



SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

February 26, 2018

Mr. Dale Myers
Washington State Department of Ecology
3190 160th Avenue Southeast
Bellevue, Washington 98008

SUBJECT: FOURTH QUARTER 2017 SUMMARY REPORT
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington
Project Number: 0914-001

Dear Mr. Myers:

SoundEarth Strategies, Inc. (SoundEarth) is pleased to present the Washington State Department of Ecology (Ecology) with a status report for the Fourth Quarter post-cleanup compliance and reporting activities for the SKS Shell Station Site (SKS Site), (Figure 1). The construction phase of the cleanup for the SKS Site was implemented in 2015 under the Prospective Purchaser Consent Decree #13-2-27556-2, entered on July 29, 2013 (PPCD). Remediation of petroleum-contaminated soil and groundwater, and post-cleanup groundwater monitoring has been performed in accordance with the PPCD and Chapter 173-340 of the Washington Administrative Code. Cleanup and development activities at the SKS Site included dewatering, extensive soil excavation, and the installation of a vapor barrier to eliminate potential vapor intrusion exposure pathway in the mixed use building constructed on the property. Cleanup of the SKS Site has been coordinated with remedial activities conducted at the adjacent Huling Brothers Property and Kennedy Family Limited Partnership Property, which are being managed separately under the Voluntary Cleanup Program (VCP; NW2716).

FOURTH QUARTER 2017 SUMMARY

Groundwater sampling was conducted in December 2017 for the 11 on-property and off-property compliance wells. The 11 compliance wells include: MW108 through MW110, located in the northeast corner of the building parking garage, and MW101 through MW105 and RW03 through RW05, which are all located within the Fauntleroy Way Southwest and Southwest Alaska Street rights-of-way (ROW). This groundwater sampling event is the eighth since cleanup was completed in 2015, and the Third consecutive in which all wells in the network work sampled. SoundEarth has uploaded Environmental Information Management (EIM) analytical and location data for the Fourth Quarter data on January 8, 2018. The EIM data was approved by Ecology on January 22, 2018.

Data from the September 2017 sampling event is tabulated below.

Well ID	Sample Date	Analytical Results (micrograms per liter)		
		GRPH	Benzene	DRPH
MW101	09/13/17	<100	<1	<50
MW102	09/13/17	<100	<1	<50
MW103	09/13/17	<100	<1	120 ^x
MW104	09/14/17	340	<1	780 ^x
MW105	09/13/17	<100	<1	<50
MW108	09/14/17	<100	<1	<50
MW109	09/14/17	150	<1	<50
MW110	09/14/17	<100	<1	99 ^x
RW03	09/14/17	2,500	8.8	1,000 ^x
RW04	09/14/17	360	3.0	200 ^x
RW05	09/14/17	230	<1	170 ^x
MTCA Method A Cleanup Level		1,000/800	5	500

NOTES:

Red denotes concentration exceeds the MTCA cleanup level.

Laboratory Note:

^xThe sample chromatographic pattern does not resemble the diesel standard used for quantitation.

< = not detected above the laboratory reporting limit

-- = not analyzed

DRPH = diesel-range petroleum hydrocarbons

GRPH = gasoline-range petroleum hydrocarbons

MTCA = Washington State Model Toxics Control Act

Please see the attached Fourth Quarter 2017 Groundwater Monitoring Report for a more detailed discussion of the results and overall groundwater concentration trends for the SKS Site.

SoundEarth also prepared agency review drafts of the Cleanup Action Report, dated January 8, 2018 and submitted January 16, 2018, the Well Decommissioning Work Plan (Alaska Street sidewalk wells) dated and submitted on December 15, 2018, and the Well Installation Work Plan (MW111, MW112, and MW113) dated December 7, 2018 and submitted to Ecology on December 11, 2018.

PLANNED FIRST QUARTER 2018 ACTIVITIES

SoundEarth plans to conduct First Quarter 2018 groundwater sampling in March 2018. Groundwater levels and analytical data trends will also be evaluated. We will also address Ecology comments to the Agency Review Drafts discussed above, and submit an agency draft plan for re-installation of the Alaska Street injection wells.

Pending Ecology’s approval of the well installation and well decommissioning work plans, SoundEarth plans to move forward with efforts to decommission the four remediation wells located on Alaska Street (RW06 through RW09) and monitoring well MW107. SoundEarth also plans to proceed with installation of wells MW-111, 112, and 113, pending Ecology approval. We look forward to discussing these issues in further detail with Ecology during First Quarter 2018.

PROJECT SCHEDULE

The following summarizes the work conducted to date and the current schedule for anticipated reporting and monitoring work at the SKS Site.

Cleanup Plan Task	Date
UST Fuel Removal and Station Shutdown	Conducted: July 2013
Installation of Shoring for UST removal	Conducted: November 2013
UST System Cleaning and Removal	Conducted: December 2013
Submit UST Removal Report	Conducted: January 2014
Permitting for Wells	Conducted: May 2014
Master Use Permit	Conducted: June 2014
Install Dewatering Wells (8 Wells)	Conducted: July 2014
Install West Bounding Well MW107 (post demolition)	Conducted: October 2014
SKS Site Demolition and Hoist Removal	Conducted: October–November 2014
Construct Dewatering System in ROW Wells	Conducted: March 2015
Operate Dewatering System	Conducted: March–June 2015
Contaminated Soil Excavation and Confirmation Sampling	Conducted: March–May 2015
Removal of Three Previously Unknown USTs	Conducted: March 2015
Backfill Excavation and Install Membrane Barrier	Conducted: August–September 2015
Install Compliance Wells MW108, MW109, and MW110	Conducted: September 2015
Prepare Interim Cleanup Action Report	Conducted: December–February 2016
First Quarter Post Cleanup Groundwater Monitoring	Conducted: March 2016
Submit preliminary Cleanup Action Report	Conducted: October 2016
Notice of Intent to Decommission Wells	Conducted: May 2017
Groundwater Elevation Study	In Progress: 2017–2018
Decommission Alaska sidewalk wells	Planned: 1Q 2018
Revised Agency-Review Cleanup Action Report	Conducted: January 2018
Alaska Street Sidewalk Well Decommissioning	Planned: 1Q -2Q 2018
Compliance/Injection Well Installation	Planned: 1Q -2Q 2018
ChemOx Injection	Planned: 2018
Groundwater Monitoring (Quarterly)	Planned: 2018–2021

NOTES:

ChemOx = Chemical Oxidant
ROW = right-of-way
SKS Site = SKS Shell Station Site
UST = underground storage tank

CLOSING

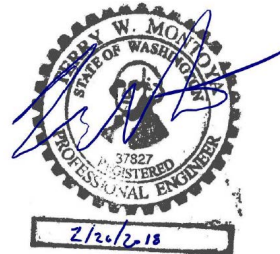
Please let me know if you would like to meet on-site or at your office to discuss any of the specific remedial activities. If you have any questions about the schedule and the cleanup activities, please contact me at 206-306-1900.

Respectfully,

SoundEarth Strategies, Inc.



Rob Roberts
Senior Scientist



Terry Montoya, P.E.
Principal Engineer

Attachment: Groundwater Monitoring Report – Fourth Quarter 2017 SKS

cc: Mr. Brad Reisinger, Lennar Multifamily
Mr. Kelley Kohout, Lennar Multifamily
Mr. Ian Fishburn, Lennar Multifamily
Mr. Ken Lederman, Foster Pepper PLLC
Mr. Phil Carmody, GID
Mr. Jason Sweatt, GID
Mr. Ian Sutton, Joyce Ziker Parkinson, PLLC
Mr. Dave Cook, Aspect Consulting

CERTWM:dnm/hsb

GROUNDWATER MONITORING REPORT – FOURTH QUARTER 2017 SKS



SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

February 23, 2018

Mr. Kelley Kohout
LMI West Seattle Holdings, LLC
1325 Fourth Avenue, Suite 1700
Seattle, Washington 98101-2528

SUBJECT: GROUNDWATER MONITORING REPORT—FOURTH QUARTER 2017
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington
Project Number: 0914-001

Dear Mr. Kohout:

SoundEarth Strategies, Inc. (SoundEarth) has prepared this report to present the results of the Fourth Quarter 2017 groundwater monitoring event conducted at the SKS Shell Station Site located at 3901 Southwest Alaska Street in Seattle, Washington (SKS Site), as shown on Figure 1. The groundwater monitoring event was conducted to evaluate the long-term effectiveness of the cleanup activities completed on and beneath the SKS Site that are being performed pursuant to the Cleanup Action Plan under Prospective Purchase Consent Decree #13-2-27556-2, entered on July 29, 2013.

BACKGROUND

The SKS Site was developed as a gasoline station and an automotive repair facility in 1934. In 1950, the original 1934 gasoline fueling equipment was removed and two 4,000-gallon underground storage tanks (USTs) were installed. The pump island and service station office were removed in 1961 and replaced with a new pump island, relocated to locations as shown on Figure 2. An additional 8,000-gallon UST was installed in 1974. The 1950-vintage USTs were removed in 1984 and replaced with one 10,000-gallon UST and two 12,000-gallon USTs. Over time, leaded and unleaded gasoline and diesel fuel have been used and stored in various USTs at the SKS Site. In December 2013, the three 1984-vintage USTs and the 1974-vintage UST were decommissioned and removed from the SKS Site.

SoundEarth conducted remedial activities on the SKS Site in 2015 as part of the Whittaker multi-family/mixed use development. Remedial activities included lot-line to lot-line remedial excavation of petroleum-contaminated soil to approximately 29.5 feet below ground surface (240 feet North American Vertical Datum 1988 [NAVD88]), right-of-way (ROW) dewatering to facilitate removal of contaminated water, and vapor barrier installation. Approximately 9,755 tons of petroleum-contaminated soil were removed from the SKS Site.

On September 1, 2015, monitoring wells MW108 through MW110 were installed in the basement/parking garage level of the building now located on the SKS Site to complete compliance groundwater monitoring.

FIELD ACTIVITIES

The Fourth Quarter monitoring event was conducted on December 12, 2017, to evaluate the long-term effectiveness of cleanup activities. Groundwater sampling was conducted on a total of 11 on-property and off-property compliance wells. The monitoring event included measuring depths to groundwater and sampling monitoring wells MW108 through MW110 located in the building parking garage, and wells MW101 through MW105 and RW03 through RW05, located within the Fauntleroy Way Southwest ROW. Remediation wells RW01 and RW02 were not included in this monitoring event, based on a telephone discussion between Dale Myers of the Washington State Department of Ecology (Ecology) and Rob Roberts of SoundEarth prior to the third quarter groundwater sampling event.

Upon arrival at the SKS Site, SoundEarth personnel opened monitoring wells and permitted water levels to equilibrate with atmospheric pressure for a minimum of 15 minutes before groundwater level measurements were obtained. Groundwater levels were measured relative to the top of well casing to an accuracy of 0.01 feet using an electronic water level meter.

Groundwater samples were collected from monitoring wells MW101 through MW105, MW108 through MW110, and remediation wells RW03 through RW05, in accordance with the U.S. Environmental Protection Agency (EPA) *Low-Flow (Minimal Drawdown) Ground-Water Procedures* (April 1996). Purging and sampling of each monitoring well were performed using a peristaltic pump and dedicated polyethylene tubing at flow rates ranging from 100 to 140 milliliters per minute. The intake was placed approximately 2 to 3 feet below the surface of the groundwater or mid-screen, if well screen is submerged, in each monitoring well. During purging, water quality was monitored using a YSI water quality meter equipped with a flow-through cell. The water quality parameters that were monitored and recorded included temperature, pH, specific conductance, dissolved oxygen, turbidity, and oxidation-reduction potential. Each monitoring well was purged until a minimum subset of pH, specific conductivity, and dissolved oxygen and/or turbidity stabilized. Monitoring wells MW103 and MW108 were purged dry while filling the flow-through cell. Therefore, grab samples were collected from these wells once the wells had recharged to their initial groundwater level.

Following purging, groundwater samples were collected from the pump outlet tubing located upstream of the flow-through cell and placed directly into clean, laboratory-prepared sample containers. Each container was labeled with a unique sample identification number, placed on ice in a cooler, and transported to Friedman & Bruya, Inc., of Seattle, Washington, under standard chain-of-custody protocols for laboratory analysis.

All groundwater samples were submitted for analysis of gasoline-range petroleum hydrocarbons (GRPH) by Northwest Total Petroleum Hydrocarbon (NWTPH) Method NWTPH-Gx; benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B; and diesel- and oil-range petroleum hydrocarbons (DRPH and ORPH, respectively).

Purge water generated during the monitoring event was placed in an appropriately labeled 55-gallon steel drum and temporarily stored on the SKS Site pending receipt of analytical data and proper disposal.

RESULTS

Groundwater Elevations and Flow Direction

Groundwater levels measured on December 12, 2017, ranged in elevation from 241.92 (MW101 in the Fautleroy Way Southwest ROW) to 240.13 (MW108 in the building parking garage) feet NAVD88 (Table 1). Historical groundwater measurements have indicated that groundwater at the Fautleroy Way Southwest and Southwest Alaska Street intersection consistently flowed at a moderate gradient of 0.015 feet per foot to the north-northeast. However, recent groundwater elevation data collected in 2017 indicate a groundwater flow direction to the west at a gradient of 0.014 feet per foot along the Fautleroy Way Southwest property edge (see rose diagram in Figure 2). The December groundwater flow data are consistent with the flow direction data obtained in Third Quarter 2017. This observed change in groundwater flow is likely due to the footing drains and associated sub-slab drainage system installed between July and September 2015 for the underground parking garage, as discussed in the Summary section on pages 5 and 6.

Groundwater Chemical Analytical Results

Groundwater analytical results from the monitoring event are summarized below (Figure 3; Table 1). Results for MW108 through MW110, located on-Property, as well as MW101, MW102, MW103, MW105, RW04, and RW05, all located within the Fautleroy Way Southwest ROW, were below Washington State Model Toxics Control Act (MTCA) A cleanup levels (CULs) for all chemicals of concern. Concentrations of ORPH, toluene, ethylbenzene, and total xylenes were below the MTCA Method A CULs for groundwater samples collected from all sampled wells.

Data from the December 2017 sampling event is tabulated and summarized below.

Well ID	Sample Date	Analytical Results (micrograms per liter)		
		GRPH	Benzene	DRPH
MW101	12/12/17	<100	<1	<50
MW102	12/12/17	<100	<1	<50
MW103	12/12/17	<100	<1	120
MW104	12/12/17	340	<1	780 ^x
MW105	12/12/17	<100	<1	<50
MW108	12/12/17	<100	<1	<50
MW109	12/12/17	150	<1	<50
MW110	12/12/17	<100	<1	99 [*]
RW03	12/12/17	2,500	8.8	1,000 ^x
RW04	12/12/17	360	3.0	200 ^x
RW05	12/12/17	230	<1	170 ^x
MTCA Method A Cleanup Level		1,000/800	5	500

NOTES:

Red denotes concentration exceeds the MTCA cleanup level.

Laboratory Note:

^{*}The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

< = not detected above the laboratory reporting limit

DRPH = diesel-range petroleum hydrocarbons

GRPH = gasoline-range petroleum hydrocarbons

MTCA = Washington State Model Toxics Control Act

- **Gasoline-Range Petroleum Hydrocarbons.** All groundwater samples collected from the monitoring wells (MW101 through MW105 and MW108 through MW110 as identified in the

2013 Draft Cleanup Action Plan) were below the MTCA Method A CUL of 800 micrograms per liter ($\mu\text{g/L}$) for GRPH. GRPH concentrations were also below the MTCA Method A CUL in groundwater samples collected from wells RW04 through RW05. A GRPH concentration exceeding the CUL was detected in the groundwater sample collected from well RW03 (2,500 $\mu\text{g/L}$) in the Fourth Quarter 2017. The concentrations of GRPH in groundwater at well RW03 were 9,000 $\mu\text{g/L}$ in the Fourth Quarter 2016. The concentrations of GRPH in groundwater at well RW03 from the Fourth Quarter 2016 to the Fourth Quarter 2017 has reduced by approximately 70 percent. GRPH concentrations in wells MW104, MW109, MW110, RW04, and RW05 during the Fourth Quarter sampling event were generally lower than or consistent with the concentrations detected in these wells during the Third Quarter 2017 groundwater sampling event.

- **Benzene.** Groundwater samples collected from all monitoring wells were below the MTCA Method A CUL of 5 $\mu\text{g/L}$ for benzene. A concentration of benzene exceeding the MTCA CUL was detected in the groundwater sample collected from remediation well RW03 (8.8 $\mu\text{g/L}$). This result was higher than the previous concentration (2.8 $\mu\text{g/L}$) detected in this well during Third Quarter 2017. A concentration of benzene (3.0 $\mu\text{g/L}$) below the MTCA Method A CUL was detected in remediation well RW04, which is lower than the benzene concentration detected during Third Quarter 2017 (6.4 $\mu\text{g/L}$).
- **Diesel-Range Petroleum Hydrocarbons.** DRPH concentrations were below the MTCA Method A CUL in groundwater samples collected from all but two wells during Fourth Quarter 2017. Groundwater sample collected in the 2017 Fourth Quarter from MW104 had detectable concentrations of DRPH of 780 $\mu\text{g/L}$ exceeding the MTCA Method A CUL of 500 $\mu\text{g/L}$. The concentrations of DRPH in groundwater at well MW104 were 16,000 $\mu\text{g/L}$ in the Fourth Quarter 2016. The concentrations of DRPH in groundwater at well MW104 from the Fourth Quarter 2016 to the Fourth Quarter 2017 has reduced by approximately 95 percent. In addition, the groundwater sample collected in the Fourth Quarter 2017 from well RW03 had detectable concentrations of DRPH of 4,600 $\mu\text{g/L}$ exceeding the MTCA Method A CUL. The concentrations of DRPH in groundwater at well RW03 were 11,000 $\mu\text{g/L}$ in the Fourth Quarter 2016. The concentrations of DRPH in groundwater at well RW03 from the Fourth Quarter 2016 to the Fourth Quarter 2017 has reduced by approximately 58 percent.

As shown in the attached Charts 1 through 4, which summarize trends in GRPH and benzene concentrations in monitoring wells MW104, MW108, MW109, and MW110 since 2011, GRPH and benzene in all four monitoring wells during Fourth Quarter 2017 are significantly lower than pre-remediation concentrations. GRPH and benzene concentrations in all four of these monitoring wells have decreased or remained below laboratory reporting limits or the MTCA Method A CULs since First Quarter 2017. Figure 4 includes trend charts as well as data comparison tables from six ROW monitoring wells. The tables on Figure 4 illustrate that ROW groundwater concentrations were either non-detect for GRPH and benzene before and after the 2015 excavation (MW101 through MW103 and MW105), or that concentrations are significantly reduced (RW02 and RW04).

Copies of the laboratory analytical reports are provided as Attachment A.

DATA VALIDATION

SoundEarth contracted with Validata, LLC to conduct a Stage 2A-level quality assurance/quality control (QA/QC) review of the analytical results. The data were reviewed using the guidance and quality control

criteria documented in the EPA's National Functional Guidelines for Organic Data Review (1999 and 2008). The quality control requirements that were reviewed included sample receipt, handling, and holding times; recoveries for method blanks, surrogates, spikes, and field duplicates; and reporting limits.

Results. The relative percent difference (RPD) for ethylbenzene calculated for the sample and duplicate collected from well MW104 exceeded the RPD control limit of 20 percent. However, no qualifier was added to the data due to the detected levels being less than five times the detection limit. All other analytes were within the acceptable range for RPD. All other QA/QC criteria were confirmed to be acceptable for the groundwater samples, and the analytical results are considered to be acceptable for use. A copy of the Validata LLC Data Validation Report is provided as Attachment B.

Following data validation, the groundwater data were uploaded to Ecology's Environmental Information Management system.

SUMMARY

Petroleum hydrocarbons (GRPH, DRPH, ORPH, and BTEX) either were not detected or were detected at concentrations less than MTCA Method A CULs in all 9 of the 11 wells sampled for groundwater at the SKS Site during this monitoring event, with the exception of:

- Remediation well RW03, which had detectable concentrations of GRPH, benzene, and DRPH exceeding the applicable CULs.
- Monitoring well MW104 had detectable concentrations of DRPH exceeding the applicable CUL.

Wells RW03 and MW104 are both located in the Fauntleroy Way SW sidewalk (Figures 3 and 4; Table 1; and Charts 1 through 4).

Although concentrations of GRPH and DRPH increased in well RW03 between the Third and Fourth Quarters of 2017 and concentrations of DRPH remain in exceedance at well MW104, analytical data indicates that concentrations of GRPH (RW03 only) and DRPH have decreased significantly in the ROW wells including wells RW03 and MW104 between December 2016 and December 2017. It is recommended that groundwater monitoring continue to further assess the natural attenuation of petroleum hydrocarbons at these well locations and to confirm the degradation trends. At this time, the analytical groundwater data and monitoring trends indicate that no additional treatment is warranted.


The historical groundwater flow direction was documented to be to the north to northeast prior to development, but based on the most recent groundwater elevations the flow direction has changed to the west-southwest (see Rose Diagrams in Figure 2). As shown on Figures 5 and 6, the building is equipped with a sub-slab drainage system that should (based on location) intercept groundwater at the south and west boundaries of the new sub-grade parking levels. The two-level parking garage includes a grid-work of sub-slab drains and vertical wall drains that outlet to a 300-foot-long, 6-foot-internal-diameter stormwater retention pipe located beneath the eastern side of the building (Figure 5). The southwestern portion of the parking garage was constructed approximately 28 feet below grade, and the current building footing drain system may be intercepting that groundwater beneath the SKS Site and entire Whittaker property. We are currently analyzing whether the building drainage system is affecting the groundwater elevation and flow direction at the northeast corner of the property.

SoundEarth will conduct a monitoring event of the same wells at the SKS Site in First Quarter 2018, the results of which will be included in a groundwater monitoring report.


CLOSING

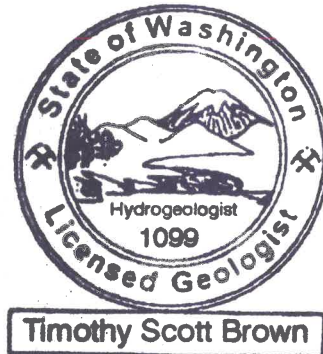
SoundEarth appreciates this opportunity to provide LMI West Seattle Holdings, LLC, with environmental consulting services. Please call Rob Roberts at 206-306-1900 if you have any questions or comments regarding the content of this report.

Respectfully,
SoundEarth Strategies, Inc.


Clare Tochilin, LG
Project Geologist


Rob Roberts
Senior Scientist

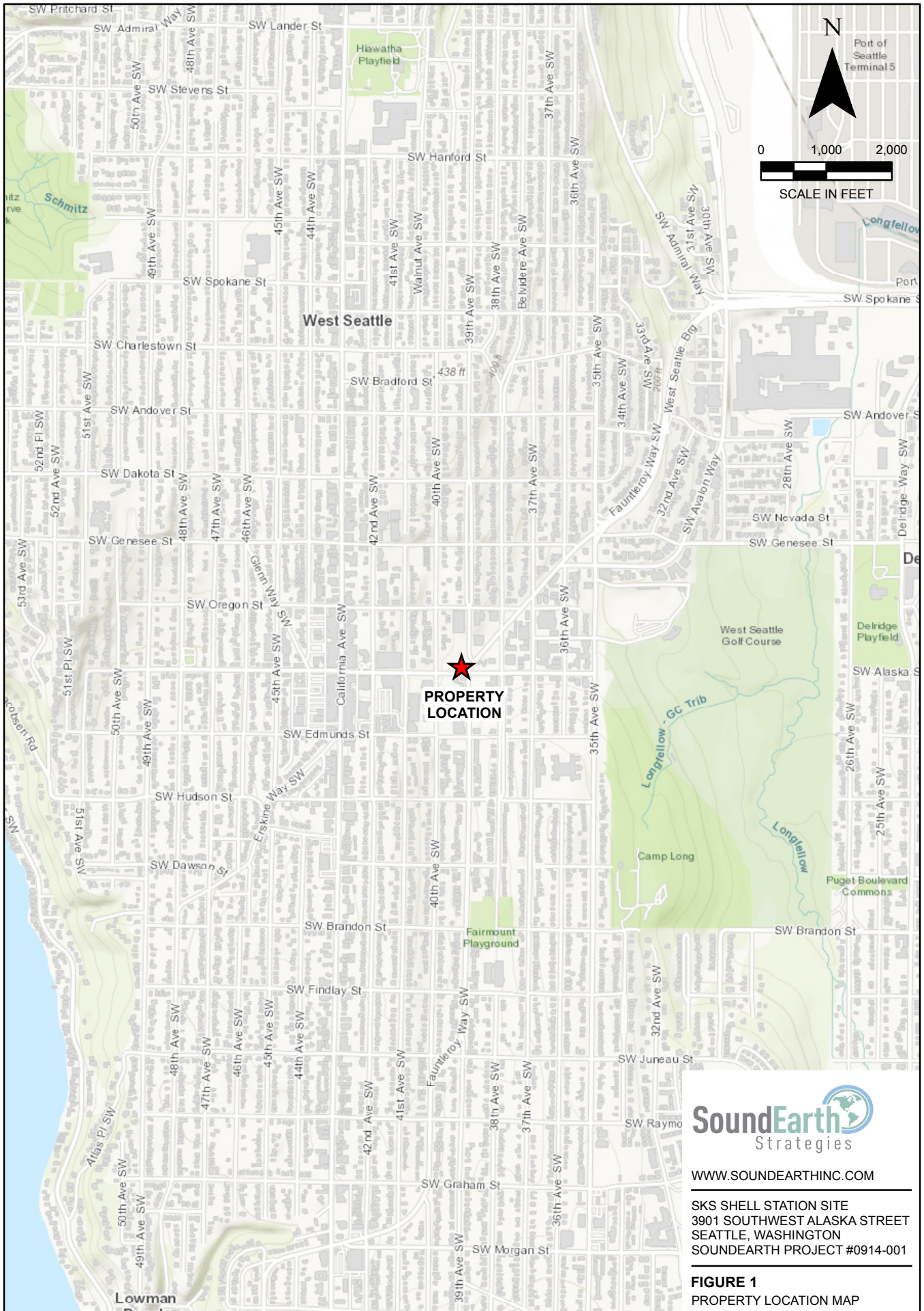

Timothy S. Brown, LHG
Senior Hydrogeologist



- Attachments:
- Figure 1, Property Location Map
 - Figure 2, Groundwater Elevation Contour Map (December 12, 2017)
 - Figure 3, 2017 Q4 Groundwater Analytical Data
 - Figure 4, GRPH and Benzene Concentration Trends in Groundwater
 - Figure 5, Cross Section and Sub-Slab Drainage Plan
 - Figure 6, Current Cross Section A-A'
 - Table 1, Summary of Groundwater Data
 - Chart 1, GRPH and Benzene Concentrations—MW104
 - Chart 2, GRPH and Benzene Concentrations—GLMW01/MW109
 - Chart 3, GRPH and Benzene Concentrations—MW110/MW-2
 - Chart 4, GRPH and Benzene Concentrations—MW-3/MW108
 - A, Laboratory Analytical Reports
 - Friedman & Bruya, Inc. #712197*
 - Friedman & Bruya, Inc. #712198*
 - B, Data Validation Report
 - Validata, LLC #712197/712198*

CJT/CER/TSB:dnm/hsb

FIGURES



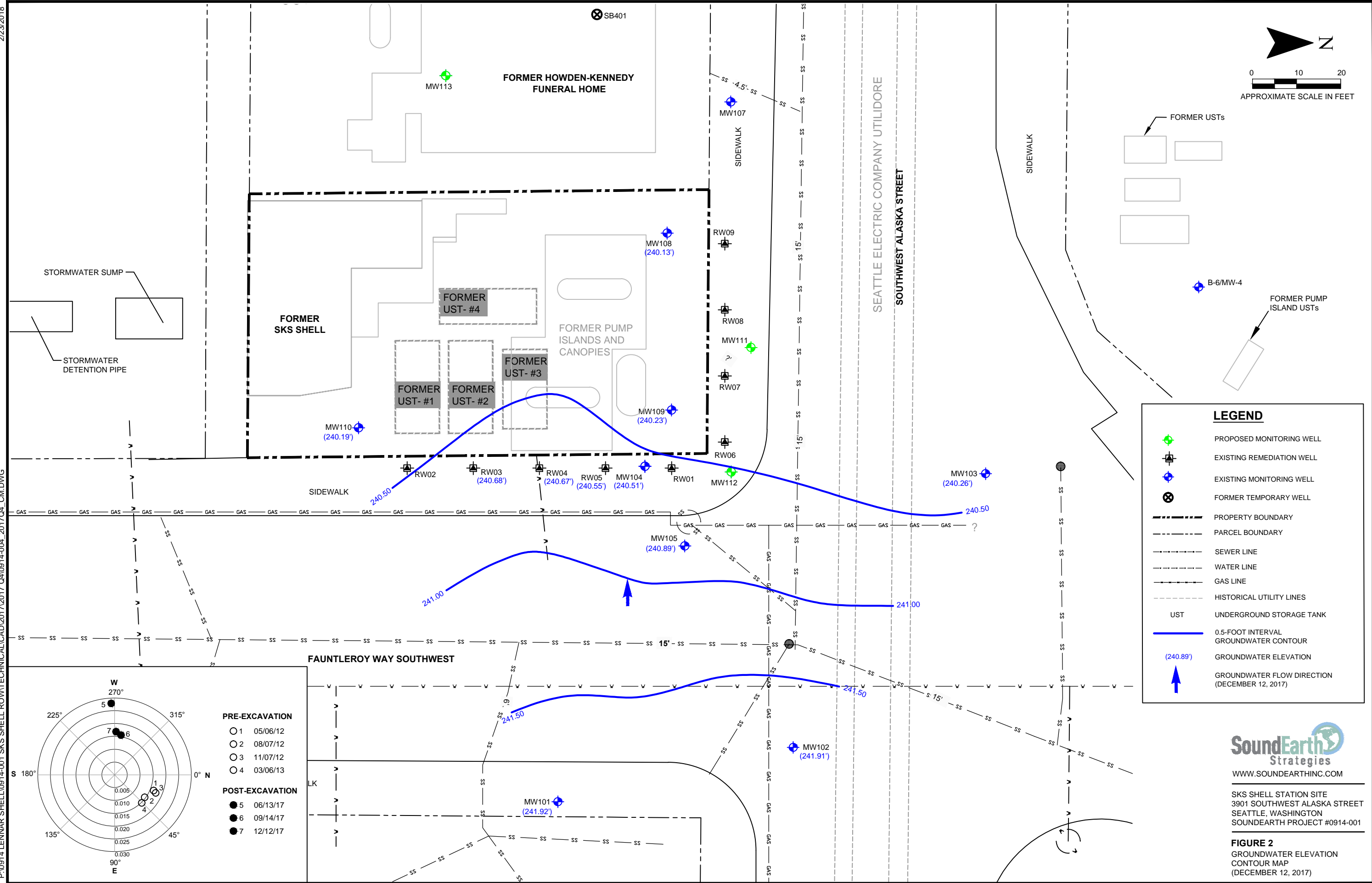
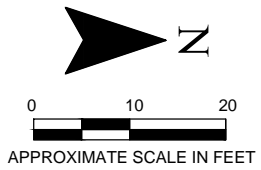
SoundEarth
Strategies

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SKS SHELL STATION SITE
3901 SOUTHWEST ALASKA STREET
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0914-001

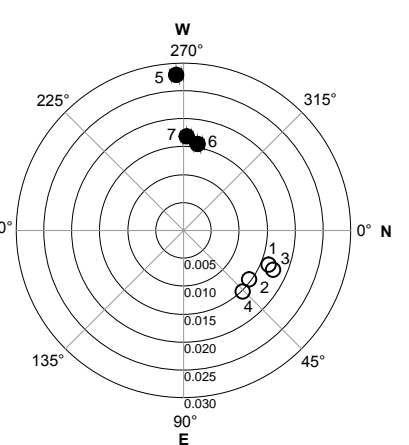
FIGURE 1
PROPERTY LOCATION MAP

2/23/2018
P:\0914 LENNAR SHELL\0914-001_SKS SHELL_ROW\TECHNICAL\CAD\2017\2017 Q4\0914-004_2017Q4_CM.DWG



LEGEND

- PROPOSED MONITORING WELL
- EXISTING REMEDIATION WELL
- EXISTING MONITORING WELL
- FORMER TEMPORARY WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS LINE
- HISTORICAL UTILITY LINES
- UST
- UNDERGROUND STORAGE TANK
- 0.5-FOOT INTERVAL GROUNDWATER CONTOUR
- GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION (DECEMBER 12, 2017)



PRE-EXCAVATION

- 1 05/06/12
- 2 08/07/12
- 3 11/07/12
- 4 03/06/13

POST-EXCAVATION

- 5 06/13/17
- 6 09/14/17
- 7 12/12/17

SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

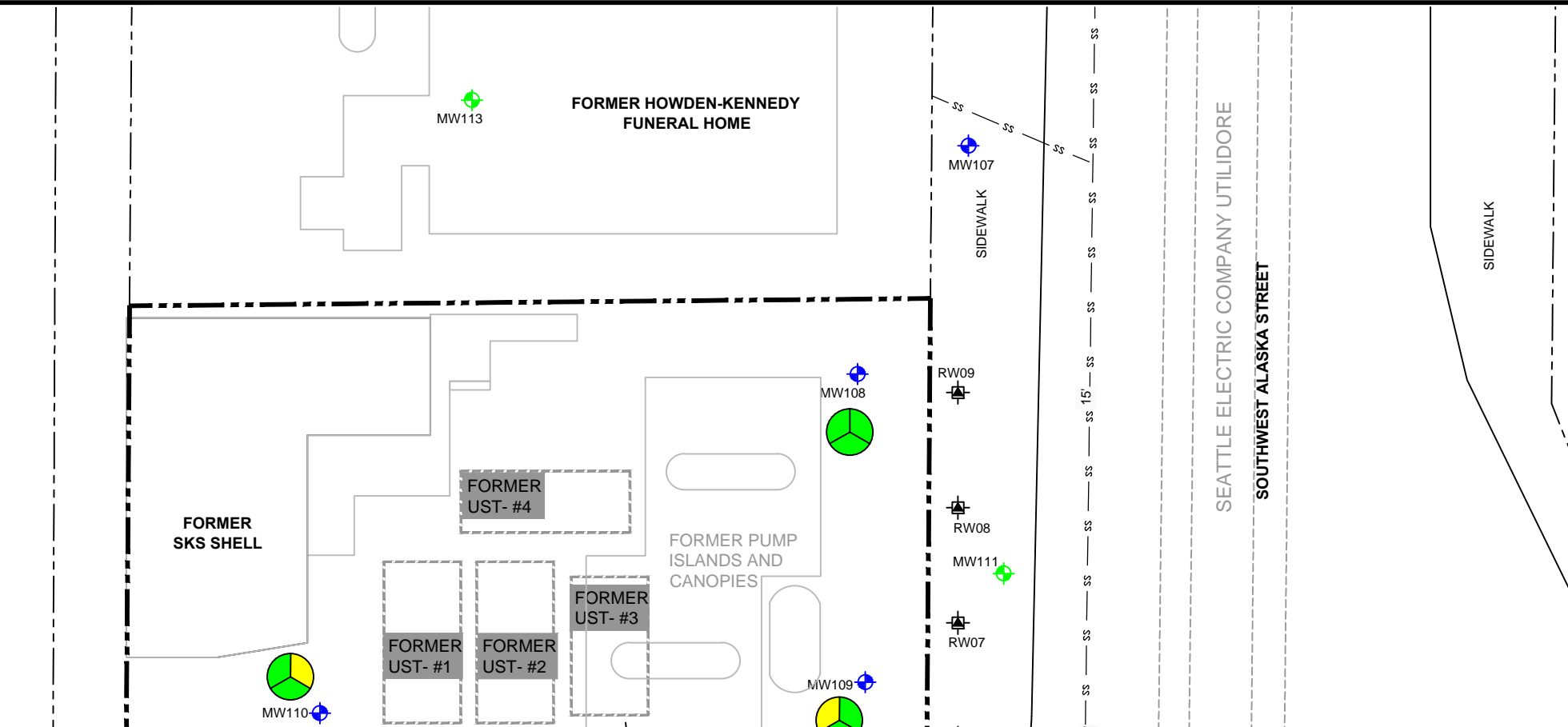
SKS SHELL STATION SITE
3901 SOUTHWEST ALASKA STREET
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0914-001

FIGURE 2
GROUNDWATER ELEVATION CONTOUR MAP
(DECEMBER 12, 2017)

2/23/2018
P:\0914 LENNAR SHELLO\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2017\2017 Q4\0914-004_2017Q4_GD.DWG

KEY

- ◆ DENOTES CONCENTRATION EXCEEDS MTCA METHOD A CLEANUP LEVEL
- ◆ DENOTES CONCENTRATION BELOW LABORATORY REPORTING LIMIT
- ◆ DENOTES CONCENTRATION DETECTED ABOVE LABORATORY REPORTING LIMIT BUT BELOW MTCA METHOD A CLEANUP LEVEL
- ◆ NOT ANALYZED

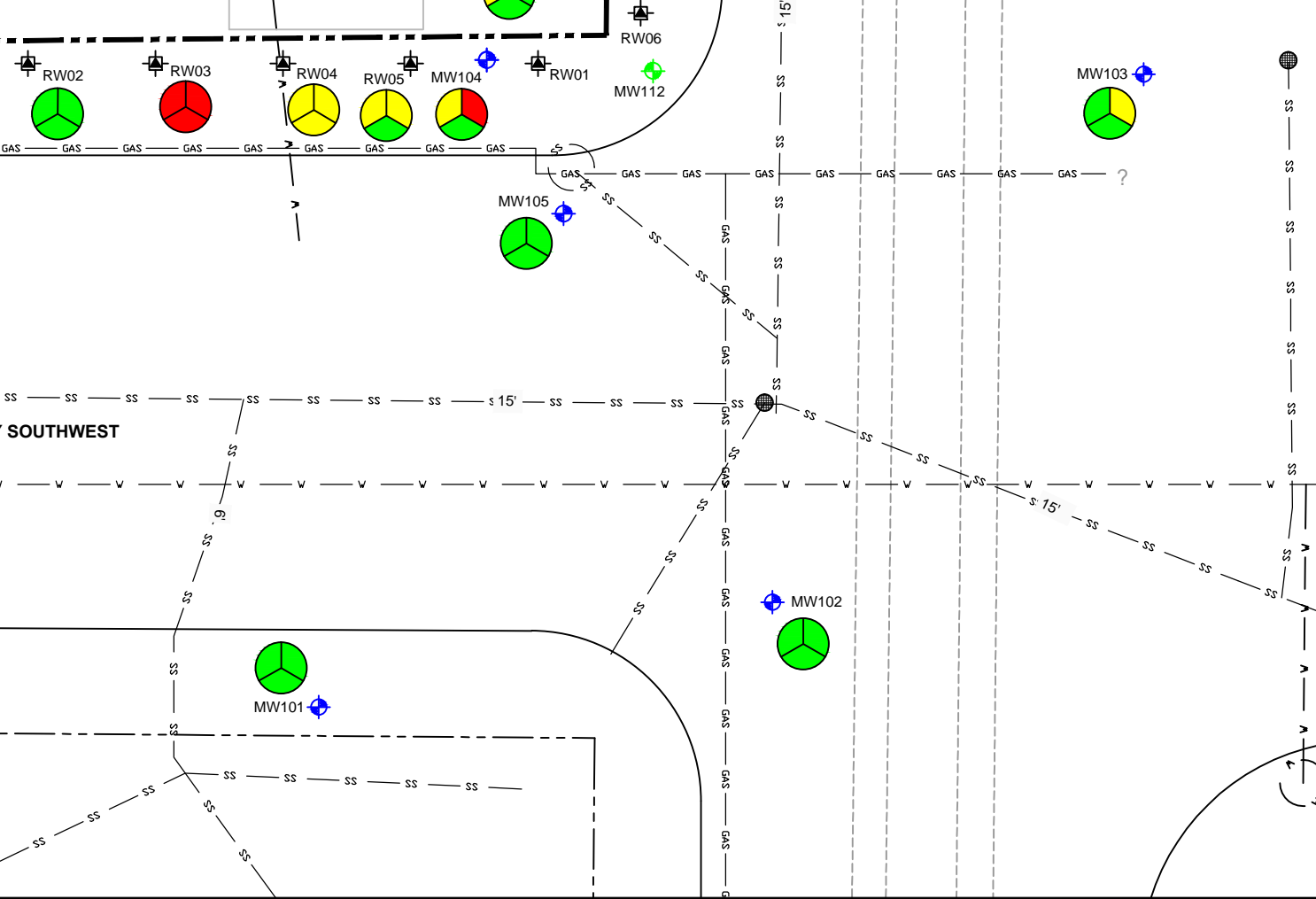


APPROXIMATE SCALE IN FEET

FORMER USTs

FORMER PU ISLAND UST

Analytical Results (micrograms per liter)								
Well ID	Sample Date	GRPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	DRPH	ORPH
MW101	06/14/17	<100	<1	<1	<1	<3	<50	<250
	09/13/17	<100	<1	<1	<1	<3	<60	<300
	12/12/17	<100	<1	<1	<1	<3	<50	<250
MW102	06/13/17	<100	<1	<1	<1	<3	<50	<250
	09/13/17	<100	<1	<1	<1	<3	<50	<250
	12/12/17	<100	<1	<1	<1	<3	<50	<250
MW103	06/13/17	<100	<1	<1	<1	<3	<60	<300
	09/13/17	<100	<1	<1	<1	<3	140	<375
	12/12/17	<100	<1	<1	<1	<3	120	<250
MW104	12/23/16	2,000	2.1	2.1	1.7	27	16,000	380
	03/17/17	1,400	<1	<1	8.5	10	7,900	<400
	06/15/17	700	<1	<1	4.0	3.1	3,000	<250
	09/14/17	460	<1	<1	1.3	<3	2,200	<300
MW105	12/12/17	340	<1	1.1	1.3	<3	780	<350
	06/13/17	<100	<1	<1	<1	<3	<50	<250
	09/13/17	<100	<1	<1	<1	<3	<60	<300
MW108	12/12/17	<100	<1	<1	<1	<3	<50	<250
	12/23/16	<100	<1	<1	<1	<3	94	<350
	03/03/17	<100	<1	<1	<1	<3	<80	<400
MW109	06/14/17	<100	<1	<1	<1	<3	140	<250
	09/14/17	<100	<1	<1	<1	<3	160	<250
	12/12/17	<100	<1	<1	<1	<3	<50	<250
	12/23/16	250	<1	<1	<1	<3	430	<250
MW110	03/03/17	370	<1	<1	1.2	<3	490	<250
	06/14/17	220	<1	<1	<1	<3	330	<250
	09/14/17	<100	<1	<1	<1	<3	140	<300
	12/12/17	150	<1	1.1	<1	<3	<50	<250
MW111	12/23/16	500	2.3	<1	9.7	18	1,200	<300
	03/03/17	570	2.1	<1	9.3	4.7	1,000	<250
	06/14/17	260	<1	<1	2.0	<3	520	<250
RW02	09/14/17	<100	<1	<1	<1	<3	150	<250
	12/12/17	<100	<1	<1	<1	<3	99	<250
	06/14/17	<100	<1	<1	<1	<3	<50	<250
RW03	12/23/16	9,000	470	16	380	750	11,000	<300
	06/14/17	1,300	7.0	<1	32	11	1,500	<250
	09/14/17	560	2.8	1.3	15	5	690	<300
	12/12/17	2,500	8.8	17	39	170	1,000	<300
RW04	06/14/17	790	2.5	<1	16	<3	400	<250
	09/14/17	400	6.4	<1	26	21	330	<250
	12/12/17	360	3.0	1.1	12	5.2	200	<300
RW05	06/14/17	400	<1	<1	4.4	<3	470	<250
	09/14/17	280	<1	1.2	1.5	<3	300	<300
	12/12/17	230	<1	1.3	1.5	<3	170	<300
MTCA Method A Cleanup Level		1,000/800	5	1,000	700	1,000	500	500



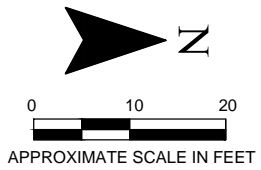
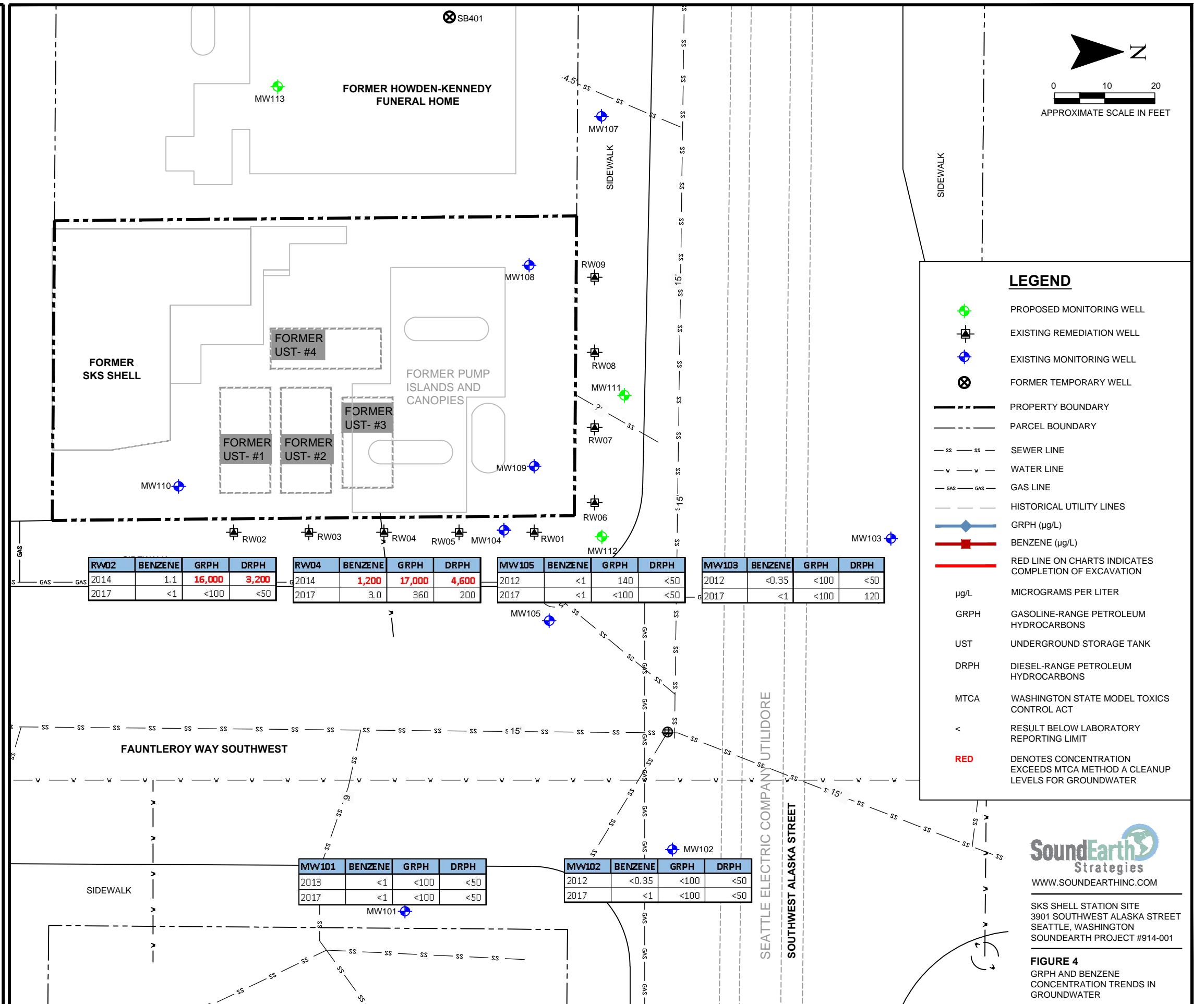
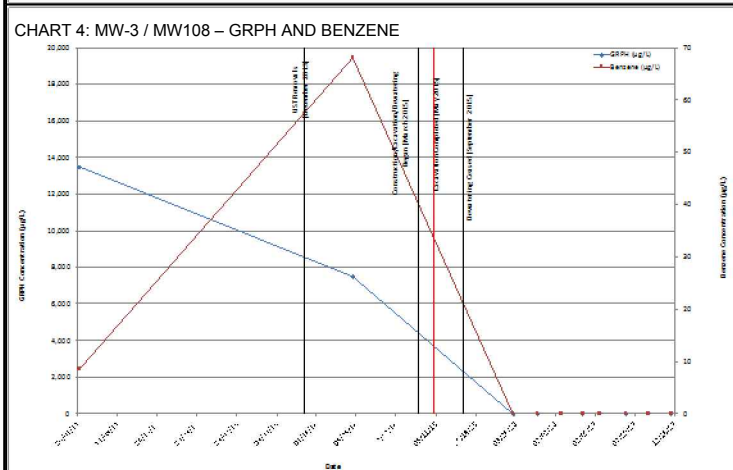
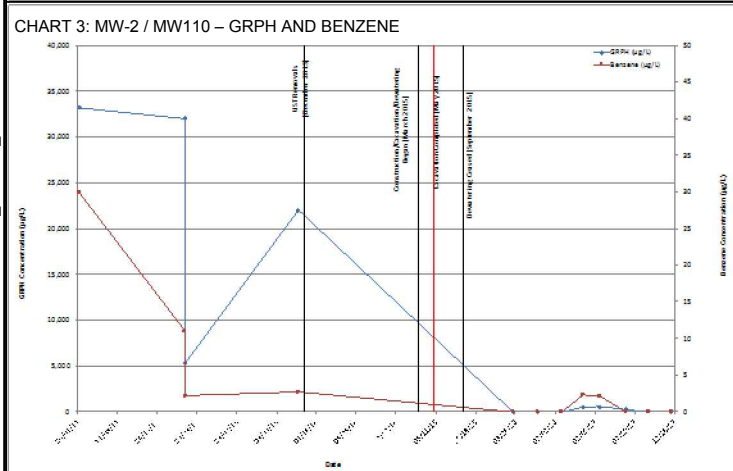
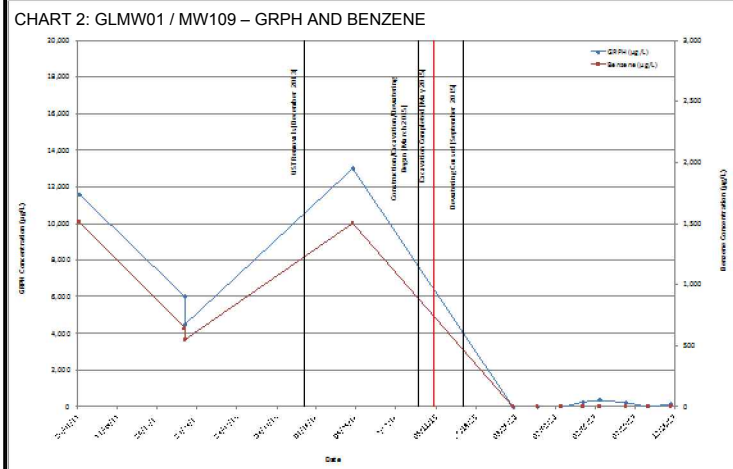
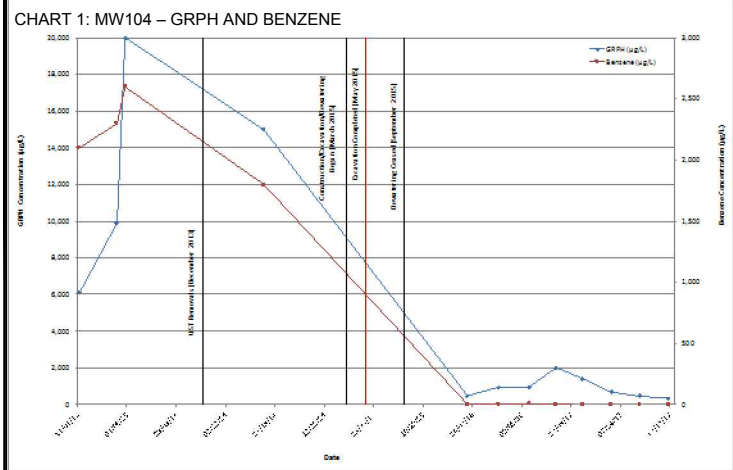
LEGEND

- ◆ PROPOSED MONITORING WELL
- ◆ EXISTING REMEDIATION WELL
- ◆ EXISTING MONITORING WELL
- ⊗ FORMER TEMPORARY WELL
- PROPERTY BOUNDARY
- - - - - PARCEL BOUNDARY
- SS-SS- SEWER LINE
- V-V- WATER LINE
- GAS-GAS- GAS LINE
- - - - - HISTORICAL UTILITY LINES
- GRPH GASOLINE-RANGE PETROLEUM HYDROCARBONS
- DRPH DIESEL-RANGE PETROLEUM HYDROCARBONS
- ORPH OIL-RANGE PETROLEUM HYDROCARBONS
- MTCA WASHINGTON STATE MODEL TOXICS CONTROL ACT
- UST UNDERGROUND STORAGE TANK
- RED DENOTES CONCENTRATION EXCEEDS MTCA METHOD A CLEANUP LEVEL
- < RESULT BELOW LABORATORY REPORTING LIMITS
- NOT ANALYZED

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SKS SHELL STATION SITE
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SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0914-001

FIGURE 3
2017 Q4 GROUNDWATER ANALYTICAL DATA



LEGEND

- PROPOSED MONITORING WELL
- EXISTING REMEDIATION WELL
- EXISTING MONITORING WELL
- FORMER TEMPORARY WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS LINE
- HISTORICAL UTILITY LINES
- GRPH (µg/L)
- BENZENE (µg/L)
- RED LINE ON CHARTS INDICATES COMPLETION OF EXCAVATION
- MICROGRAMS PER LITER
- GASOLINE-RANGE PETROLEUM HYDROCARBONS
- UNDERGROUND STORAGE TANK
- DIESEL-RANGE PETROLEUM HYDROCARBONS
- WASHINGTON STATE MODEL TOXICS CONTROL ACT
- RESULT BELOW LABORATORY REPORTING LIMIT
- DENOTES CONCENTRATION EXCEEDS MTCA METHOD A CLEANUP LEVELS FOR GROUNDWATER

RW02	BENZENE	GRPH	DRPH
2014	1.1	16,000	3,200
2017	<1	<100	<50

RW04	BENZENE	GRPH	DRPH
2014	1,200	17,000	4,600
2017	3.0	360	200

MW105	BENZENE	GRPH	DRPH
2012	<1	140	<50
2017	<1	<100	<50

MW103	BENZENE	GRPH	DRPH
2012	<0.35	<100	<50
2017	<1	<100	120

MW101	BENZENE	GRPH	DRPH
2013	<1	<100	<50
2017	<1	<100	<50

MW102	BENZENE	GRPH	DRPH
2012	<0.35	<100	<50
2017	<1	<100	<50



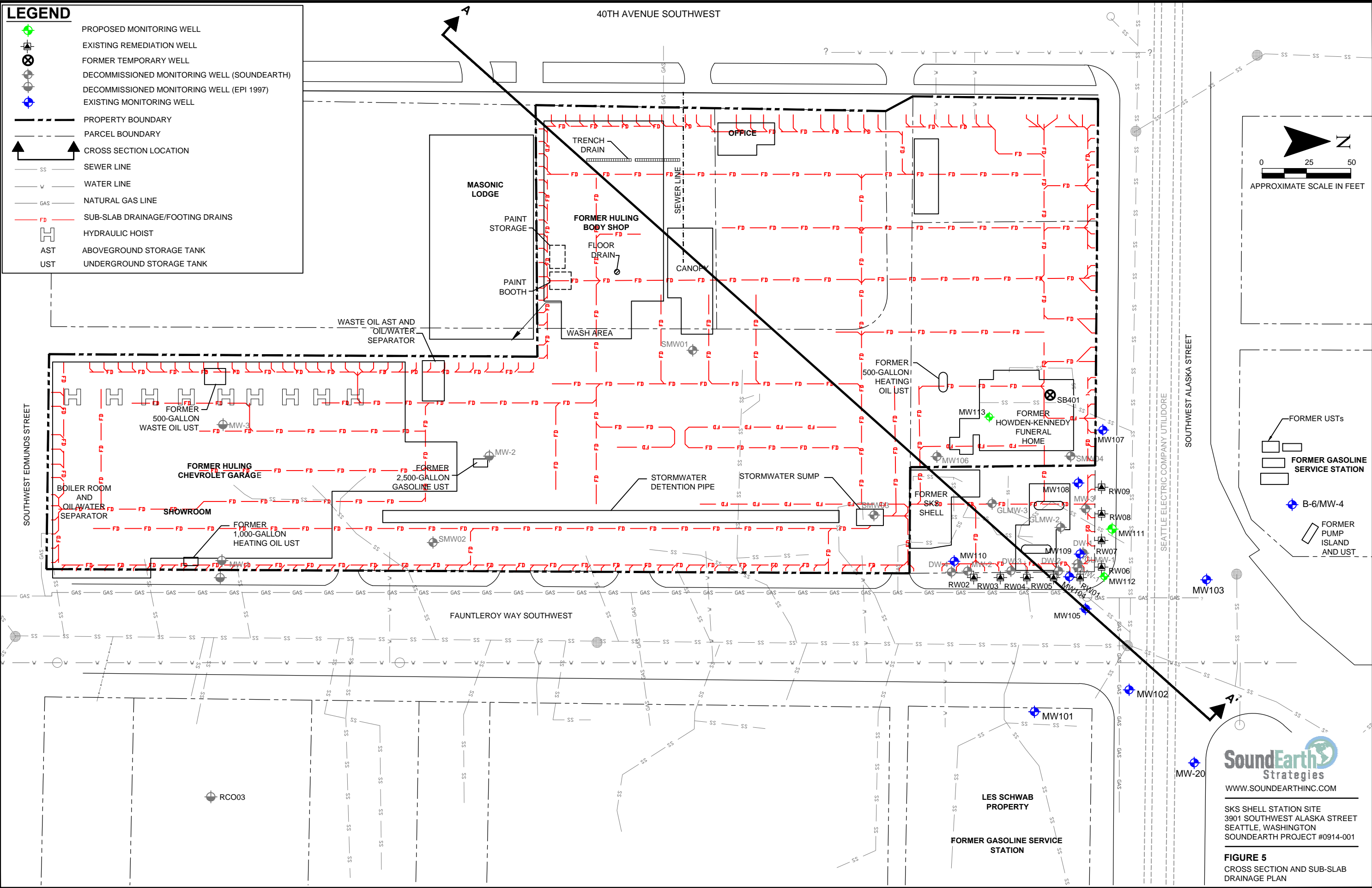
SKS SHELL STATION SITE
3901 SOUTHWEST ALASKA STREET
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #914-001

FIGURE 4
GRPH AND BENZENE
CONCENTRATION TRENDS IN
GROUNDWATER

2/23/2018
P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2017\2017 04\0914-004_2017_EL.DWG

LEGEND

- PROPOSED MONITORING WELL
- EXISTING REMEDIATION WELL
- FORMER TEMPORARY WELL
- DECOMMISSIONED MONITORING WELL (SOUNDEARTH)
- DECOMMISSIONED MONITORING WELL (EPI 1997)
- EXISTING MONITORING WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- CROSS SECTION LOCATION
- SEWER LINE
- WATER LINE
- NATURAL GAS LINE
- SUB-SLAB DRAINAGE/FOOTING DRAINS
- HYDRAULIC HOIST
- ABOVEGROUND STORAGE TANK
- UNDERGROUND STORAGE TANK

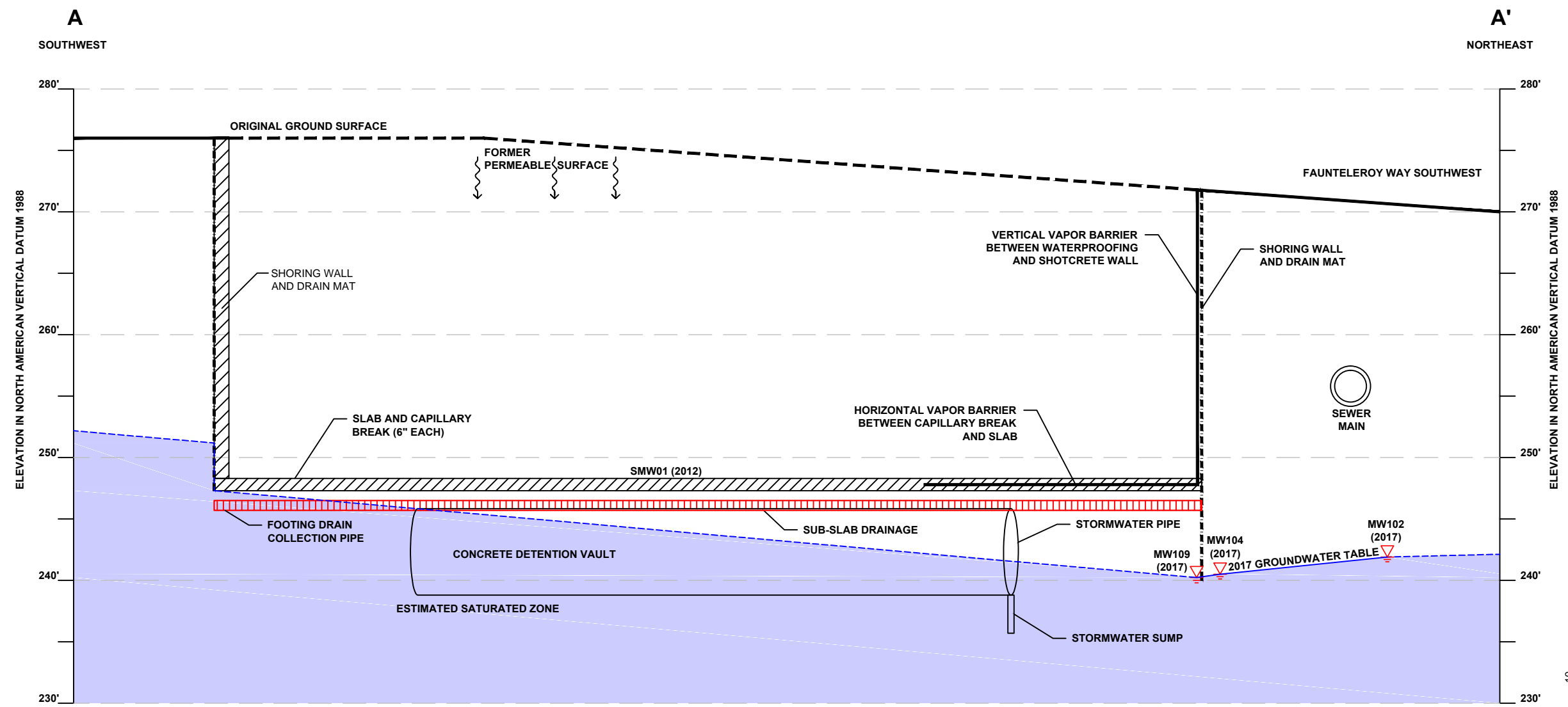


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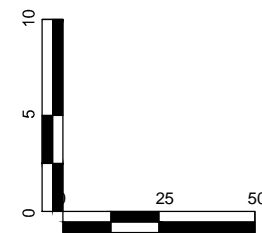
FIGURE 5
CROSS SECTION AND SUB-SLAB
DRAINAGE PLAN

P:\0914 LENNAR SHELL\0914-001_SKS SHELL_ROW\TECHNICAL\CAD\2017\2017_04\0914-004_2017_XAA.DWG 2/23/2018



LEGEND

▽ GROUNDWATER LEVEL 12/12/17



APPROXIMATE SCALE IN FEET



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SOUNDEARTH PROJECT #0914-001

FIGURE 6
CURRENT CROSS SECTION A-A'

TABLE



Table 1
Summary of Groundwater Data
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

Well ID	Sample Date	Sampled By	Depth to Groundwater (feet below TOC)	Relative Groundwater Elevation ⁽¹⁾	Analytical Results (µg/L)											
					GRPH ⁽²⁾	Benzene ⁽³⁾	Toluene ⁽³⁾	Ethylbenzene ⁽³⁾	Total Xylenes ⁽³⁾	MTBE ⁽³⁾	EDC ⁽³⁾	EDB ⁽³⁾	DRPH ⁽²⁾	DRPH with Silica Gel ⁽⁴⁾	ORPH ⁽²⁾	ORPH with Silica Gel ⁽⁴⁾
MW108	03/17/16	SoundEarth	5.52	--	<100	<1	<1	<1	<3	--	--	--	93 ^x	--	<300	--
	06/24/16	SoundEarth	3.33	--	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	09/28/16	SoundEarth	3.85	--	<100	<1	<1	<1	<3	--	--	--	<60	--	<300	--
	12/23/16	SoundEarth	6.56	--	<100	<1	<1	<1	<3	--	--	--	94 ^x	<70	<350	<350
	03/03/17	SoundEarth	6.64	--	<100	<1	<1	<1	<3	--	--	--	<80	<80	<400	<400
	06/14/17	SoundEarth	7.06	240.77	<100	<1	<1	<1	<3	--	--	--	140 ^x	--	<250	--
	09/14/17	SoundEarth	6.69	241.14	<100	<1	<1	<1	<3	--	--	--	160 ^x	--	<250	--
12/12/17	SoundEarth	7.70	240.13	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--	
MW109	03/17/16	SoundEarth	5.42	--	<100	<1	<1	<1	<3	--	--	--	97 ^x	--	<250	--
	06/24/16	SoundEarth	3.35	--	<100	<1	<1	<1	<3	--	--	--	160 ^x	--	<250	--
	09/28/16	SoundEarth	3.96	--	<100	<1	<1	<1	<3	--	--	--	260 ^x	--	<250	--
	12/23/16	SoundEarth	6.59	--	250	<1	<1	<1	<3	--	--	--	430 ^x	<50	<250	<250
	03/03/17	SoundEarth	6.70	--	370	<1	<1	1.2	<3	--	--	--	490 ^x	55 ^x	<250	<250
	06/14/17	SoundEarth	6.87	241.05	220	<1	<1	<1	<3	--	--	--	330	--	<250	--
	09/14/17	SoundEarth	6.84	241.08	<100	<1	<1	<1	<3	--	--	--	140 ^x	--	<300	--
12/12/17	SoundEarth	7.69	240.23	150	<1	1.1	<1	<3	--	--	--	<50	--	<250	--	
MW110	03/17/16	SoundEarth	5.70	--	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	06/24/16	SoundEarth	3.56	--	<100	<1	<1	<1	<3	--	--	--	100 ^x	--	<250	--
	09/28/16	SoundEarth	4.19	--	<100	<1	<1	<1	<3	--	--	--	590 ^x	--	440 ^x	--
	12/23/16	SoundEarth	6.96	--	500	2.3	<1	9.7	18	--	--	--	1,200 ^x	68 ^x	<300	<300
	03/03/17	SoundEarth	7.57	--	570	2.1	<1	9.3	4.7	--	--	--	1,000 ^x	110 ^x	<250	<250
	06/14/17	SoundEarth	7.78	240.43	260	<1	<1	2.0	<3	--	--	--	520	--	<250	--
	09/14/17	SoundEarth	7.44	240.77	<100	<1	<1	<1	<3	--	--	--	150 ^x	--	<250	--
12/12/17	SoundEarth	8.02	240.19	<100	<1	<1	<1	<3	--	--	--	99 ^x	--	<250	--	
MTCA Method A Cleanup Levels for Groundwater⁽⁵⁾					1,000/800⁽⁶⁾	5	1,000	700	1,000	20	5	0.01	500	500	500	500

NOTES:

Red indicates concentrations exceeding MTCA Method A cleanup levels for groundwater.

Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

⁽¹⁾Elevation reference datum North American Vertical Datum of 1988 (Dowl HKM November 2012).

⁽²⁾Analyzed by Method NWTPH-Gx (gasoline) and NWTPH-Dx (diesel and oil).

⁽³⁾Analyzed by EPA Method 8260B, 8260C, or 8021B.

⁽⁴⁾Analyzed by Method NWTPH-Dx; sample extracts passed through a silica gel column prior to analysis.

⁽⁵⁾MTCA Cleanup Regulation, Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

⁽⁶⁾1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

Laboratory Note:

^xThe sample chromatographic pattern does not resemble the fuel standard used for quantitation.

-- = not analyzed, not measured

< = not detected above the laboratory reporting limit

µg/L = micrograms per liter

DRPH = diesel-range petroleum hydrocarbons

EDB = 1,2 dibromoethane

EDC = 1,2 dichloroethane

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTBE = methyl tertiary-butyl ether

MTCA = Washington State Model Toxics Control Act

NWTPH = Northwest Total Petroleum Hydrocarbon

ORPH = oil-range petroleum hydrocarbons

SoundEarth = SoundEarth Strategies, Inc.

TOC = top of casing elevation

CHARTS

Chart 1
GRPH and Benzene Concentrations - MW104
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

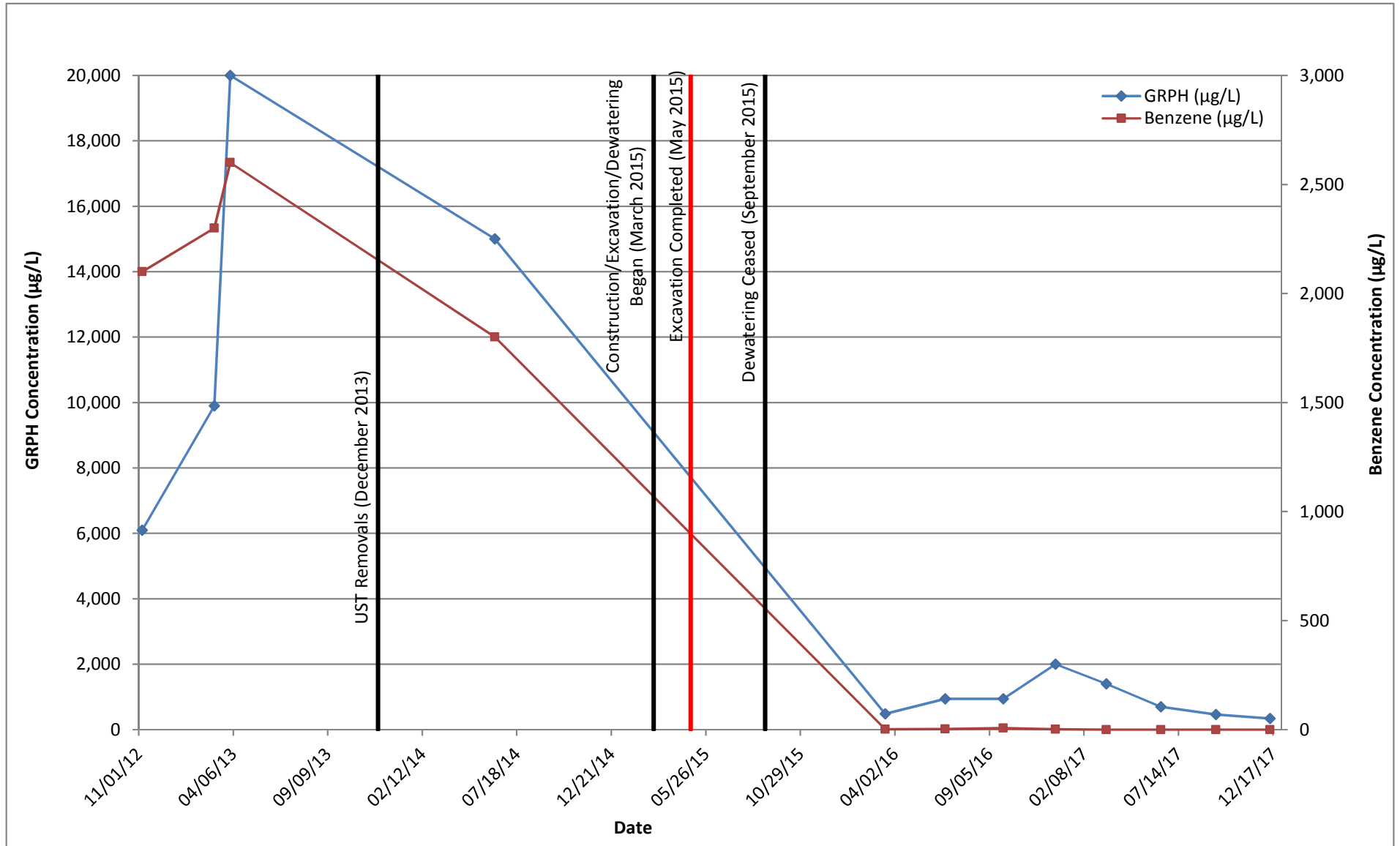


Chart 2
GRPH and Benzene Concentrations - GLMW01/MW109
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

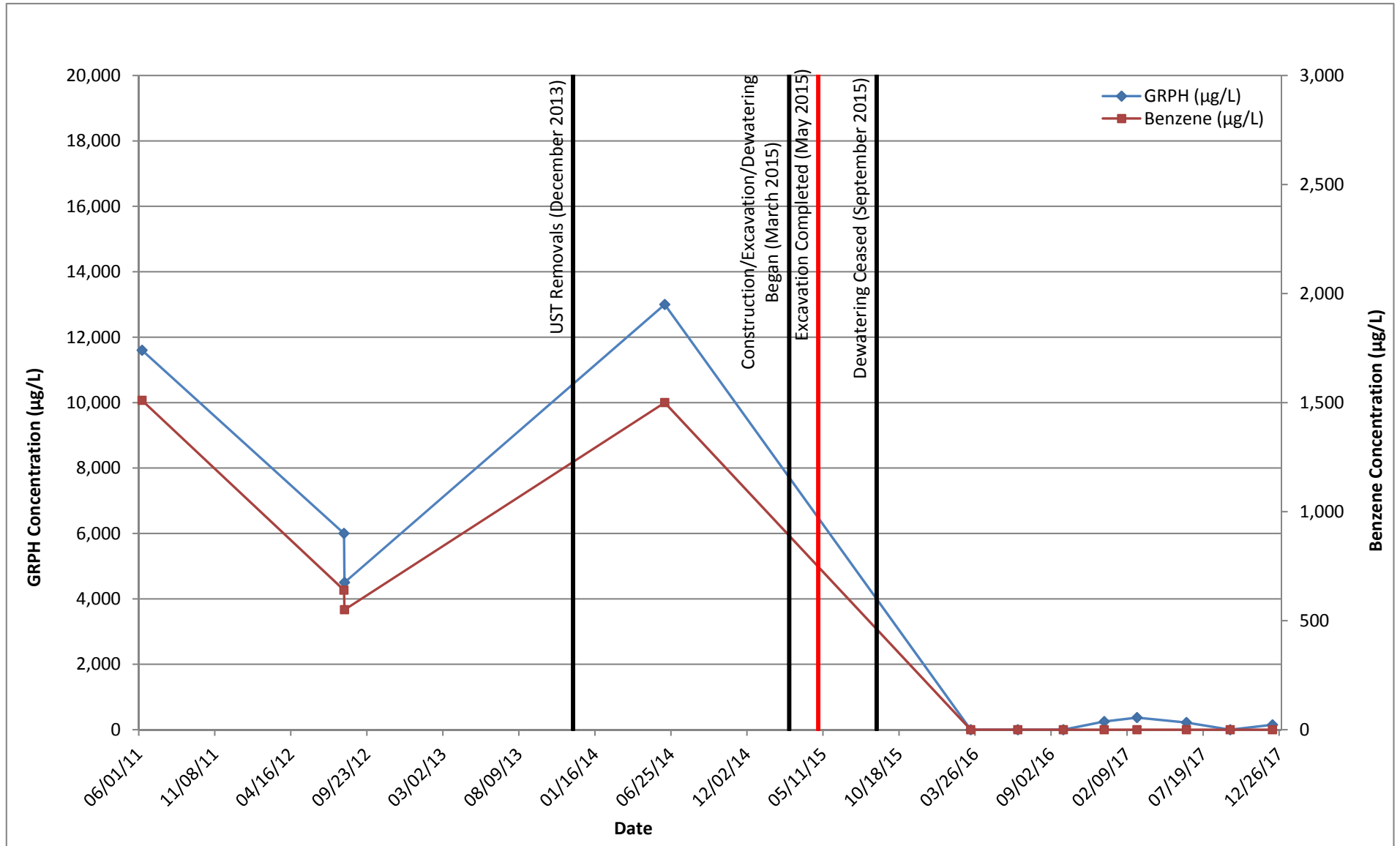


Chart 3
GRPH and Benzene Concentrations - MW110/MW-2
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

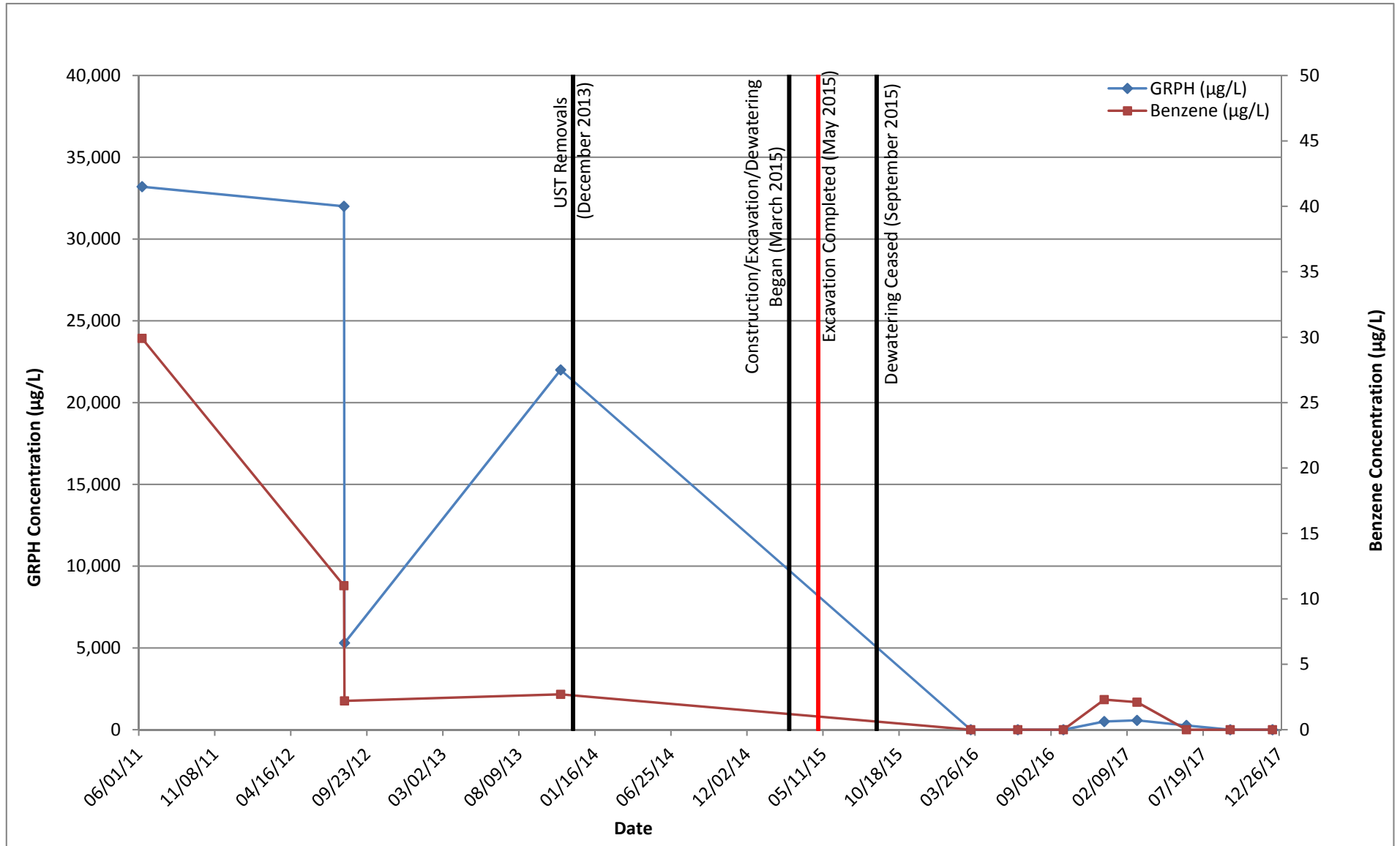
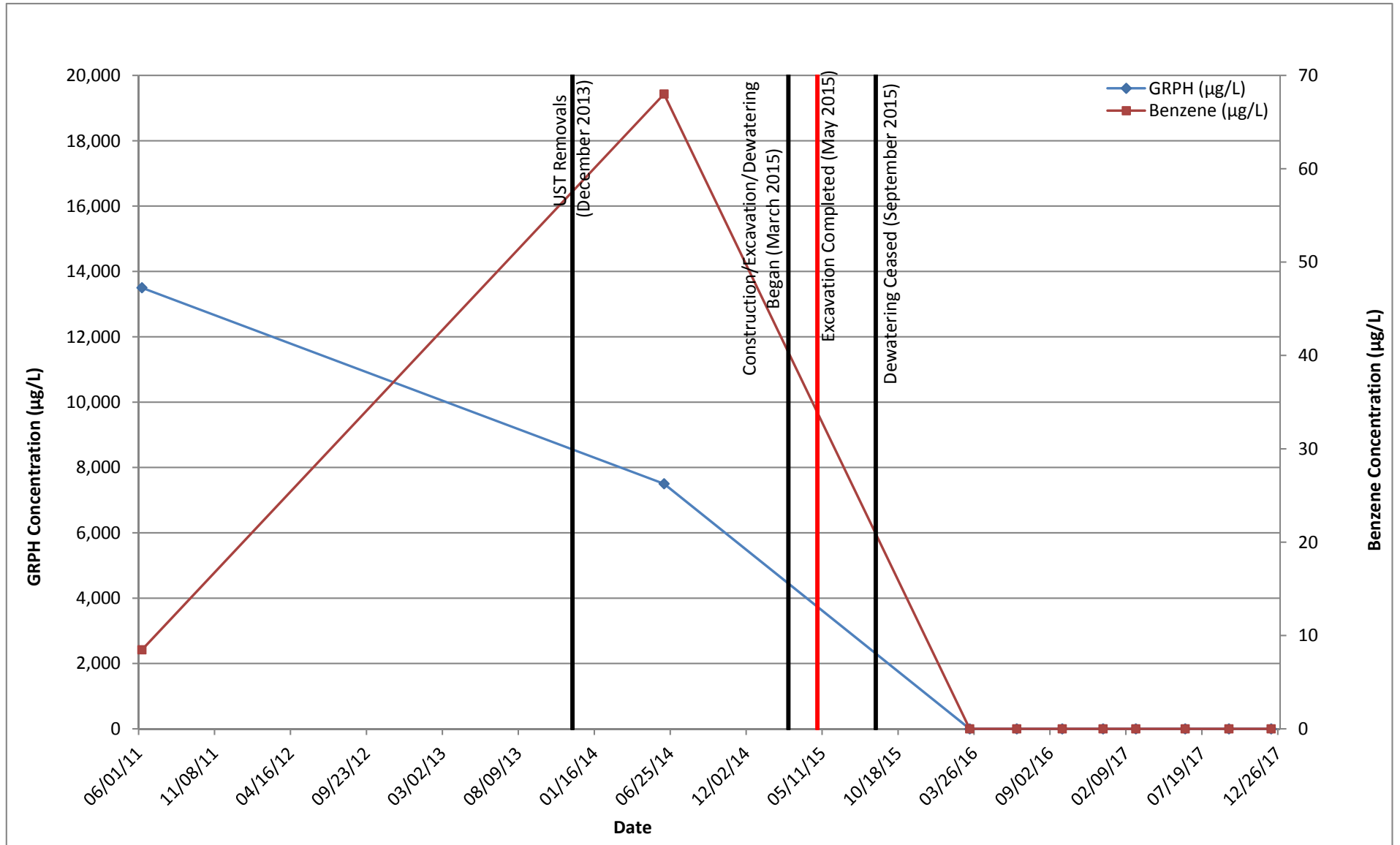


Chart 4
GRPH and Benzene Concentrations - MW-3/MW108
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington



ATTACHMENT A
LABORATORY ANALYTICAL REPORTS

Friedman & Bruya, Inc. #712197

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 20, 2017

Rob Roberts, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Mr Roberts:

Included are the results from the testing of material submitted on December 13, 2017 from the SOU_0914-001_ 20171213, F&BI 712197 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Jonathan Loeffler
SOU1220R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on December 13, 2017 by Friedman & Bruya, Inc. from the SoundEarth Strategies SOU_0914-001_ 20171213, F&BI 712197 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>SoundEarth Strategies</u>
712197 -01	MW103-20171212
712197 -02	MW105-20171212
712197 -03	MW102-20171212
712197 -04	MW101-20171212
712197 -05	MW108-20171212

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/20/17
 Date Received: 12/13/17
 Project: SOU_0914-001_ 20171213, F&BI 712197
 Date Extracted: 12/15/17
 Date Analyzed: 12/15/17 and 12/18/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE,
 XYLENES AND TPH AS GASOLINE
 USING METHODS 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
MW103-20171212 712197-01	<1	<1	<1	<3	<100	94
MW105-20171212 712197-02	<1	<1	<1	<3	<100	92
MW102-20171212 712197-03	<1	<1	<1	<3	<100	64
MW101-20171212 712197-04	<1	<1	<1	<3	<100	68
MW108-20171212 712197-05	<1	<1	<1	<3	<100	65
Method Blank 07-2812 MB	<1	<1	<1	<3	<100	67

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/20/17
Date Received: 12/13/17
Project: SOU_0914-001_20171213, F&BI 712197
Date Extracted: 12/15/17
Date Analyzed: 12/15/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-Dx**
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 51-134)
MW103-20171212 712197-01	120	<250	94
MW105-20171212 712197-02	<50	<250	80
MW102-20171212 712197-03	<50	<250	87
MW101-20171212 712197-04	<50	<250	83
MW108-20171212 712197-05	<50	<250	91
Method Blank 07-2821 MB	<50	<250	80

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/20/17

Date Received: 12/13/17

Project: SOU_0914-001_20171213, F&BI 712197

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES, AND TPH AS GASOLINE
USING METHOD 8021B AND NWTPH-Gx**

Laboratory Code: 712223-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	
			Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	98	72-119
Toluene	ug/L (ppb)	50	102	71-113
Ethylbenzene	ug/L (ppb)	50	103	72-114
Xylenes	ug/L (ppb)	150	87	72-113
Gasoline	ug/L (ppb)	1,000	102	70-119

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/20/17

Date Received: 12/13/17

Project: SOU_0914-001_20171213, F&BI 712197

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	88	88	58-134	0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

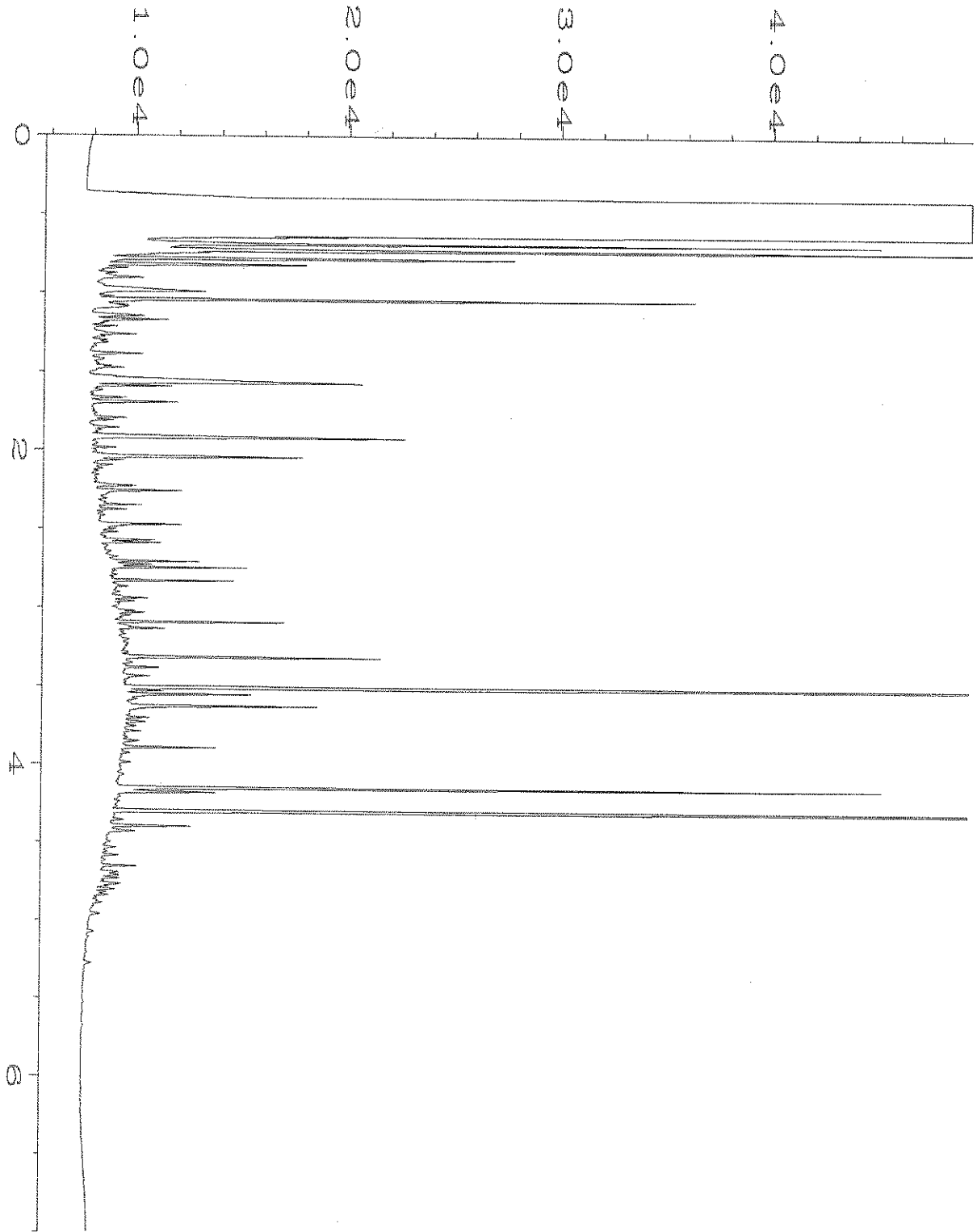
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

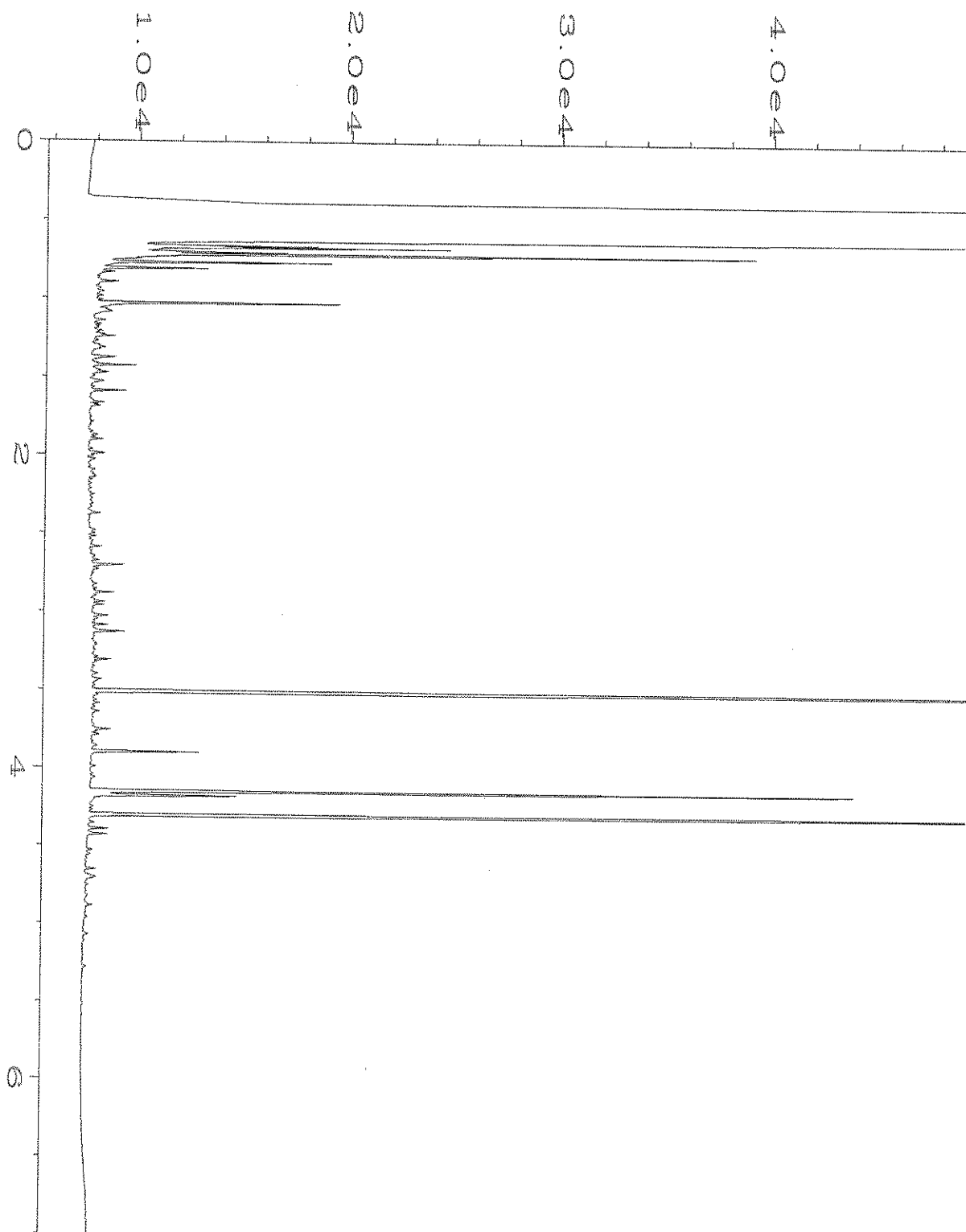
ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

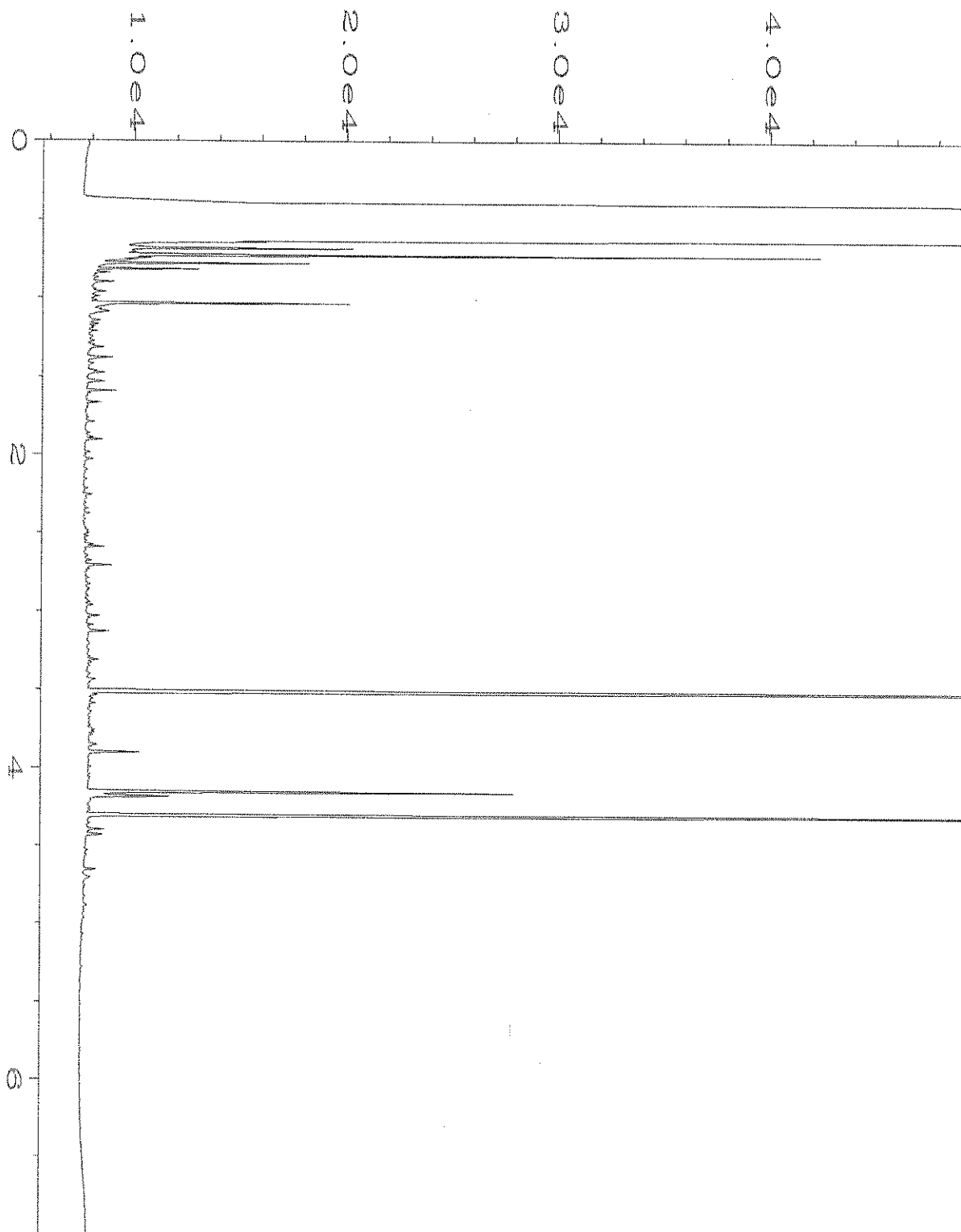
x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



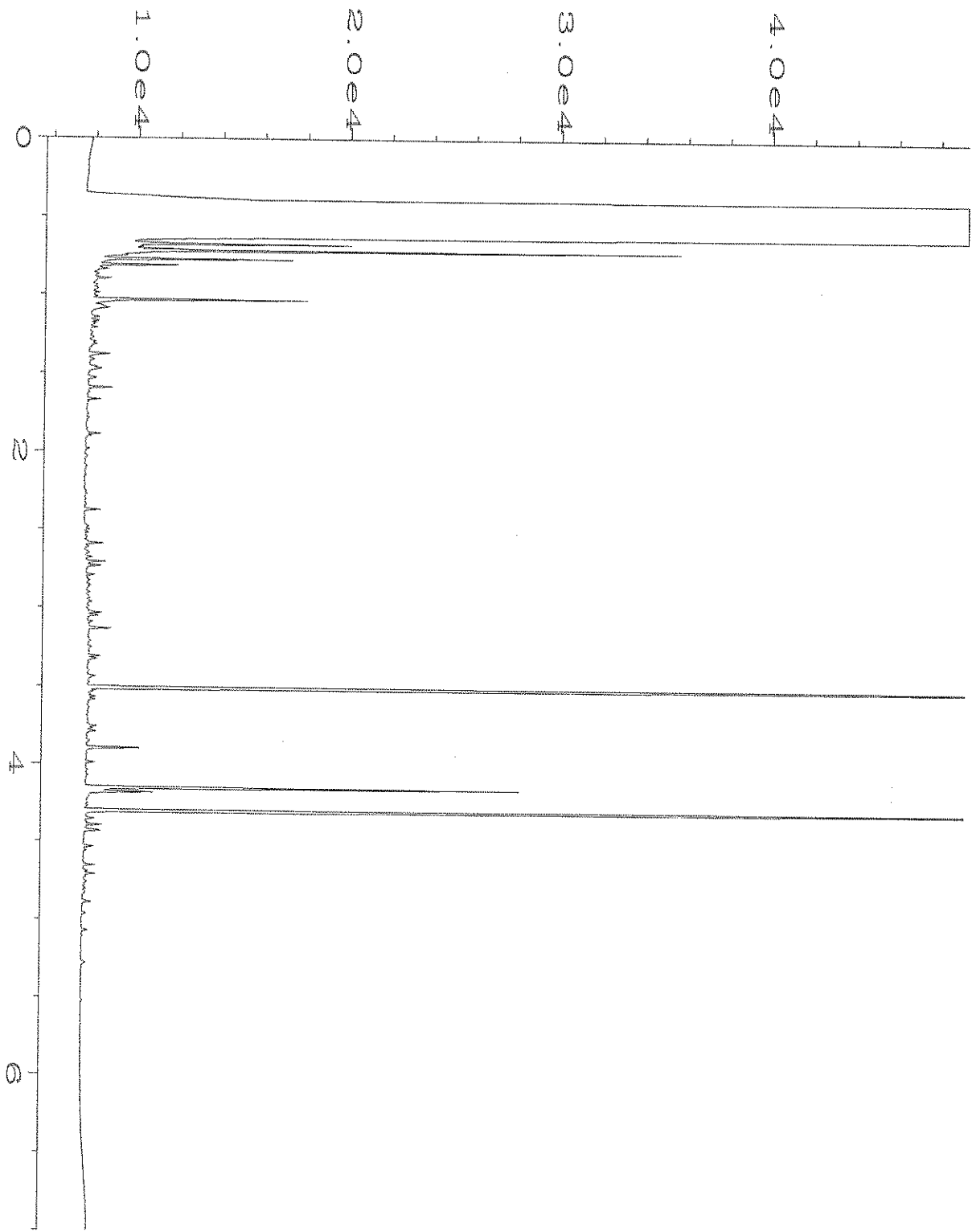
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Operator	: mwdl	Vial Number	: 21
Instrument	: GC #6	Injection Number	: 1
Sample Name	: 712197-01	Sequence Line	: 6
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 15 Dec 17 12:14 PM	Analysis Method	: DX.MTH
Report Created on:	18 Dec 17 09:27 AM		



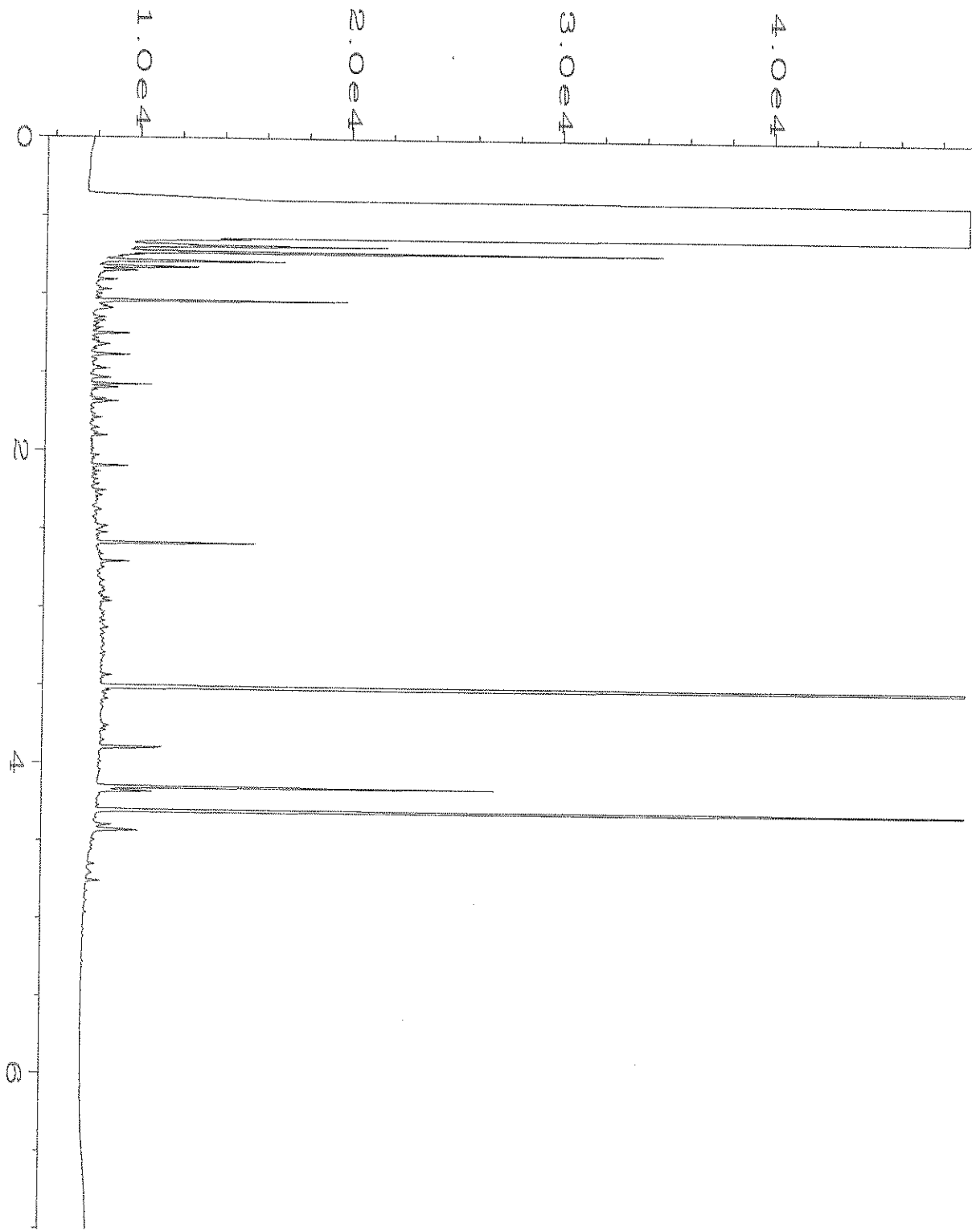
Data File Name	: C:\HPCHEM\6\DATA\12-15-17\022F0601.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 22
Instrument	: GC #6	Injection Number	: 1
Sample Name	: 712197-02	Sequence Line	: 6
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 15 Dec 17 12:25 PM	Analysis Method	: DX.MTH
Report Created on:	18 Dec 17 09:27 AM		



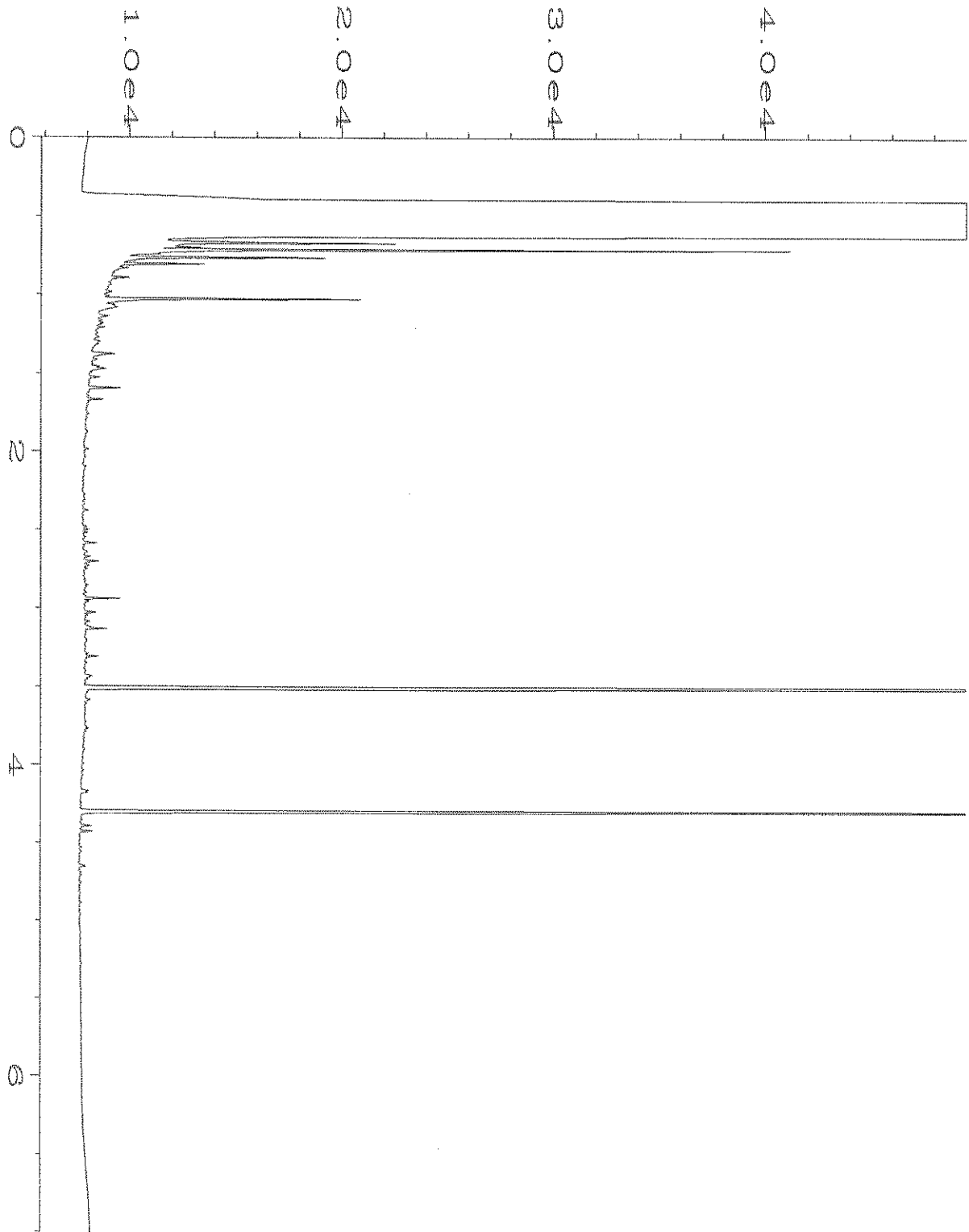
Data File Name	: C:\HPCHEM\6\DATA\12-15-17\023F0601.D	Page Number	: 1
Operator	: mwd1	Vial Number	: 23
Instrument	: GC #6	Injection Number	: 1
Sample Name	: 712197-03	Sequence Line	: 6
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 15 Dec 17 12:36 PM	Analysis Method	: DX.MTH
Report Created on:	18 Dec 17 09:27 AM		



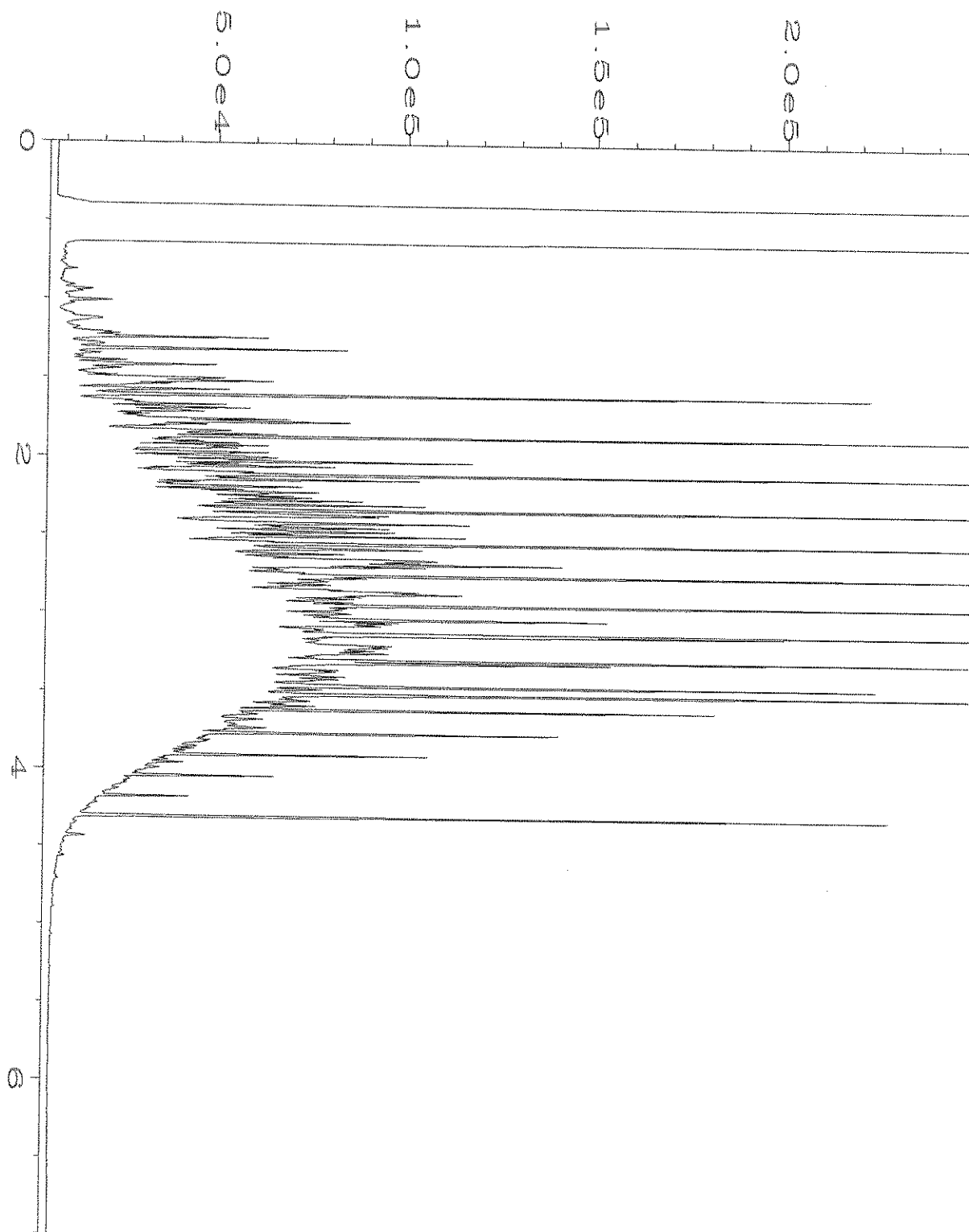
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Operator	: mwdl	Vial Number	: 24
Instrument	: GC #6	Injection Number	: 1
Sample Name	: 712197-04	Sequence Line	: 6
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 15 Dec 17 12:46 PM	Analysis Method	: DX.MTH
Report Created on:	18 Dec 17 09:30 AM		



Data File Name	: C:\HPCHEM\6\DATA\12-15-17\025F0601.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 25
Instrument	: GC #6	Injection Number	: 1
Sample Name	: 712197-05	Sequence Line	: 6
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 15 Dec 17 12:57 PM	Analysis Method	: DX.MTH
Report Created on:	18 Dec 17 09:27 AM		



Data File Name	: C:\HPCHEM\6\DATA\12-15-17\015F0401.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 15
Instrument	: GC #6	Injection Number	: 1
Sample Name	: 07-2821 mb	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 15 Dec 17 11:00 AM	Analysis Method	: DX.MTH
Report Created on:	18 Dec 17 09:27 AM		



Data File Name	: C:\HPCHEM\6\DATA\12-15-17\005F1301.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 5
Instrument	: GC #6	Injection Number	: 1
Sample Name	: 1000 Dx 49-188D	Sequence Line	: 13
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 15 Dec 17 07:21 PM	Analysis Method	: DX.MTH
Report Created on:	18 Dec 17 09:29 AM		

712197

SAMPLE CHAIN OF CUSTODY

ME 12/13/17

vwa/co5

Send Report to Rob Roberts, cc: Jonathan Loeffler
 Company SoundEarth Strategies, Inc.
 Address 2811 Fairview Avenue E, Suite 2000
 City, State, ZIP Seattle, Washington 98102
 Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) *Jonathan Loeffler*

PROJECT NAME/NO. SKS SHELL / 0914-001 PO # _____

REMARKS _____

Page # _____ of _____

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED				Notes
								NWTPH-DX	NWTPH-GX	BTEX by 8021B	CVOCs by 8260C	
MW103-20171212	MW103	—	01	12/12/17	1205	WATER	4	X	X	X		
MW105-20171212	MW105	—	02		1303	WATER	4	X	X	X		
MW102-20171212	MW102	—	03		1421	WATER	4	X	X	X		
MW101-20171212	MW101	—	04		1502	WATER	4	X	X	X		
MW108-20171212	MW108	—	05		1555	WATER	4	X	X	X		
<i>JH</i>								12/12/17				
								Samples received at 4:00				

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <i>Jonathan Loeffler</i>	JONATHAN LOEFFLER	SOUNDEARTH	12/13/17	
Received by: <i>CRB</i>	CRISTIAN BALDELOAN	FEDEX	12/13/17	1:37 PM
Relinquished by:				
Received by: <i>Nhan Phan</i>	Nhan Phan	FBI	12/13/17	1430

Friedman & Bruya, Inc. #712198

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 21, 2017

Rob Roberts, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Mr Roberts:

Included are the results from the testing of material submitted on December 13, 2017 from the SOU_0914-001_ 20171213, F&BI 712198 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Jonathan Loeffler
SOU1221R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on December 13, 2017 by Friedman & Bruya, Inc. from the SoundEarth Strategies SOU_0914-001_ 20171213, F&BI 712198 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>SoundEarth Strategies</u>
712198 -01	MW110-20171212
712198 -02	MW104-20171212
712198 -03	RW05-20171212
712198 -04	RW04-20171212
712198 -05	RW03-20171212
712198 -06	MW109-20171212
712198 -07	MW99-20171212

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/21/17
 Date Received: 12/13/17
 Project: SOU_0914-001_ 20171213, F&BI 712198
 Date Extracted: 12/18/17
 Date Analyzed: 12/18/17 and 12/19/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE,
 XYLENES AND TPH AS GASOLINE
 USING METHODS 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 52-124)
MW110-20171212 712198-01	<1	<1	<1	<3	<100	92
MW104-20171212 712198-02	<1	1.1	1.3	<3	340	94
RW05-20171212 712198-03	<1	1.3	1.5	<3	230	91
RW04-20171212 712198-04	3.0	1.1	12	5.2	360	93
RW03-20171212 712198-05	8.8	17	39	170	2,500	104
MW109-20171212 712198-06	<1	1.1	<1	<3	150	90
MW99-20171212 712198-07	<1	1.4	2.6	<3	400	94
Method Blank 07-2813 MB	<1	<1	<1	<3	<100	94

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/21/17
 Date Received: 12/13/17
 Project: SOU_0914-001_ 20171213, F&BI 712198
 Date Extracted: 12/14/17
 Date Analyzed: 12/14/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
 FOR TOTAL PETROLEUM HYDROCARBONS AS
 DIESEL AND MOTOR OIL
 USING METHOD NWTPH-Dx**
 Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 41-152)
MW110-20171212 712198-01	99 x	<250	75
MW104-20171212 712198-02 1/1.4	780 x	<350	86
RW05-20171212 712198-03 1/1.2	170 x	<300	92
RW04-20171212 712198-04 1/1.2	200 x	<300	93
RW03-20171212 712198-05	1,000 x	<300	77
MW109-20171212 712198-06	<50	<250	92
MW99-20171212 712198-07 1/1.4	670 x	<350	89
Method Blank 07-2804 MB2	<50	<250	86

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/21/17

Date Received: 12/13/17

Project: SOU_0914-001_20171213, F&BI 712198

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES, AND TPH AS GASOLINE
USING METHOD 8021B AND NWTPH-Gx**

Laboratory Code: 712245-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	
			Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	113	65-118
Toluene	ug/L (ppb)	50	108	72-122
Ethylbenzene	ug/L (ppb)	50	113	73-126
Xylenes	ug/L (ppb)	150	105	74-118
Gasoline	ug/L (ppb)	1,000	109	69-134

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/21/17

Date Received: 12/13/17

Project: SOU_0914-001_20171213, F&BI 712198

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	88	88	58-134	0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

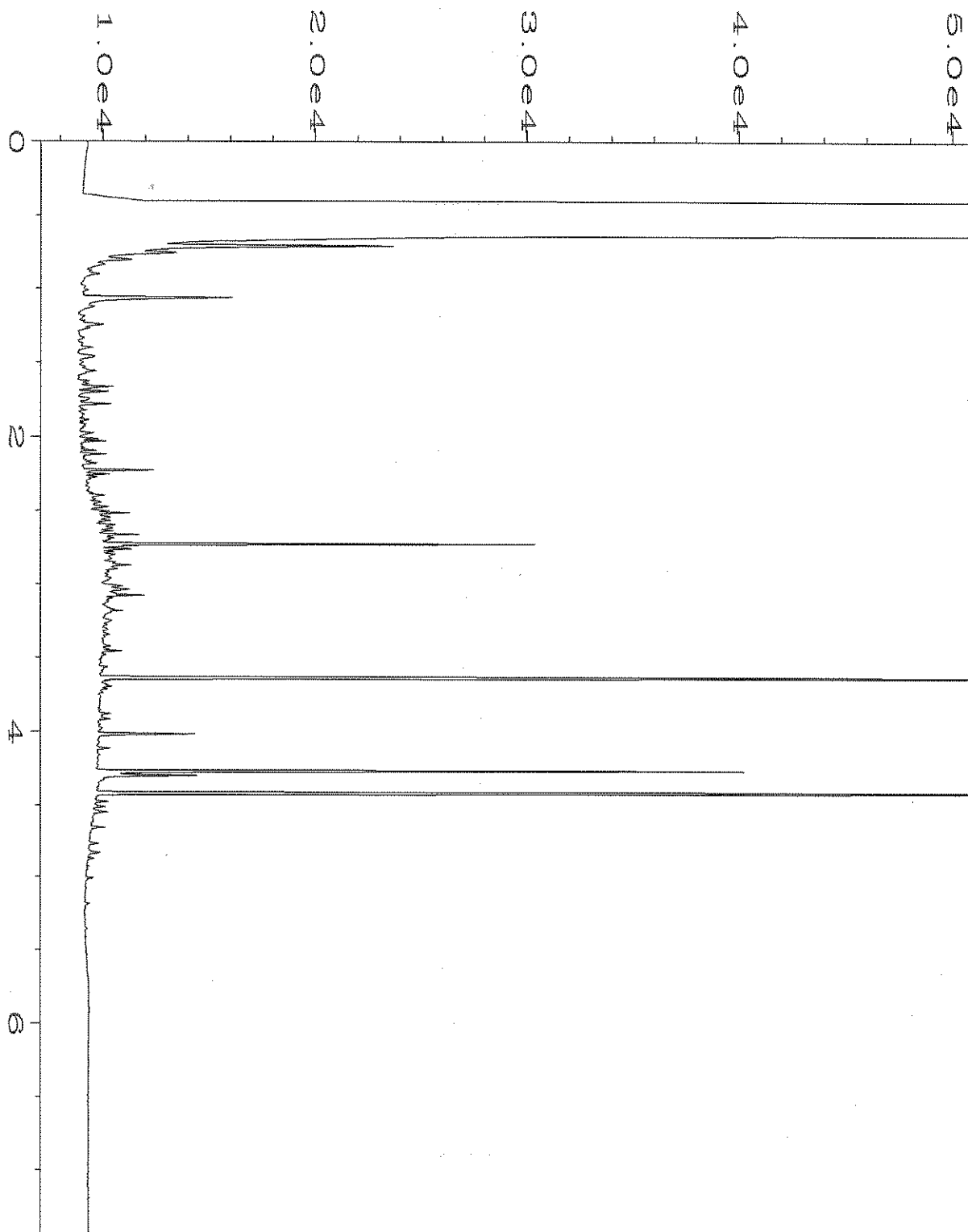
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

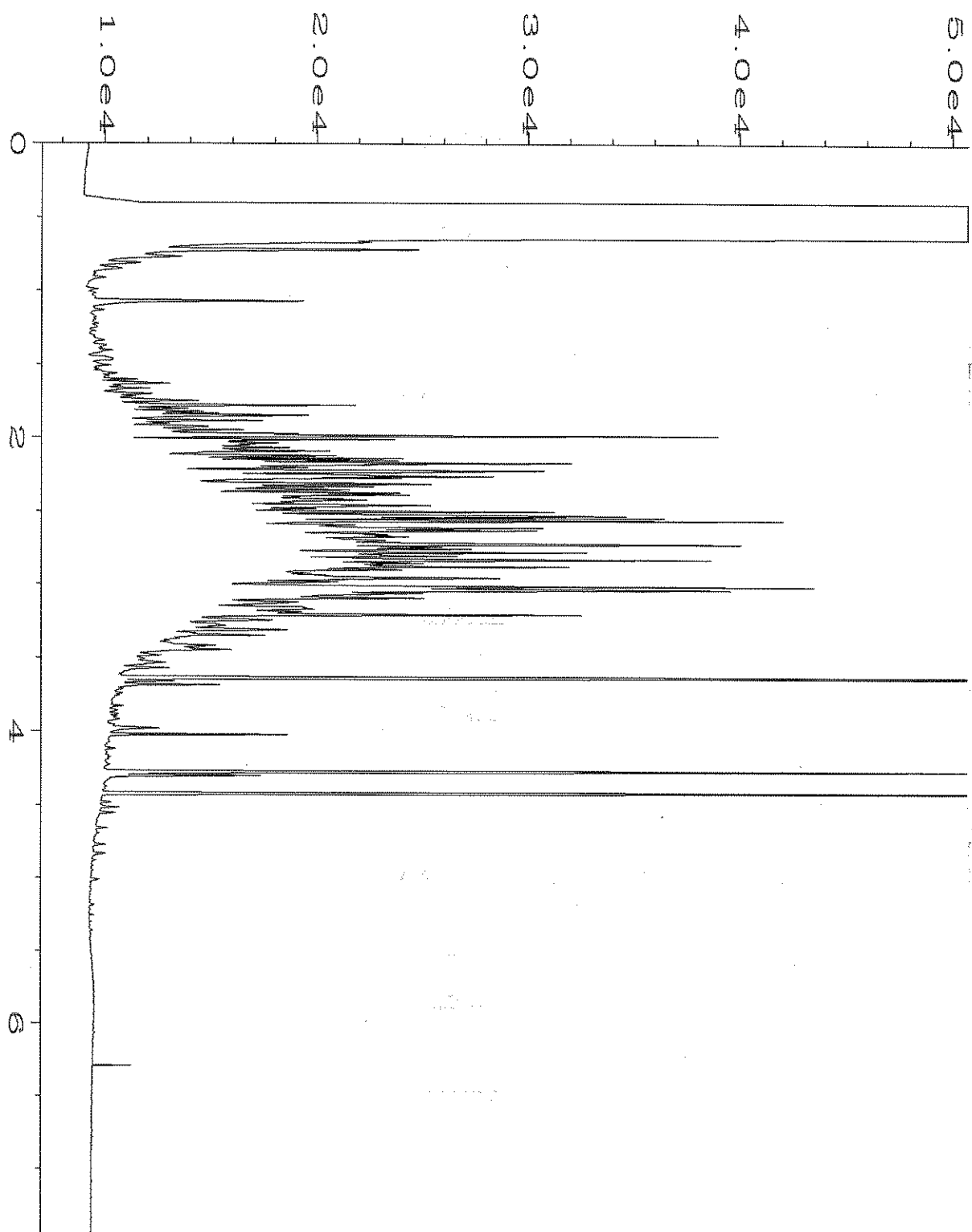
ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

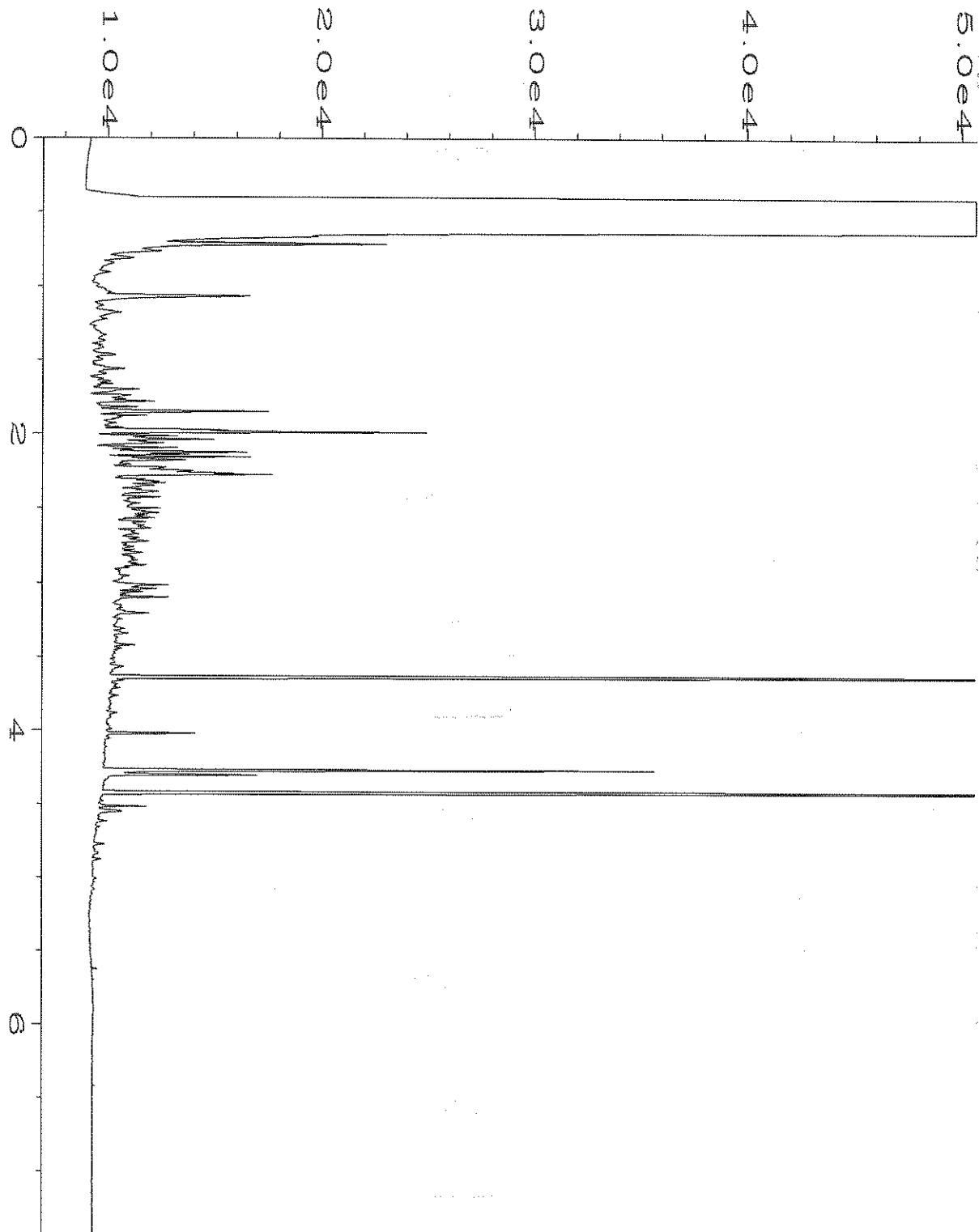
x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



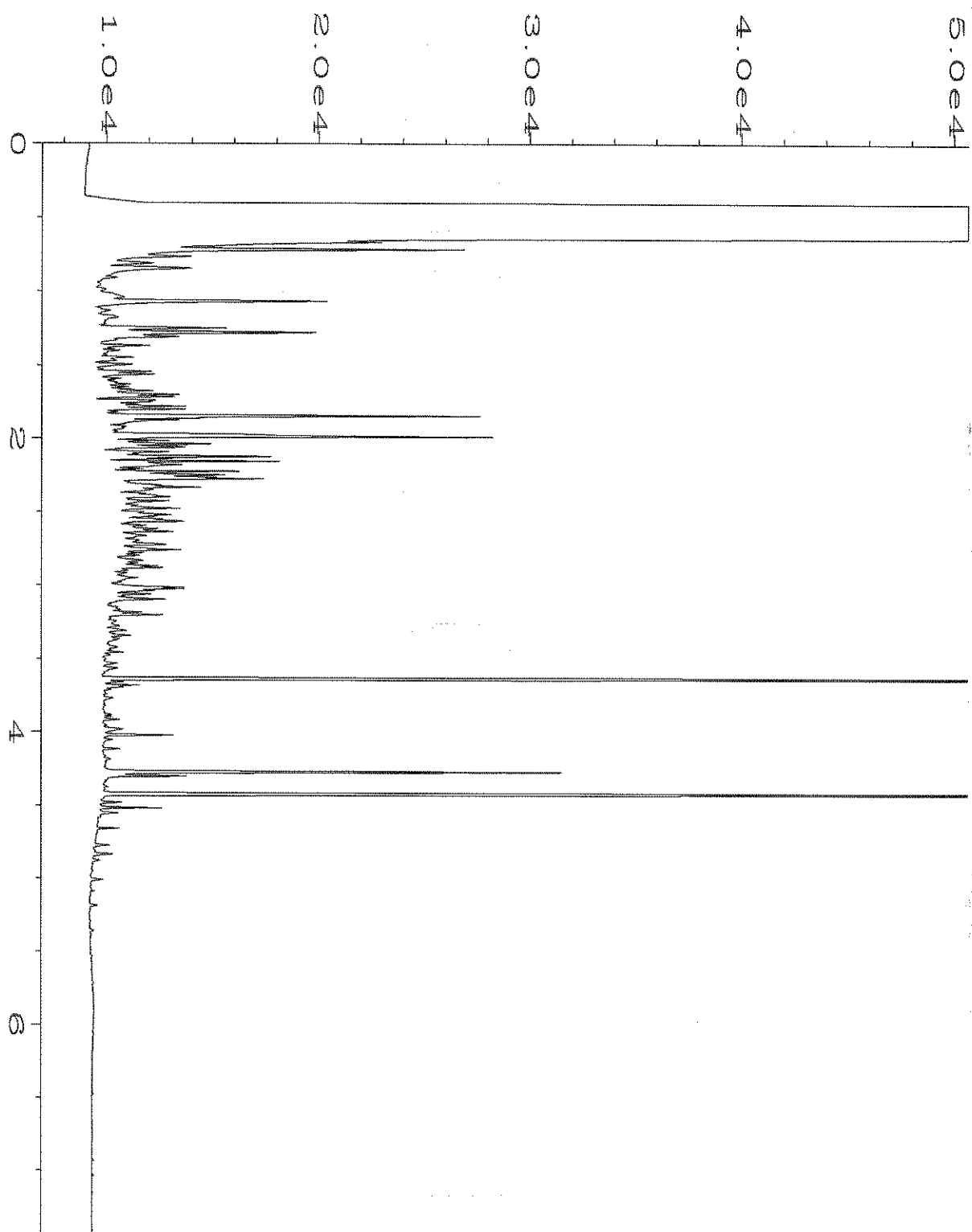
Data File Name	: C:\HPCHEM\1\DATA\12-14-17\025F0401.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 25
Instrument	: GC1	Injection Number	: 1
Sample Name	: 712198-01	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 14 Dec 17 01:24 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:17 AM		



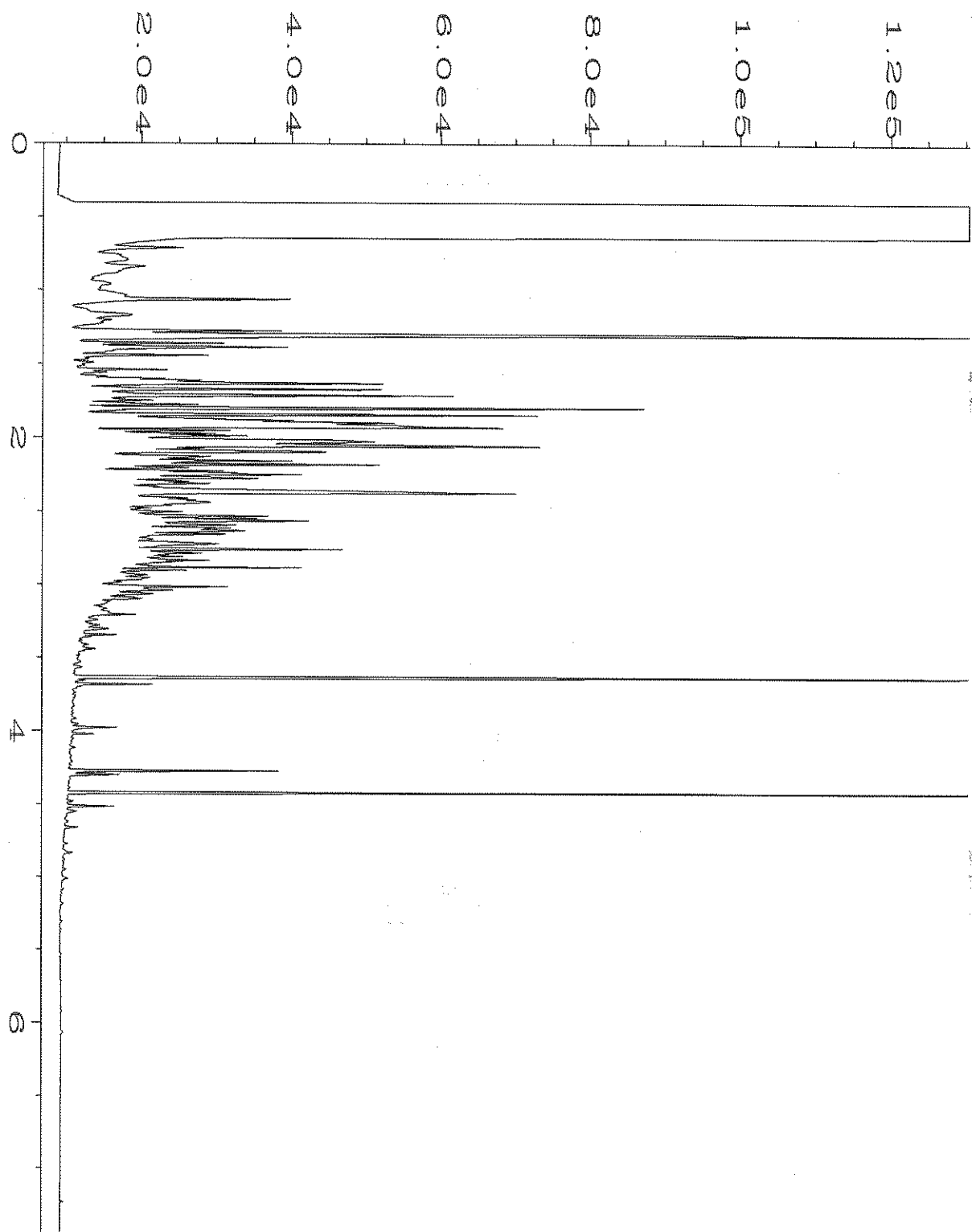
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Operator	: mwdl	Vial Number	: 26
Instrument	: GC1	Injection Number	: 1
Sample Name	: 712198-02	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 14 Dec 17 01:35 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:17 AM		



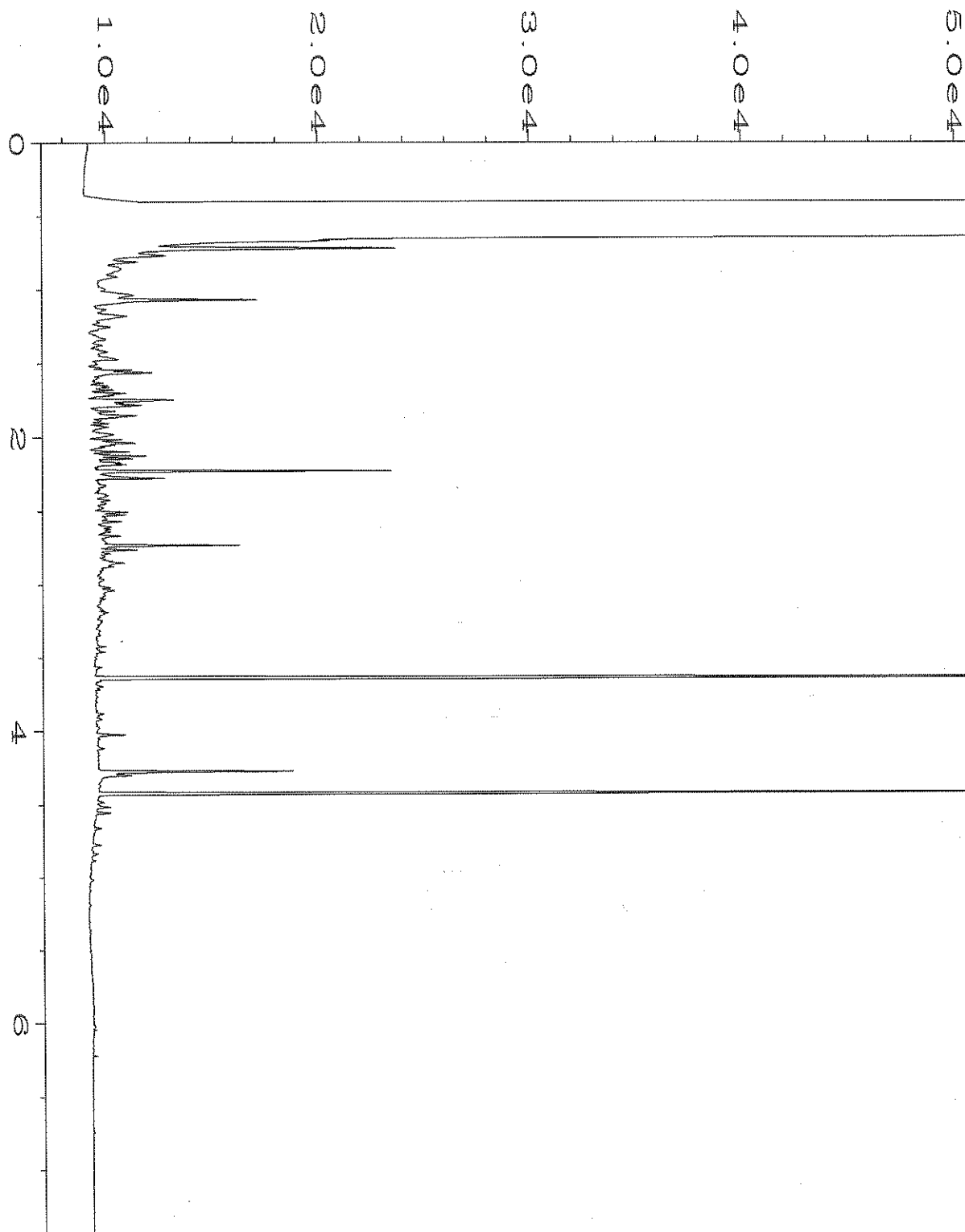
Data File Name	: C:\HPCHEM\1\DATA\12-14-17\027F0401.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 27
Instrument	: GC1	Injection Number	: 1
Sample Name	: 712198-03	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 14 Dec 17 01:46 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:18 AM		



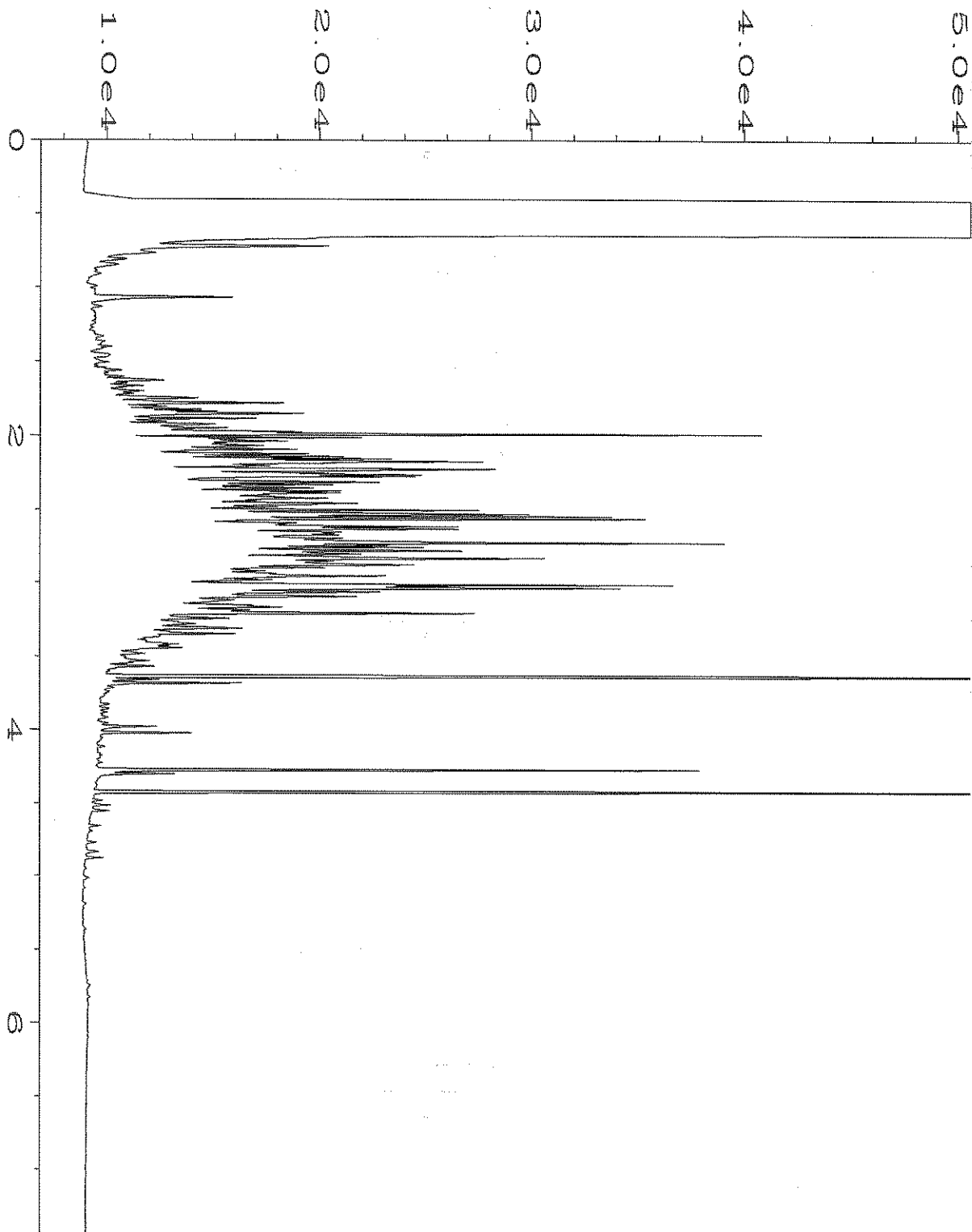
Data File Name	: C:\HPCHEM\1\DATA\12-14-17\028F0401.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 28
Instrument	: GC1	Injection Number	: 1
Sample Name	: 712198-04	Sequence Line	: 4
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 14 Dec 17 01:58 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:18 AM		



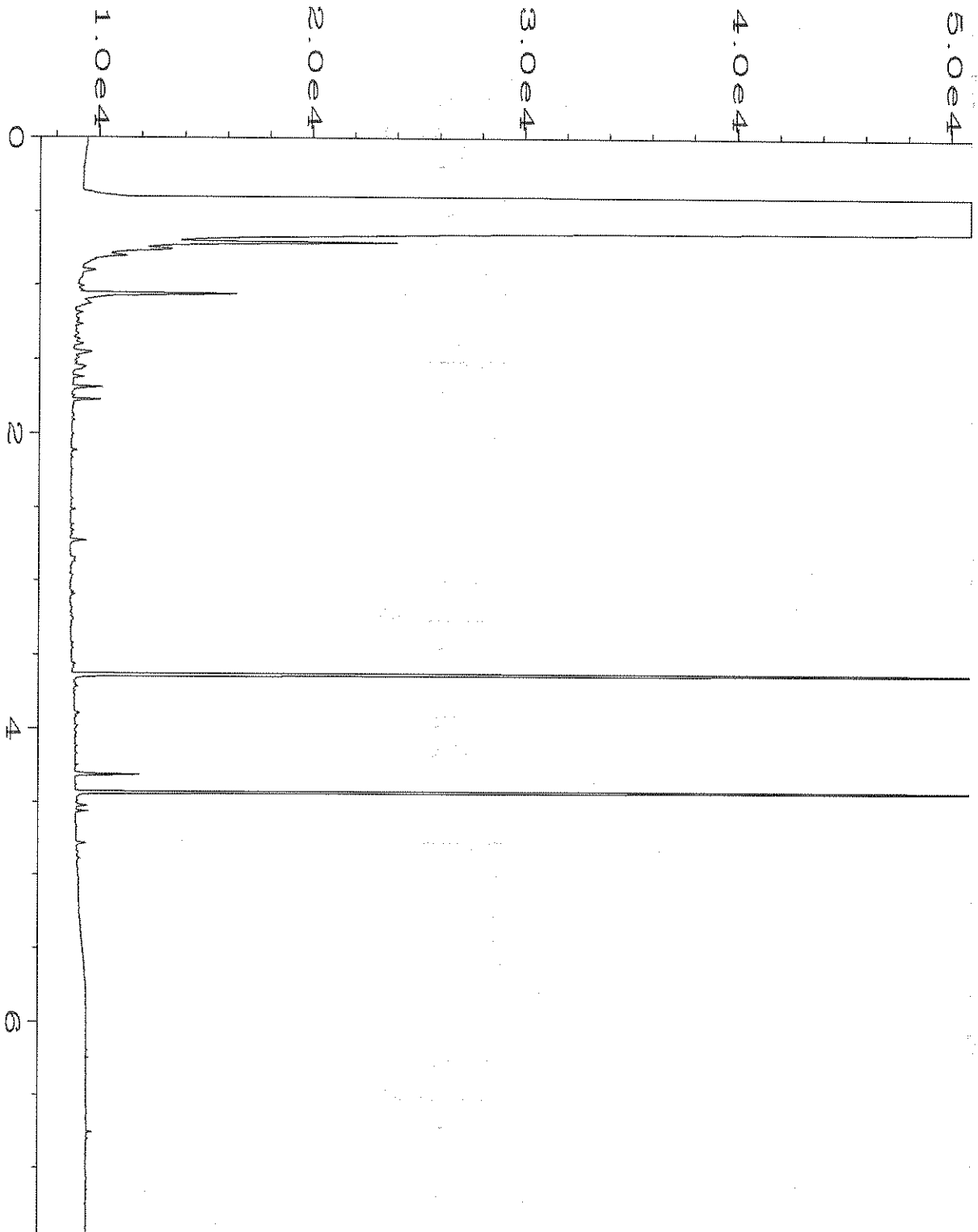
Data File Name	: C:\HPCHEM\1\DATA\12-14-17\029F0401.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 29
Instrument	: GC1	Injection Number	: 1
Sample Name	: 712198-05	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 14 Dec 17 02:09 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:18 AM		



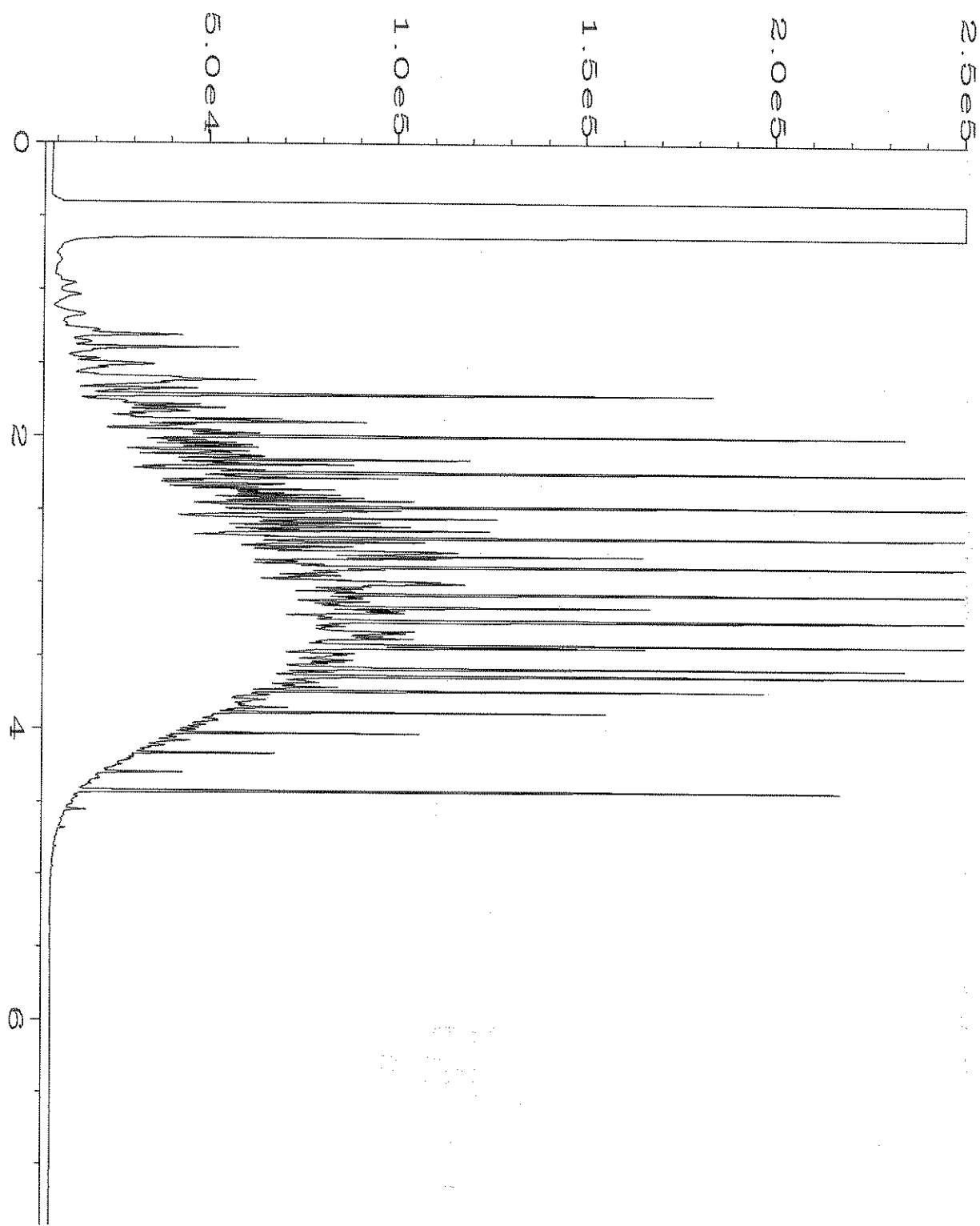
Data File Name	: C:\HPCHEM\1\DATA\12-14-17\030F0401.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 30
Instrument	: GC1	Injection Number	: 1
Sample Name	: 712198-06	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 14 Dec 17 02:20 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:18 AM		



Data File Name	: C:\HPCHEM\1\DATA\12-14-17\031F0401.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 31
Instrument	: GC1	Injection Number	: 1
Sample Name	: 712198-07	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 14 Dec 17 02:31 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:18 AM		



Data File Name	: C:\HPCHEM\1\DATA\12-14-17\022F0401.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 22
Instrument	: GC1	Injection Number	: 1
Sample Name	: 07-2804 mb2	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 14 Dec 17 12:52 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:17 AM		



Data File Name	: C:\HPCHEM\1\DATA\12-14-17\005F0501.D	Page Number	: 1
Operator	: mwdl	Vial Number	: 5
Instrument	: GC1	Injection Number	: 1
Sample Name	: 1000 Dx 49-188D	Sequence Line	: 5
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 14 Dec 17 03:05 PM	Analysis Method	: DX.MTH
Report Created on:	15 Dec 17 09:19 AM		

712198

SAMPLE CHAIN OF CUSTODY

ME 12/13/17

COS/UV2

Send Report to Rob Roberts, cc: Jonathan Loeffler
 Company SoundEarth Strategies, Inc.
 Address 2811 Fairview Avenue E, Suite 2000
 City, State, ZIP Seattle, Washington 98102
 Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) *Alan Fisher*
 PROJECT NAME/NO. SKS SHELL / 0914-001 PO #
 REMARKS

Page # 1 of 1
 TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by:
 SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED				Notes
								NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C	
MW110-20171212	MW110	-	01 A-D	12/12/17	1041	H2O	4	X	X	X		
MW104-20171212	MW104	-	02		1120			X	X	X		
RW05-20171212	RW05	-	03		1240			X	X	X		
RW04-20171212	RW04	-	04		1327			X	X	X		
RW03-20171212	RW03	-	05		1420			X	X	X		
MW109-20171212	MW109	-	06		1515			X	X	X		
MW99-20171212	MW99	-	07		1150			X	X	X		
								Samples received at <u>4</u> °C				

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <i>Alan Fisher</i>	Alan Fisher	SoundEarth	12/13/17	
Received by: <i>[Signature]</i>	CROTTIANT BALDWIN	DODEX	12/13/17	1:57 PM
Relinquished by:				
Received by: <i>[Signature]</i>	Nhan Phan	FBI	12/13/17	14:30

ATTACHMENT B
DATA VALIDATION REPORT

Validata, LLC #712197/712198

DATA VALIDATION REPORT

SKS SHELL Fourth Quarter 2017

Prepared for:

Sound Earth Strategies, Inc.
2811 Fairview Ave East, Suite 2000
Seattle, Washington 98102

Prepared by:

Validata, LLC
3346 NE 178th St.
Lake Forest Park, Washington 98155

PROJECT NARRATIVE

Data Validation

This report summarizes the results of the summary level validation (Stage 2A) performed on water samples for the SKS Shell sampling project. A complete list of samples is provided in the Sample Index. Samples were analyzed by Friedman & Bruya, Inc. laboratory, Seattle, Washington. The analytical methods are listed below:

Sample Index

ANALYSIS	METHOD	Reviewer
BTEX, TPH as Gasoline Range	SW8021B/NWTPH-Gx	C. Jensen
Total Petroleum Hydrocarbons – Diesel Range, Motor Oil	NWTPH-Dx	C. Jensen

The data were reviewed using guidance and quality control criteria documented in the analytical methods; *USEPA National Functional Guidelines for Organic Data Review* (EPA, 1999 & 2008).

The goal of data validation is to assign data assessment qualifiers for assistance in data interpretation. Results assigned as estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. For results assigned an R, the data are rejected and should not be used for site evaluation purposes. Unqualified data implies the data meet the data quality objectives as stated in the documents and methods referenced above. A summary of the data qualifiers used in validation are included in Appendix A. The summary of Qualified Data are provided in Appendix B. All validation worksheets are provided in Appendix C.

SAMPLE INDEX

SDG	Sample ID	Lab Sample ID	BTEX	NWTPH-Gx	NWTPH-Dx
712197	MW103-20170913	712197-01	X	X	X
712197	MW105-20170913	712197-02	X	X	X
712197	MW102-20170913	712197-03	X	X	X
712197	MW101-20170913	712197-04	X	X	X
712198	RW03-20170914	712198-05	X	X	X
712198	RW04-20170914	712198-04 1/1.2	X	X	X
712198	RW05-20170914	712198-03 1/1.2	X	X	X
712198	MW104-20170914	712198-02 1/1.4	X	X	X
712198	MW99-20170914	712198-07 1/1.4	X	X	X
712197	MW108-20170914	712197-05	X	X	X
712198	MW109-20170914	712198-06	X	X	X
712198	MW110-20170914	712198-01	X	X	X

DATA VALIDATION REPORT

Volatile Organic Compounds - Method SW8021B – Benzene, Toluene, Ethylbenzene, Xylenes

This report documents the review of analytical data from the analyses of water samples and the associated laboratory and field quality control (QC) samples. Friedman & Bruya, Inc. laboratory, Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
712197	5	STAGE 2A
712198	7	STAGE 2A

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables for a Stage 2A review. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

HARDCOPY VERIFICATION

Sample IDs and results reported in the data summary spreadsheet were verified (10% verification) by comparing the spreadsheet with the laboratory data package. Ten percent (10%) of the laboratory QC results were also verified.

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

Sample Receipt, Preservation, and Holding Times	Matrix Spikes/Matrix Spike Duplicates (MS/MSD)
Laboratory Blanks	Field Duplicates
Field Blanks	Target Analyte List
Surrogate Compounds	Reporting Limits
Laboratory Control Samples (LCS)	Reported Results

Sample Receipt, Preservation, and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 0° to 6°C. For volatiles analysis, no action is taken if the cooler temperature is <10°C. If the cooler temperature is >10°C, associated sample results are estimated (J/UJ-1). With the exceptions noted below, the laboratory received the sample coolers within the advisory temperature range.

SDGs 712197, 712198: The cooler temperatures were within the recommended temperature range.

Method and Field Blanks

The method blanks were all reported as undetected for target compounds.

Surrogate Compounds

Surrogates were added to all samples. All surrogate recoveries were within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were not specifically analyzed for this dataset. The laboratory demonstrated precision and accuracy

through the analysis of laboratory control and laboratory control sample duplicate samples (LCS/LCSD) with acceptable results.

Field Duplicates

For water samples, the RPD control limit is 20% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 1x the RL.

SDG 712198: Sample pair MW99-20171212/MW104-20171212 were identified as a field duplicate pair. Field precision was acceptable with the exception of ethyl benzene as summarized below. Field data are not qualified for duplicate precision exceedance.

Sample ID	lab ID	analyte	712198-02	712198-07	RPD
MW104-20171212	712198-02	benzene	0	0	0.0%
MW99-20171212	712198-07	toluene	1.1	1.40	24%
		ethyl benzene	1.3	2.6	66%
		xylenes	0	0	0%

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

The laboratory reporting limits were sufficiently below the MTCA Method A cleanup levels provided in appendix B.

Reported Results

Reported results were considered acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the surrogate, LCS recovery values. With the exceptions noted above, precision was also acceptable as demonstrated by the LCS and field duplicate RPD values. All data are acceptable for use.

DATA VALIDATION REPORT

TPH as Gasoline Range Organics - Method NWTPH-Gx

This report documents the review of analytical data from the analyses of water samples and the associated laboratory and field quality control (QC) samples. Friedman & Bruya, Inc. laboratory, Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
712197	5	STAGE 2A
712198	7	STAGE 2A

DATA PACKAGE COMPLETENESS

With the exception noted below, the laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

HARDCOPY VERIFICATION

Sample IDs and results reported in the data summary spreadsheet were verified (10% verification) by comparing the spreadsheet the laboratory data package. Ten percent (10%) of the laboratory QC results were also verified.

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

Sample Receipt, Preservation, and Holding Times	Matrix Spikes/Matrix Spike Duplicates (MS/MSD)
Laboratory Blanks	Field Duplicates
Field Blanks	Target Analyte List
Surrogate Compounds	Reporting Limits
Laboratory Control Samples (LCS)	Reported Results

Sample Receipt, Preservation, and Holding Times

As stated in the validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 0°C-6°C and samples must be analyzed within 14 days. For volatiles analysis, no action is taken if the cooler temperature is <10°C. If the cooler temperature is >10°C, associated sample results are estimated (J/UJ-1). The following exceptions were noted during validation:

SDG 712197, 712198: The cooler temperatures were within the recommended temperature range.

Method and Field Blanks

The method blanks were all reported as undetected for target compounds.

Surrogate Compounds

Surrogates were added to all samples. All surrogate recoveries were within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were not specifically analyzed for this dataset. The laboratory demonstrated precision and accuracy through the analysis of laboratory control and laboratory control duplicate samples (LCS/LCSD) with acceptable results.

Field Duplicates

For water samples, the RPD control limit is 20% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 1x the RL.

SDG 712198: Sample pair MW104-20171212/MW99-20171212 were identified as a field duplicate pair. Field precision was acceptable.

Sample ID	lab ID	analyte	712198-02	712198-07	RPD
MW104-20171212	712198-02	GRO	340	400	16%
MW99-20171212	712198-07				

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

The laboratory reporting limits were sufficiently below the MTCA Method A cleanup levels provided in appendix B.

Reported Results

Results reported were deemed acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the surrogate and LCS recovery values. Precision was also acceptable as demonstrated by the LCS and laboratory and field duplicate RPD values. All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT

Diesel Range, Motor Oil - Method NWTPH-Dx

This report documents the review of analytical data from the analyses of water samples and the associated laboratory and field quality control (QC) samples. Friedman & Bruya, Inc. laboratory, Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
712197	5	STAGE 2A
712198	7	STAGE 2A

DATA PACKAGE COMPLETENESS

With the exception noted below, the laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative if applicable.

HARDCOPY VERIFICATION

Sample IDs and results reported in the data summary spreadsheet were verified (10% verification) by comparing the spreadsheet the laboratory data package. Ten percent (10%) of the laboratory QC results were also verified.

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

Sample Receipt, Preservation, and Holding Times	Matrix Spikes/Matrix Spike Duplicates (MS/MSD)
Laboratory Blanks	Field Duplicates
Field Blanks	Target Analyte List
Surrogate Compounds	Reporting Limits
Laboratory Control Samples (LCS)	Reported Results

Sample Preservation and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 0°C - 6°C and be extracted within 7 days for aqueous samples and 14 days for soil samples. Sample extracts must be analyzed within 40 days of extraction.

SDG 712197, 712198: No problems were noted.

Method and Field Blanks

The method blanks were all reported as undetected for target compounds. Field blanks were not submitted with this sampling event.

Surrogate Compounds

Surrogates were added to all samples. All surrogate recoveries were within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were not specifically analyzed for this dataset. The laboratory demonstrated precision and accuracy through the analysis of laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) with acceptable results.

Field Duplicates

For water samples, the RPD control limit is 20% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 1x the RL.

SDG 712198: Sample pair MW104-20171212/MW99-20171212 were identified as a field duplicate pair. Field precision was acceptable.

Sample ID	lab ID	analyte	712198-02	712198-07	RPD
MW104-20171212	712198-02	Diesel Range	780	670	15%
MW99-20171212	712198-07	Motor Oil	0	0	0

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

The laboratory reporting limits were sufficiently below the MTCA Method A cleanup levels provided in appendix B.

Reported Results

SDG 712198: Samples MW110-20171212, MW104-20171212, RW05-20171212, RW04-20171212, RW03-20171212 and MW99-20171212 were qualified as estimated (J+) and reason code 2 since the laboratory reported the diesel range results as "x" indicating the chromatographic pattern does not match the standard.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. Accuracy was acceptable, as demonstrated by the surrogate and LCS/LCSD recovery values. Precision was also acceptable as demonstrated by the LCS/LCSD and laboratory and field duplicate relative percent difference values. The data were qualified due to sample versus fuel reference material not matching, as indicated by the laboratory. All data, as reported, are acceptable for use.

**APPENDIX A
DATA QUALIFIER DEFINITIONS
REASON CODES
AND CRITERIA TABLES**

DATA VALIDATION QUALIFIER CODES

Based on National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

DATA QUALIFIER REASON CODES

Group	Code	Reason for Qualification
Sample Handling	1	Improper Sample Handling or Sample Preservation (i.e., headspace, cooler)
Instrument Performance	24	Instrument Performance (i.e., tune, resolution, retention time window, endrin breakdown, lock-mass)
Instrument Performance	5A	Initial Calibration (RF, %RSD, r2)
Instrument Performance	5B	Calibration Verification (CCV, CCAL; RF, %D, %R) Use bias flags (H,L)1 where appropriate
Instrument Performance	5C	Initial Calibration Verification (ICV %D, %R) Use bias flags (H,L)1 where appropriate
Blank Contamination	7	Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.)
Blank Contamination	6	Lab Blank Contamination (i.e., method blank, instrument blank, etc.) Use low bias flag (L)1 for negative instrument blanks
Precision and Accuracy	8	Matrix Spike (MS and/or MSD) Recoveries Use bias flags (H,L)1 where appropriate
Precision and Accuracy	9	Precision (all replicates: LCS/LCSD, MS/MSD, Lab Replicate, Field Replicate)
Precision and Accuracy	10	Laboratory Control Sample Recoveries (a.k.a. Blank Spikes) Use bias flags (H,L)1 where appropriate
Precision and Accuracy	12	Reference Material Use bias flags (H,L)1 where appropriate
Precision and Accuracy	13	Surrogate Spike Recoveries (a.k.a. labeled compounds, recovery standards) Use bias flags (H,L)1 where appropriate
Interferences	16	ICP/ICP-MS Serial Dilution Percent Difference
Interferences	17	ICP/ICP-MS Interference Check Standard Recovery Use bias flags (H,L)1 where appropriate
Interferences	19	Internal Standard Performance (i.e., area, retention time, recovery)
Interferences	22	Elevated Detection Limit due to Interference (i.e., chemical and/or matrix)
Interferences	23	Bias from Matrix Interference (i.e. diphenyl ether, PCB/pesticides)
Identification and Quantitation	2	Chromatographic pattern in sample does not match pattern of calibration standard
Identification and Quantitation	3	2nd column confirmation (RPD or %D)
Identification and Quantitation	4	Tentatively Identified Compound (TIC) (associated with NJ only)
Identification and Quantitation	20	Calibration Range or Linear Range Exceeded
Identification and Quantitation	25	Compound Identification (i.e., ion ratio, retention time, relative abundance, etc.)
Miscellaneous	11	A more appropriate result is reported (multiple reported analyses i.e., dilutions, reextractions, etc. Associated with "R" and "DNR" only)
Miscellaneous	14	Other (See DV report for details)
Miscellaneous	26	Method QC information not provided

DATA VALIDATION CRITERIA

Volatile Organic Compounds by Gas Chromatography-Mass Spectroscopy (GC-MS)
(Based on NFG 1999 & 2008 and SW-846 Method 8260, analyzed by SW8021B)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Blanks					
Method Blank (MB)	MB: One per matrix per batch (of ≤ 20 sample) No TICs present	NFG (2) Method (3)	U (pos) if result is < 5X or 10X action level R (pos) TICs using 10X rule	7	10X action level for methylene chloride, acetone, & 2-butanone. 5X for all other target analytes Hierarchy of blank review: #1 - Review MB, qualify as needed #2 - Review TB, qualify as needed #3 - Review FB, qualify as needed Note: Actions as per NFG 1999
Trip Blank (TB)	No detected compounds > MDL	NFG (2) Method (3)	U (pos) if result is < 5X or 10X action level	6	
Field Blank (FB)	No detected compounds > MDL	NFG (2) Method (3)	U (pos) if result is < 5X or 10X action level	6	
Precision and Accuracy					
LCS/LCSD (recovery)	One per matrix per batch (of ≤ 20 samples)	Method (3)	J (pos) if %R > UCL J (pos)/UJ (ND) if %R < LCL J (pos)/R (ND) %R < 10%	10 (H,L)4	No action if only one spike %R is outside criteria when LCSD is analyzed, unless one recovery is <10%. QAPP may have overriding accuracy limits.
LCS/LCSD RPD	If LCSD analyzed RPD < lab limits	Method (3)	J (pos)	9	Qualify all associated samples. QAPP may have overriding precision limits.
Reference Material (RM, SRM, or CRM)	Result ±20% of the 95% confidence interval of the true value for analytes	Standard review	J (pos)/UJ (ND) if < LCL J (pos) if > UCL	12 (H,L)4	QAPP may have overriding accuracy limits. Some manufacturers may have different RM control limits
Surrogates	Added to all samples Within method/laboratory control limits	NFG (1) Method (3)	J (pos) if %R > UCL J (pos)/UJ (ND) if %R < LCL J (pos)/R (ND) if < 10%	13 (H,L)4	No action if there are 4+ surrogates and only 1 outlier. Qualify all compounds if qualification is required.
Internal Standards	Added to all samples Acceptable Range: IS area 50% to 200% of CCAL area RT within 30 seconds of CC RT	NFG (1) Method (3)	J (pos) if > 200% J (pos)/UJ (ND) if < 50% J (pos)/R (ND) if < 25% if RT > 30 seconds use PJ	19	Qualify compounds quantified using particular internal standard
MS/MSD (recovery)	One per matrix per batch (of ≤ 20 samples) Use method acceptance criteria/laboratory limits	NFG (1) Method (3)	J (pos) %R > UCL J (pos)/UJ (ND) if both %R < LCL J (pos)/R (ND) if both %R < 10% J (pos)/UJ (ND) if one > UCL & one < LCL, with no bias	8 (H,L)4	No action if only one spike %R is outside criteria. No action if parent concentration is >4x the amount spiked. Qualify parent sample only.
MS/MSD (RPD)	One per matrix per batch (of ≤ 20 samples) Use method acceptance criteria/laboratory limits	NFG (1) Method (3)	J (pos) If RPD > control limit	9	Qualify parent sample only
Field Duplicates	Solids: RPD < 50% OR difference < 2X RL (for results < 5X RL) Aqueous: RPD < 35%	Standard review	J (pos)/UJ (ND) Qualify only parent and field duplicate samples	9	Use project limits if specified

	OR difference < 1X RL (for results < 5X RL)				
Compound Identification and Quantitation					
Retention Time Relative Ion Intensities	RRT within 0.06 of standard RRT Ion relative intensity within 20% of standard All ions in std. at > 10% intensity must be present in sample	NFG (1) Method (3)	U (pos) if identification criteria not met	25	
TICs	Major ions (>10%) in reference must be present in sample; intensities agree within 20%; check identification	NFG (1) Method (3)	NJ TIC R (pos) if common laboratory contaminants	4	Common laboratory contaminants: aldol condensation products, solvent preservatives, and reagent contaminants
Calibration Range	Results greater than highest calibration standard	Standar d review	Qualify J (pos)	20	If result from dilution analysis is not reported.
Dilutions, Reextractions and/or Reanalyses	Report only one result per analyte	Standar d review	Report best result	11	Best value reported

1 National Functional Guidelines for Organic Data Review, June, 2008 (pos): Positive Result

2 National Functional Guidelines for Organic Data Review, Oct, 1999 (ND): Non-detect

3 Method SW846 8260C Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

4 NFG 2013 suggests using "+ / -" to indicate bias; validation uses "H" = high bias indicated; "L" = low bias indicated.

DATA VALIDATION CRITERIA

Validation Guidelines for Total Petroleum Hydrocarbons-Gasoline Range
(Based on EPA National Functional Guidelines as applied to criteria in NWTPH-Gx,
June 1997, Wa DOE & Oregon DEQ)

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling				
Cooler Temperature & Preservation	4°C±2°C Water: HCl to pH < 2	J(+)/UJ(-) if greater than 6°C	1	
Holding Time	Waters: 14 days preserved 7 days unpreserved Solids: 14 Days	J(+)/UJ(-) if hold times exceeded J(+)/R(-) if exceeded > 3X	1	Professional Judgement
Instrument Performance				
Initial Calibration	5 calibration points (All within 15% of true value) Linear Regression: r2 ≥0.990 If used, RSD of response factors ≤20%	Narrate if fewer than 5 calibration levels or if %R >15% J(+)/UJ(-) if r2 <0.990 J(+)/UJ(-) if %RSD > 20% 5A Mid-range Calibration Check Std. Analyzed before and after each analysis shift & every 20 samples. Recovery range 80% to 120%	5A	
Mid-range Calibration Check Std.	Analyzed before and after each analysis shift & every 20 samples. Recovery range 80% to 120%	Narrate if frequency not met. J(+)/UJ(-) if %R < 80% J(+) if %R >120%	5B	
Blank Contamination				
Method Blank	At least one per batch (≤10 samples)	U (at the RL) if sample result is < RL & < 5X blank result. U (at reported sample value) if sample result is ≥ RL and < 5X blank result	7	
Trip Blank (if required by project)	No results >RL	Action is same as method blank for positive results remaining in trip blank after method blank qualifiers are assigned.	18	
Field Blanks (if required by project)	No results >RL	remaining in field blank after method and trip blank qualifiers are assigned.	6	
Precision and Accuracy				
MS samples (accuracy) (if required by project)	%R within lab control limits	Qualify parent only, unless other QC indicates systematic problems. J(+) if both %R > upper control limit (UCL) J(+)/UJ(-) if both %R < lower control limit (LCL) No action if parent conc. >5X the amount spiked.	8	Use Professional Judgement if only one %R outlier
Precision: MS/MSD or LCS/LCSD or sample/dup	At least one set per batch (≤10 samples) RPD ≤ lab control limit	J(+) if RPD > lab control limits	9	
LCS (not required by method)	%R within lab control limits	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL J(+)/R(-) if any %R <10%	10	Professional Judgement
Surrogates	1,4-difluorobenzene added to all samples (inc. QC samples). %R = 50-150%	J(+)/UJ(-) if %R < LCL J(+) if %R >UCL J(+)/R(-) if any %R <10% No action if 2 or more surrogates are used, and only one is outside control limits.	13	Professional Judgement
Pattern Identification	Compare sample chromatogram to standard chromatogram to ensure range and pattern are reasonable match. Laboratory may flag results which have poor match.	J(+)	2	
Field Duplicates	Use project control limits, if stated in QAPP default: water: RPD < 35% solids: RPD < 50%	Narrate outliers If required by project, qualify with J(+)/UJ(-)	9	
Compound ID and Calculation				
Two analyses for one sample (e.g., dilution)	Report only one result per analyte	best value chosen	11	

DATA VALIDATION CRITERIA

Validation Guidelines for Total Petroleum Hydrocarbons-Diesel & Residual Range
(Based on EPA National Functional Guidelines as applied to criteria in NWTPH-Dx,
June 1997, Wa DOE & Oregon DEQ)

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling				
Cooler Temperature & Preservation	4°C±2°C Water: HCl to pH < 2	J(+)/UJ(-) if greater than 6 deg. C	1	
Holding Time	Ext. Waters: 14 days preserved 7 days unpreserved Ext. Solids: 14 Days Analysis: 40 days from extraction	J(+)/UJ(-) if hold times exceeded J(+)/R(-) if exceeded > 3X	1	Professional Judgement
Instrument Performance				
Initial Calibration	5 calibration points (All within 15% of true value) Linear Regression: $r^2 \geq 0.990$ If used, RSD of response factors $\leq 20\%$	Narrate if fewer than 5 calibration levels or if %R > 15% J(+)/UJ(-) if $r^2 < 0.990$ J(+)/UJ(-) if %RSD > 20%	5A	
Mid-range Calibration Check Std.	Analyzed before and after each analysis shift & every 20 samples. Recovery range 85% to 115%	Narrate if frequency not met. J(+)/UJ(-) if %R < 85% J(+) if %R > 115%	5B	
Blank Contamination				
Method Blank	At least one per batch (≤ 20 samples) Method Blank No results > R	U (at the RL) if sample result is < RL & < 5X blank result. 7 U (at reported sample value) if sample result is \geq RL and < 5X blank result	7	
Field Blanks (if required by project)	No results > RL	Action is same as method blank for positive results remaining in the field blank after method blank qualifiers are assigned.	6	
Precision and Accuracy				
MS samples (accuracy) (if required by project)	%R within lab control limits	Qualify parent only, unless other QC indicates systematic problems. J(+) if both %R > upper control limit (UCL) J(+)/UJ(-) if both %R < lower control limit (LCL) No action if parent conc. > 5X the amount spiked.	8	Use Professional Judgement if only one %R outlier
Precision: MS/MSD or LCS/LCSD or sample/dup	At least one set per batch (≤ 10 samples) RPD \leq lab control limit	J(+) if RPD > lab control limits	9	
LCS (not required by method)	%R within lab control limits	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL J(+)/R(-) if any %R < 10%	10	Professional Judgement
Surrogates	2-fluorobiphenyl, p-terphenyl, o-terphenyl, and/or pentacosane added to all samples (inc. QC samples). %R = 50-150%	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL J(+)/R(-) if any %R < 10% No action if 2 or more surrogates are used, and only one is outside control limits	13	Professional Judgement
Pattern Identification	Compare sample chromatogram to standard chromatogram to ensure range and pattern are reasonable match. Laboratory may flag results which have poor match.	J(+)	2	
Field Duplicates	Use project control limits, if stated in QAPP default: water: RPD < 35% solids: RPD < 50%	Narrate (Use Professional Judgement to qualify)	9	
Compound ID and Calculation				
Two analyses for one sample (dilution)	Report only one result per analyte	all results that should not be reported.	11	

APPENDIX B
QUALIFIED DATA SUMMARY TABLE

ID	Sample Date	GRPH ⁽²⁾	Benzene ⁽³⁾	Toluene ⁽³⁾	Ethyl-benzene ⁽³⁾	Total Xylenes ⁽³⁾	DRPH ⁽²⁾	validation qualifier	ORPH ⁽²⁾
MW101	12/12/2017	<100	<1	<1	<1	<3	<50		<250
MW102	12/12/2017	<100	<1	<1	<1	<3	<50		<250
MW103	12/12/2017	<100	<1	<1	<1	<3	120		<250
MW104	12/12/2017	340	<1	1.1	1.3	<3	780x	J+, 2	<350
MW105	12/12/2017	<100	<1	<1	<1	<3	<50		<250
RW03	12/12/2017	2,500	8.8	17	39	170	1000x	J+, 2	<300
RW04	12/12/2017	360	3.0	1.1	1.2	5.2	200x	J+, 2	<300
RW05	12/12/2017	230	<1	1.3	1.5	<3	170x	J+, 2	<300
MW108	12/12/2017	<100	<1	<1	<1	<3	<50		<250
MW109	12/12/2017	150	<1	1.1	<1	<3	<50		<250
MW99	12/12/2017	400	<1	1.4	2.6	<3	670x	J+, 2	<350
MW110	12/12/2017	<100	<1	<1	<1	<3	99x	J+, 2	<250
MTCA GW criteria		1,000/800⁽⁶⁾	5	1,000	700	1,000	500		500

Red indicates concentrations exceeding MTCA Method A cleanup levels for groundwater.

Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

⁽²⁾Analyzed by Method NWTPH-Gx (gasoline) and NWTPH-Dx (diesel and oil).

⁽³⁾Analyzed by EPA Method 8260B or 8260C.

⁽⁴⁾Analyzed by Method NWTPH-Dx; sample extracts passed through a silica gel column prior to analysis.

⁽⁵⁾MTCA Cleanup Regulation, Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

⁽⁶⁾1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

Laboratory Note:

*The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Validation qualifiers

J+ numerical value is the approximate concentration

Validation Codes

2 Chromatographic pattern in sample does not match pattern of calibration standard

DRPH = diesel-range petroleum hydrocarbons

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTCA = Washington State Model Toxics Control Act

NWTPH = Northwest Total Petroleum Hydrocarbon

ORPH = oil-range petroleum hydrocarbons

SoundEarth = SoundEarth Strategies, Inc.

APPENDIX C
DATA VALIDATION CHECKLISTS

VALIDATION WORKSHEET

Method: PTEx / GRU
 Date Reviewed: 1.3.17
 Sample Collection Dates: 12.12.17

SDG: 712197
 Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	MW167.20171212	MW105.20171212	MW102.20171212	MW101.20171212	MW108.20171212															
Sample results	A	A	A	A	A															
Holding Times	A	A	A	A	A															
Completion	A	A	A	A	A															
Method Blanks	A	A	A	A	A															
LCS duplicate RPD	A	A	A	A	A															
MS/MSD:																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

SM 12.12.17
 Prep 12.15.17
 run 12.15 + 12.18.17

Surrogates ok

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/20/17
 Date Received: 12/13/17
 Project: SOU_0914-001_ 20171213, F&BI 712197
 Date Extracted: 12/15/17
 Date Analyzed: 12/15/17 and 12/18/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE,
 XYLENES AND TPH AS GASOLINE
 USING METHODS 8021B AND NWTPH-Gx**
 Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
MW103-20171212 712197-01	<1	<1	<1	<3	<100	94
MW105-20171212 712197-02	<1	<1	<1	<3	<100	92
MW102-20171212 712197-03	<1	<1	<1	<3	<100	64
MW101-20171212 712197-04	<1	<1	<1	<3	<100	68
MW108-20171212 712197-05	<1	<1	<1	<3	<100	65
Method Blank 07-2812 MB	<1	<1	<1	<3	<100	67

VALIDATION WORKSHEET

Method: BTEX / GRU
 Date Reviewed: 1.8.17
 Sample Collection Dates: 12.12.17

SDG: 712198
 Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	MW110. 20171212	MW104. 20171212	2W05. 20171212	2W04. 20171212	2W08. 20171212	MW107. 20171212	MW599. 20171212													
Sample results	A	A	A	A	A	A	A													
Holding Times	A	A	A	A	A	A	A													
Completion	A	A	A	A	A	A	A													
Method Blanks	A	A	A	A	A	A	A													
LCS duplicate RPD	A	A	A	A	A	A	A													
MS/MSD:																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Spl 12-12-17
 prep 12-18-17
 run 12-18-17; 12-19-17
 Surv. ok.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/21/17
 Date Received: 12/13/17
 Project: SOU_0914-001_20171213, F&BI 712198
 Date Extracted: 12/18/17
 Date Analyzed: 12/18/17 and 12/19/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
 FOR BENZENE, TOLUENE, ETHYLBENZENE,
 XYLENES AND TPH AS GASOLINE
 USING METHODS 8021B AND NWTPH-G_x**
 Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 52-124)
MW110-20171212 712198-01	<1	<1	<1	<3	<100	92
MW104-20171212 712198-02	<1	1.1	1.3	<3	340	94
RW05-20171212 712198-03	<1	1.3	1.5	<3	230	91
RW04-20171212 712198-04	3.0	1.1	12	5.2	360	93
RW03-20171212 712198-05	8.8	17	39	170	2,500	104
MW109-20171212 712198-06	<1	1.1	<1	<3	150	90
MW99-20171212 712198-07	<1	1.4	2.6	<3	400	94
Method Blank 07-2813 MB	<1	<1	<1	<3	<100	94

VALIDATION WORKSHEET

Method: DRO / MLO NWT PH - Dx
 Date Reviewed: 1.9.18
 Sample Collection Dates: 12.12.17

SDG: 712197
 Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	MW105.20171212	MW105.20171212	MW102.20171212	MW101.20171212	MW108.20171212															
Sample results	A	A	A	A	A															
Holding Times	A	A	A	A	A															
Completion	A	A	A	A	A															
Method Blanks	A	A	A	A	A															
LCS duplicate RPD	A	A	A	A	A															
MS/MSD:																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments: 4°C
SP. 12.12.17
prep 12.15.17
MW 12.15.17
Surrogates ok

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/20/17
Date Received: 12/13/17
Project: SOU_0914-001_20171213, F&BI 712197
Date Extracted: 12/15/17
Date Analyzed: 12/15/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-Dx**
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 51-134)
MW103-20171212 712197-01	120	<250	94
MW105-20171212 712197-02	<50	<250	80
MW102-20171212 712197-03	<50	<250	87
MW101-20171212 712197-04	<50	<250	83
MW108-20171212 712197-05	<50	<250	91
Method Blank 07-2821 MB	<50	<250	80

VALIDATION WORKSHEET

Method: DRB/mo, NWTP4
 Date Reviewed: 1.5.18
 Sample Collection Dates: 12.12.17

SDG: 712198
 Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	MW110. 20171212	MW104. 20171212	RW05. 20171212	RW04. 20171212	RW03. 20171212	MW104. 20171212	MW99. 20171212													
Sample results	A	A	A	A	A	A	A													
Holding Times	A	A	A	A	A	A	A													
Completion	A	A	A	A	A	A	A													
Method Blanks	A	A	A	A	A	A	A													
LCS duplicate RPD	A	A	A	A	A	A	A													
MS/MSD:																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

4°C

SN	Date	FB pair	MW104	MW99	RPD
prep	12.14.17	DRB	780	670	15
WA	12.14.17	WA	<350	<350	0
Surv. ok		B	<1	<1	0
		T	1.1	1.4	24
		E	1.3	2.0	600
		X	<3	<3	0
Lab X for DRB		MW110			
		MW104			
		RW05			
		RW04	600	400	100
		RW03			
		MW99			

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/21/17
 Date Received: 12/13/17
 Project: SOU_0914-001_ 20171213, F&BI 712198
 Date Extracted: 12/14/17
 Date Analyzed: 12/14/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
 FOR TOTAL PETROLEUM HYDROCARBONS AS
 DIESEL AND MOTOR OIL
 USING METHOD NWTPH-Dx
 Results Reported as ug/L (ppb)**

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 41-152)
MW110-20171212 712198-01	99 x J+ 2	<250	75
MW104-20171212 712198-02 1/1.4	780 x J+ 2	<350	86
RW05-20171212 712198-03 1/1.2	170 x J+ 2	<300	92
RW04-20171212 712198-04 1/1.2	200 x J+ 2	<300	93
RW03-20171212 712198-05	1,000 x J+ 2	<300	77
MW109-20171212 712198-06	<50	<250	92
MW99-20171212 712198-07 1/1.4	670 x J+ 2	<350	89
Method Blank 07-2804 MB2	<50	<250	86

712198

SAMPLE CHAIN OF CUSTODY

ME 12/13/17

05/002

Send Report to Rob Roberts, cc: Jonathan Loeffler

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, Washington 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) [Signature]

PROJECT NAME/NO. SKS SHELL / 0914-001 PO # _____

REMARKS _____

Page # 1 of 1

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED				Notes
								NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C	
MW110-20171212	MW110	-	01 ^A	12/12/17	1041	H2O	4	X	X	X		
MW104-20171212	MW104	-	02		1120			X	X	X		
RW05-20171212	RW05	-	03		1240			X	X	X		
RW04-20171212	RW04	-	04		1327			X	X	X		
RW03-20171212	RW03	-	05		1420			X	X	X		
MW109-20171212	MW109	-	06		1515			X	X	X		
MW99-20171212	MW99	-	07		1150			X	X	X		
				CTT	12/12/17	Samples received at <u>4</u> °C						

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044

FORMS\COC\COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>[Signature]</u>	Clare Tochin	SoundEarth	12/13/17	
Received by: <u>[Signature]</u>	CHRISTINA BALDWIN	FED EX	12/13/17	1:37 PM
Relinquished by: _____				
Received by: <u>[Signature]</u>	Nhan Phan	FBI	12/13/17	1430

712197

SAMPLE CHAIN OF CUSTODY

ME 12/13/17

vw2/035

Send Report to Rob Roberts, cc: Jonathan Loeffler

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E. Suite 2000

City, State, ZIP Seattle, Washington 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) Jonathan Loeffler

PROJECT NAME/NO SKS SHELL / 0914-001

PO #

REMARKS

Page # of

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by:

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED				Notes	
								NWTPH-DX	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C		
MW103-20171212	MW103	—	01 ^A	12/12/17	1205	WATER	4	X	X	X			
MW105-20171212	MW105	—	02		1303	WATER	4	X	X	X			
MW102-20171212	MW102	—	03		1421	WATER	4	X	X	X			
MW101-20171212	MW101	—	04		1502	WATER	4	X	X	X			
MW108-20171212	MW108	—	05 ^V		1555	WATER	4	X	X	X			
								<i>JL</i>		12/12/17			
								Samples received at 4 °C					

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 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044

FORMS\COC\COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <i>Jonathan Loeffler</i>	JONATHAN LOEFFLER	SOUNDEARTH	12/13/17	
Received by: <i>Cristina Baldelou</i>	CRISTINA BALDELOU	FEDER	12/13/17	1:37 PM
Relinquished by:				
Received by: <i>Nhan Phan</i>	Nhan Phan	FBI	12/13/17	1430