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

September 11, 2017

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

SUBJECT: GROUNDWATER MONITORING REPORT—SECOND 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 Second 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. Successive oil companies retailing gasoline products at the SKS Site include Gilmore Red Lion in the 1930s, Mobil Oil in the 1940s, Texaco in the 1950s, Atlantic Richfield in the 1960s, ARCO from 1975 to 1995, Texaco from approximately 1998 to 2004, and Shell from 2004 until July 2013.

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 Property development of the SKS Site and adjacent properties. Remedial activities included lot-line to lot-line remedial excavation of petroleum-impacted soil to approximately 29.5 feet below ground surface, right-of-way (ROW) dewatering, and 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 on the SKS Site to complete compliance groundwater monitoring.

FIELD ACTIVITIES

The Second Quarter monitoring event was conducted on June 13 through 15, 2017, to evaluate the long-term effectiveness of cleanup activities. The monitoring event included measuring depths to groundwater in monitoring wells MW108 through MW110, located in the basement level of the building now located on the SKS Site, as well as MW101 through MW105 and RW02 through RW05, located within the Fauntleroy Way Southwest ROW. Monitoring well RW01, located within the Fauntleroy Way Southwest ROW, was obstructed at a depth of approximately 16.5 feet below ground surface and could not be measured.

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 RW02 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 50 to 120 milliliters per minute. The intake was placed approximately 2 to 3 feet below the surface of the groundwater or mid-screen 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 well MW108 was purged dry while filling the flow-through cell. Therefore, a grab sample was collected once the well had recharged to its 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.

The 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) by Method NWTPH-Dx and with silica gel cleanup by EPA Method 3630. Selected DRPH and ORPH samples were analyzed with silica gel cleanup because previous DRPH and ORPH exceedances in groundwater were flagged as not resembling the fuel standard used by the laboratory for DRPH identification. 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 levels measured on June 13 and 14, 2017, ranged in elevation from 241.94 (MW105 in the Fauntleroy Way Southwest ROW) to 240.43 (MW110 in the lower level garage) feet North American

Vertical Datum of 1988 (Table 1). Historical groundwater measurements have indicated that groundwater at the Fauntleroy Way Southwest and Southwest Alaska Street intersection consistently flowed at a moderate gradient of 0.015 feet per foot to the north-northeast. However, the most recent groundwater elevations indicate a groundwater flow direction to the west along the Fauntleroy Way Southwest property edge (Figure 2). This observed change in groundwater flow is likely due to the footing drains and associated sub-slab drainage system installed for the underground parking garage, as discussed in the Summary section below.

Groundwater analytical results from the monitoring event are summarized below (Figure 3; Table 1). Results for MW108 and MW109, both located on-property, as well as MW101, MW102, MW103, MW105, RW02, RW04, and RW05, all located within the Fauntleroy Way Southwest ROW, were below Washington State Model Toxics Control Act (MTCA) cleanup levels for all chemicals of concern. Concentrations of ORPH (both with and without silica gel cleanup), toluene, ethylbenzene, and total xylenes were below the MTCA Method A cleanup level for all groundwater samples collected.

The following summarizes results from other monitoring wells:

- **Gasoline-Range Petroleum Hydrocarbons.** All groundwater samples collected from the compliance wells (MW101 through MW105 and MW108 through MW110 as identified in the 2013 Draft Cleanup Action Plan) were below the MTCA Method A cleanup level (CUL) of 800 micrograms per liter (µg/L) for GRPH. A concentration of GRPH exceeding the MTCA CUL was detected in the groundwater sample collected from remediation well RW03 (1,300 µg/L). This result was lower than the previous concentration (4,900 µg/L) detected in RW03 in the First Quarter 2017 groundwater sample.
- **Benzene.** All groundwater samples collected from the compliance wells were below the MTCA Method A cleanup level of 5 µg/L for benzene. A concentration of benzene exceeding the MTCA CUL was detected in the groundwater sample collected from remediation well RW03 (7.0 µg/L). This result was lower than the previous (150 µg/L) concentration detected in RW03 during First Quarter 2017.
- **Diesel-Range Petroleum Hydrocarbons.** Groundwater samples collected from MW104, RW03, and MW110 had concentrations of DRPH that exceeded the MTCA Method A CUL of 500 µg/L for DRPH. A decreasing trend in the DRPH concentration was observed from First to Second Quarter. Based on the history of the site and the presence of organic material in native soils encountered during excavation, groundwater samples were analyzed for DRPH both with and without silica gel cleanup. With the silica gel cleanup, none of the analyzed groundwater samples contained petroleum-based DRPH concentrations exceeding the MTCA Method A cleanup level. DRPH and ORPH samples were analyzed with silica gel cleanup because previous DRPH and ORPH exceedances in groundwater were flagged by the laboratory as not resembling the fuel standard. A review of historical documents indicates that the source of the organic material beneath the SKS Shell site is likely from the low-lying wetland that formerly occupied the upgradient Whittaker development property prior to initial development in the 1950s and up to 15 feet of fill material that included wood waste and other organics. Original topography predating the filling is apparent in maps predating the 1950s, and site photos taken during mass excavation.

As shown in the attached Charts 1 through 4, which summarize trends in GRPH and benzene concentrations in monitoring wells MW04, MW108, MW109, and MW110 since 2011, GRPH and benzene in all four monitoring wells during Second Quarter 2017 are significantly lower than pre-remediation concentrations. GRPH and benzene concentrations in all four of these monitoring points have decreased or remained below laboratory reporting limits since First Quarter 2017. Figure 4 includes trend charts as well as data comparison tables from 7 ROWs 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 MW105), or that concentrations are significantly reduced (RW02 and RW04). The approximate area of groundwater impacts prior to the source removal is provided for comparison on Figure 5.

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 QC requirements that were reviewed included sample receipt, handling, and holding times; recoveries for method blanks, surrogates, spikes, field duplicates; and reporting limits.

Results. The analytical data for NWTPH-Dx for samples collected from monitoring wells MW104, MW108, RW03, and the field duplicate collected from MW104 were flagged "J+" (as estimates) due to the laboratory reporting that the detected chromatographic pattern did not match the diesel fuel standard. These results were also flagged "x" by the analytical laboratory for the same reason. However, the results were determined to be acceptable for use. 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 Washington State Department of Ecology's (Ecology) Environmental Information Management system.

SUMMARY

Concentrations of GRPH, DRPH, and BTEX decreased for the second consecutive quarter in monitoring wells MW104 and RW03 during Second Quarter 2017, after an unexpected increase in the Fourth Quarter 2016. Concentrations of DRPH in monitoring well MW110 had previously increased for several quarters, but decreased for the second consecutive quarter during Second Quarter 2017.

Aside from exceedances for benzene and GRPH in well RW03, all wells are MTCA compliant for GRPH and BTEX. Figure 4 shows a significant reduction of benzene, GRPH, and DRPH in groundwater at the SKS Site. Downgradient ROW wells MW101, MW102, MW103, and MW105 were compliant 2012 and 2013, and remain complaint in 2017.

As stated above the historical groundwater flow direction was documented to be to the north to northeast. Figure 6 provides the historical groundwater elevation contours for the Whittaker Property, comprised of SKS Shell, Huling, and Kennedy properties prior to remedial excavation and construction activities and confirms a historical groundwater flow direction to the north to northeast. Attachment C

provides a set of historical contour maps for the SKS Site as well as a rose diagram for reference. The attached contour maps and rose diagrams were used for discussion purposes with Ecology during a conference call between Gene Freeman with Ecology and SoundEarth representatives on May 29, 2013.

As discussed in our previous groundwater monitoring reports, groundwater levels were generally 1 to 3 feet lower in the Fourth Quarter 2016 and First and Second Quarters 2017, than previously measured at the SKS Site. This unexpected condition represents a change from trends that we have observed in the past.

As shown on Figure 2, the most recent groundwater elevations in the immediate vicinity of the property indicate that the flow direction has changed from those consistently measured in 2012 and 2013, prior to site redevelopment. As shown in Figures 7 and 8, the building is equipped with a sub-slab drainage system that intercepts groundwater at the south and west boundaries of the new sub-grade parking levels and limits groundwater recharge to the entire Whittaker Property. This interception would lower water levels at the northeast corner of the Whittaker Property and SKS Site. 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 (Figure 7). As shown in Figure 9, the southwestern portion of the parking garage was constructed below the historical water table and the current building footing drain system is intercepting that groundwater flow path beneath the SKS Site and entire Whittaker Property. Therefore, building drain system is likely affecting groundwater recharge at the northeast corner of the property.

Prior to modifying the existing groundwater monitoring program and making any decisions related to future groundwater cleanup, we are currently conducting a long term transducer study to evaluate groundwater levels. Groundwater levels should have been at their highest (not lowest) levels during the recent wet season monitoring events (December 2016 and March 2017). The Revised 2017 Work Plan for the SKS Site outlines several monitoring elements that we are conducting in order to better understand groundwater fluctuations, flow direction, and groundwater conditions.

SoundEarth will conduct a monitoring event of the same wells at the SKS Site in Third Quarter 2017 (except for RW01 and RW02 at Ecology's request), 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 either of the undersigned 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 Hydrogeologist

Rob Roberts
Senior Scientist

Suzy Stumpf, PE
Senior Engineer

Attachments:
Figure 1, Property Location Map
Figure 2, Groundwater Elevation Contour Map (June 13-14, 2017)
Figure 3, 2017 Q2 Groundwater Analytical Data
Figure 4, GRPH and Benzene Concentration Trends in Groundwater
Figure 5, SKS Shell Historical Groundwater Analytical Results
Figure 6, Whittaker Property Historical Groundwater Elevations (November 7, 2012)
Figure 7, Cross Section and Sub-Slab Drainage Plan
Figure 8, Current Cross Section A-A'
Figure 9, Historical 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. #706255 and additional
B, Data Validation Report
Validata, LLC #706255
C, SKS Shell Site Historical Groundwater Contour Maps and Rose Diagram

CER/SES:slf

FIGURES

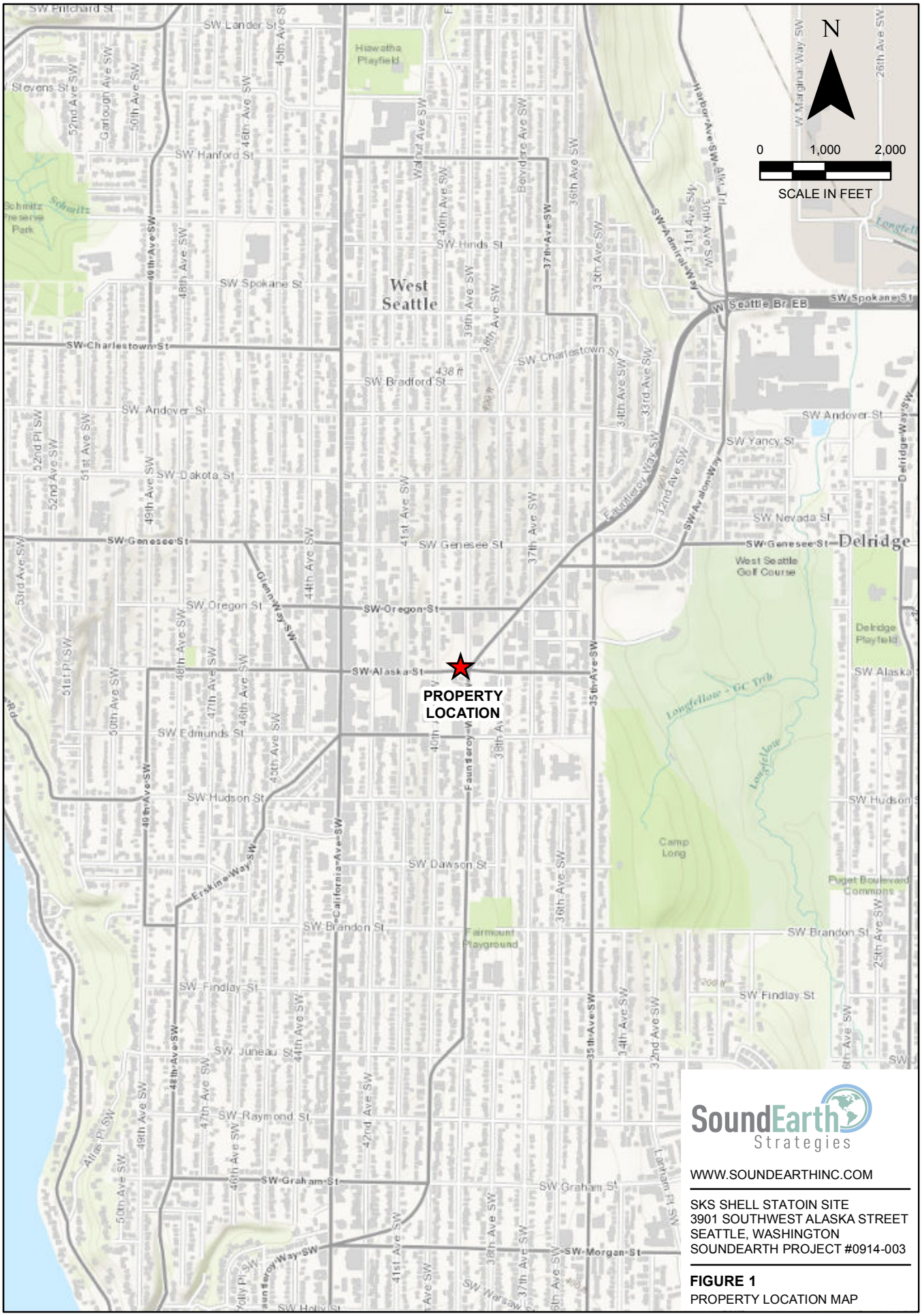

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FIGURE 1
PROPERTY LOCATION MAP

9/8/2017

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2017\2017 Q2\0914-004-2017Q2_CM.DWG

FORMER HOWDEN-KENNEDY FUNERAL HOME

SB401

MW107

SIDEWALK

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

SIDEWALK

N

0 10 20

APPROXIMATE SCALE IN FEET

FORMER USTs

B-6/MW-4

FORMER PUMP ISLAND USTs

STORMWATER SUMP

STORMWATER DETENTION PIPE

FORMER SKS SHELL

FORMER UST- #4

FORMER PUMP ISLANDS AND CANOPIES

FORMER UST- #3

FORMER UST- #1

FORMER UST- #2

RW09

MW108 (240.77')

RW08

MW111

RW07

MW109 (241.05')

MW110 (240.43')

RW06

RW02 (241.38')

RW03 (241.59')

RW04 (241.60')

RW05 (241.45')

MW104 (241.45')

RW01

MW103 (240.99')

MW105 (241.94')

MW102 (243.64')

MW101 (243.74')

SIDEWALK

FAUNTLEROY WAY SOUTHWEST

240.5

241.0

241.5

242.0

242.5

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
- (241.45) — GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION (JUNE 13-14, 2017)

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FIGURE 2
GROUNDWATER ELEVATION CONTOUR MAP (JUNE 13-14, 2017)

9/11/2017

KEY

GRPH / DRPH / ORPH

- 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

SB401

FORMER HOWDEN-KENNEDY FUNERAL HOME

MW107

SIDEWALK

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

RW09

MW108

RW08

MW111

RW07

MW109

RW06

FORMER SKS SHELL

FORMER UST- #4

FORMER PUMP ISLANDS AND CANOPIES

FORMER UST- #3

FORMER UST- #1

FORMER UST- #2

MW110

RW02

RW03

RW04

RW05

MW104

RW01

MW105

MW103

MW102

MW101

N

0 10 20

APPROXIMATE SCALE IN FEET

FORMER USTs

B-6/MW-4

FORMER PUMP ISLAND USTs

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 — 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

Well ID	Sample Date	Analytical Results (micrograms per liter) GRPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	DRPH	DRPH with Silica Gel	ORPH
MW101	06/14/17	<100	<1	<1	<1	<3	<50	--	<250
MW102	06/13/17	<100	<1	<1	<1	<3	<50	--	<250
MW103	06/13/17	<100	<1	<1	<1	<3	<60	--	<300
MW104	03/17/17	1,400	<1	<1	8.5	10	7,900	290	<400
	06/15/17	700	<1	<1	4.0	3.1	3,000	--	<250
MW105	06/13/17	<100	<1	<1	<1	<3	<50	--	<250
MW108	03/03/17	<100	<1	<1	<1	<3	<80	<80	<400
	06/14/17	<100	<1	<1	<1	<3	140	--	<250
MW109	03/03/17	370	<1	<1	1.2	<3	490	55	<250
	06/14/17	220	<1	<1	<1	<3	330	--	<250
MW110	03/03/17	570	2.1	<1	9.3	4.7	1,000	110	<250
	06/14/17	260	<1	<1	2.0	<3	520	--	<250
RW02	06/14/17	<100	<1	<1	<1	<3	<50	--	<250
RW03	03/02/17	4,900	150	<10	220	190	11,000	880	<250
	06/14/17	1,300	7.0	<1	32	11	1,500	--	<250
RW04	06/14/17	790	2.5	<1	16	<3	400	--	<250
RW05	06/14/17	400	<1	<1	4.4	<3	470	--	<250
MTCA Method A Cleanup Level		1,000/800	5	1,000	700	1,000	500	500	500

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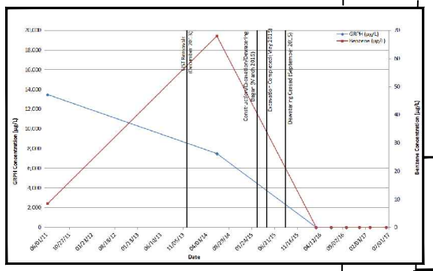
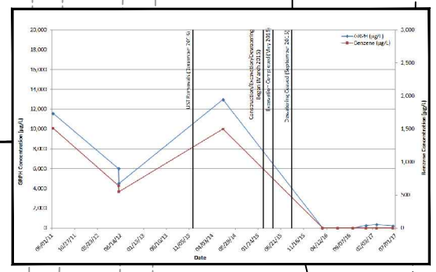
FIGURE 3
2017 Q2 GROUNDWATER ANALYTICAL DATA

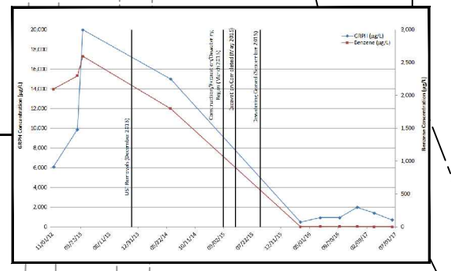
P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2017\2017 Q2\0914-004_2017Q2_GD.DWG

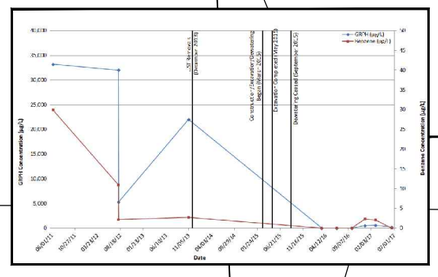
9/11/2017

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2017\2017 Q2\0914-004_2017_CT.DWG









SB401

FORMER HOWDEN-KENNEDY FUNERAL HOME

MW107

SIDEWALK

RW09

MW108

FORMER SKS SHELL

FORMER UST- #4

FORMER PUMP ISLANDS AND CANOPIES

FORMER UST- #3

FORMER UST- #1

FORMER UST- #2

RW08

MW111

RW07

MW109

MW110

RW06

RW02 RW03 RW04 RW05 MW104 RW01

SIDEWALK

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	2.5	790	400

MW105

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

MW103

MW103	BENZENE	GRPH	DRPH
2012	<0.35	<100	<50
2017	<1	<100	<60

FAUNTLEROY WAY SOUTHWEST

SIDEWALK

MW102

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

MW101

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

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

N

0 10 20

APPROXIMATE SCALE IN FEET

FORMER USTs

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)

µg/L	MICROGRAMS PER LITER
GRPH	GASOLINE-RANGE PETROLEUM HYDROCARBONS
UST	UNDERGROUND STORAGE TANK
DRPH	DIESEL-RANGE PETROLEUM HYDROCARBONS
MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
<	RESULT BELOW LABORATORY REPORTING LIMIT
RED	DENOTES CONCENTRATION EXCEEDS MTCA METHOD A CLEANUP LEVELS FOR GROUNDWATER

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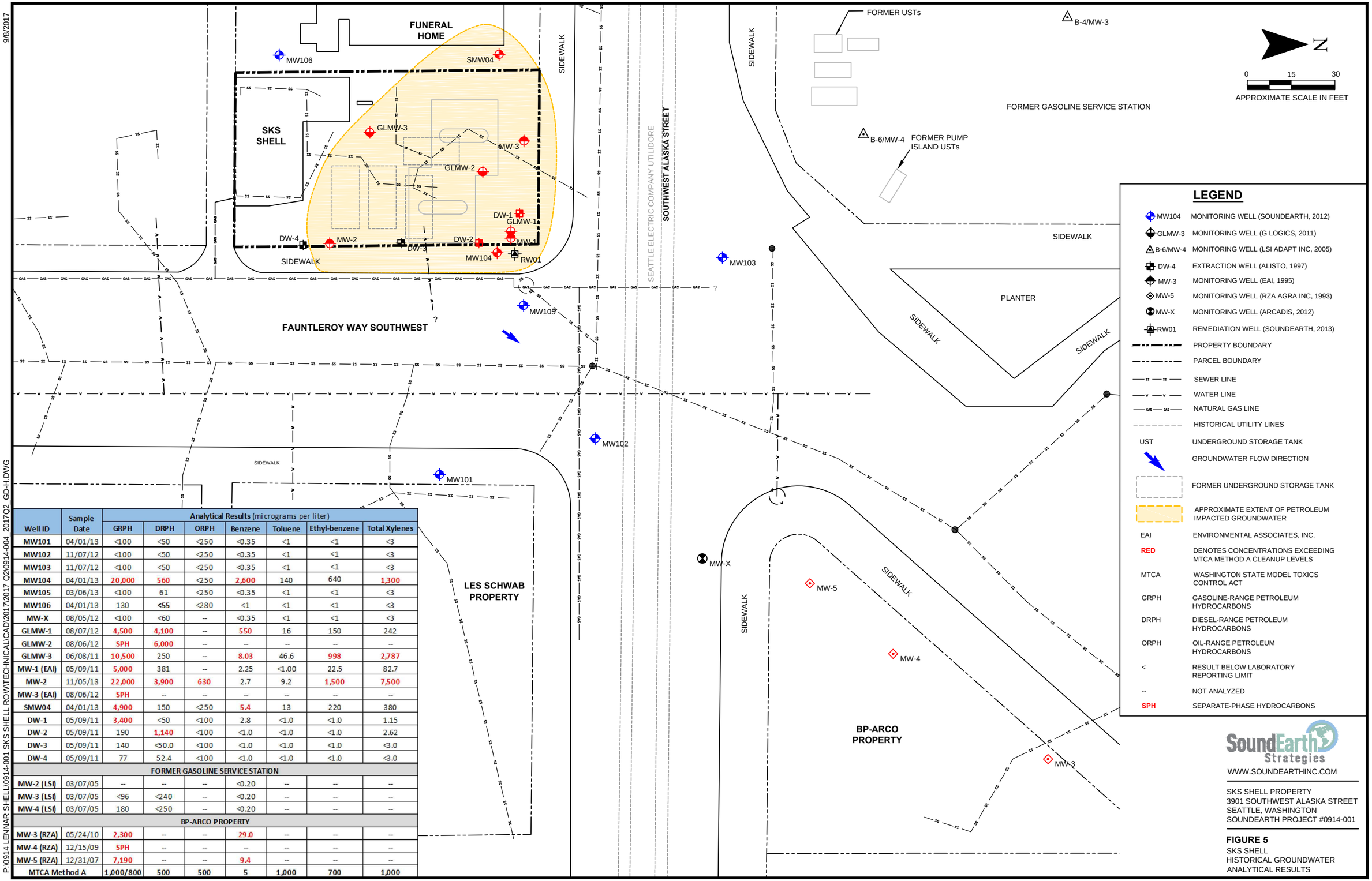
FIGURE 4
GRPH AND BENZENE CONCENTRATION TRENDS IN GROUNDWATER

9/8/2017



LEGEND

MW104	MONITORING WELL (SOUNDEARTH, 2012)
GLMW-3	MONITORING WELL (G LOGICS, 2011)
B-6/MW-4	MONITORING WELL (LSI ADAPT INC, 2005)
DW-4	EXTRACTION WELL (ALISTO, 1997)
MW-3	MONITORING WELL (EAI, 1995)
MW-5	MONITORING WELL (RZA AGRA INC, 1993)
MW-X	MONITORING WELL (ARCADIS, 2012)
RW01	REMEDIATION WELL (SOUNDEARTH, 2013)
	PROPERTY BOUNDARY
	PARCEL BOUNDARY
	SEWER LINE
	WATER LINE
	NATURAL GAS LINE
	HISTORICAL UTILITY LINES
UST	UNDERGROUND STORAGE TANK
	GROUNDWATER FLOW DIRECTION
	FORMER UNDERGROUND STORAGE TANK
	APPROXIMATE EXTENT OF PETROLEUM IMPACTED GROUNDWATER
EAI	ENVIRONMENTAL ASSOCIATES, INC.
RED	DENOTES CONCENTRATIONS EXCEEDING MTCA METHOD A CLEANUP LEVELS
MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
GRPH	GASOLINE-RANGE PETROLEUM HYDROCARBONS
DRPH	DIESEL-RANGE PETROLEUM HYDROCARBONS
ORPH	OIL-RANGE PETROLEUM HYDROCARBONS
<	RESULT BELOW LABORATORY REPORTING LIMIT
--	NOT ANALYZED
SPH	SEPARATE-PHASE HYDROCARBONS

Well ID	Sample Date	Analytical Results (micrograms per liter)						
		GRPH	DRPH	ORPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW101	04/01/13	<100	<50	<250	<0.35	<1	<1	<3
MW102	11/07/12	<100	<50	<250	<0.35	<1	<1	<3
MW103	11/07/12	<100	<50	<250	<0.35	<1	<1	<3
MW104	04/01/13	20,000	560	<250	2,600	140	640	1,300
MW105	03/06/13	<100	61	<250	<0.35	<1	<1	<3
MW106	04/01/13	130	<55	<280	<1	<1	<1	<3
MW-X	08/05/12	<100	<60	--	<0.35	<1	<1	<3
GLMW-1	08/07/12	4,500	4,100	--	550	16	150	242
GLMW-2	08/06/12	SPH	6,000	--	--	--	--	--
GLMW-3	06/08/11	10,500	250	--	8.03	46.6	998	2,787
MW-1 (EAI)	05/09/11	5,000	381	--	2.25	<1.00	22.5	82.7
MW-2	11/05/13	22,000	3,900	630	2.7	9.2	1,500	7,500
MW-3 (EAI)	08/06/12	SPH	--	--	--	--	--	--
SMW04	04/01/13	4,900	150	<250	5.4	13	220	380
DW-1	05/09/11	3,400	<50	<100	2.8	<1.0	<1.0	1.15
DW-2	05/09/11	190	1,140	<100	<1.0	<1.0	<1.0	2.62
DW-3	05/09/11	140	<50.0	<100	<1.0	<1.0	<1.0	<3.0
DW-4	05/09/11	77	52.4	<100	<1.0	<1.0	<1.0	<3.0
FORMER GASOLINE SERVICE STATION								
MW-2 (LSI)	03/07/05	--	--	--	<0.20	--	--	--
MW-3 (LSI)	03/07/05	<96	<240	--	<0.20	--	--	--
MW-4 (LSI)	03/07/05	180	<250	--	<0.20	--	--	--
BP-ARCO PROPERTY								
MW-3 (RZA)	05/24/10	2,300	--	--	29.0	--	--	--
MW-4 (RZA)	12/15/09	SPH	--	--	--	--	--	--
MW-5 (RZA)	12/31/07	7,190	--	--	9.4	--	--	--
MTCA Method A		1,000/800	500	500	5	1,000	700	1,000

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

FIGURE 5
SKS SHELL
HISTORICAL GROUNDWATER
ANALYTICAL RESULTS

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2017\2017 Q2\0914-004 2017Q2 GD-H.DWG

9/8/2017

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROWT\TECHNICAL\CAD\2017\2017 Q2\0914-004_2017Q2_CM-WHIT.DWG

LEGEND

- MONITORING WELL
- MONITORING WELL
- HULING KENNEDY PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SS — SEWER LINE
- W — WATER LINE
- GAS — NATURAL GAS LINE
- HYDRAULIC HOIST
- UST — UNDERGROUND STORAGE TANK
- AST — ABOVEGROUND STORAGE TANK
- (246.00') — GROUNDWATER ELEVATION
- 1.00-FOOT-INTERVAL GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION (NOVEMBER 7, 2012)
- * — WELL COMPLETED IN PERCHED INTERVAL; WATER LEVELS NOT REPRESENTATIVE OF PRIMARY WATER-BEARING ZONE

N

0 25 50

APPROXIMATE SCALE IN FEET

40TH AVENUE SOUTHWEST

SOUTHWEST ALASKA STREET

FAUNTLEROY WAY SOUTHWEST

SEATTLE ELECTRIC COMPANY UTILIDORE

MASONIC LODGE

HULING BODY SHOP

OFFICE

TRENCH DRAIN

SEWER LINE

PAINT STORAGE

FLOOR DRAIN

CANOPY

PAINT BOOTH

WASH AREA

FORMER 500-GALLON WASTE OIL UST

WASTE OIL AST AND OIL/WATER SEPARATOR

RETAIL STORE

(247.18') SMW01

EXISTING HEATING OIL UST

SEWER LINE

KENNEDY FUNERAL HOME

HOIST REMOVED

MW-3 (250.24')

BOILER ROOM AND OIL/WATER SEPARATOR

HULING CHEVROLET GARAG E

SHOWROOM

FORMER 2,500-GALLON GASOLINE UST

(246.07') MW-2

FORMER 1,000-GALLON HEATING OIL UST

MW-1*

SMW02 (244.98')

MW106

SMW04

SMW03 (246.00')

SKS SHELL

GLMW-3 (245.74')

MW-3 (245.47')

GLMW-2

GLMW-1 (244.92')

(245.44') MW-2

MW1 (244.54')

MW104 (241.91')

MW105

MW103 (241.75')

MW102 (243.65)

(244.12') MW101

MW-X (243.29')

LES SCHWAB PROPERTY

FORMER BUILDING

FORMER USTs

FORMER PUMP ISLAND USTs

249.00 248.00 247.00 250.00 249.00 248.00 247.00 246.00 245.00 246.00 245.00 244.00 243.00 242.00 242.00 244.00

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SKS SHELL PROPERTY
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SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0914-001

FIGURE 6

WHITTAKER PROPERTY
HISTORICAL GROUNDWATER ELEAVATIONS
(NOVEMBER 7, 2012)

9/8/2017

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
- SS — SEWER LINE
- W — WATER LINE
- GAS — NATURAL GAS LINE
- FD — SUB-SLAB DRAINAGE/FOOTING DRAINS
- HYDRAULIC HOIST
- AST — ABOVEGROUND STORAGE TANK
- UST — UNDERGROUND STORAGE TANK

40TH AVENUE SOUTHWEST

SOUTHWEST EDMUNDS STREET

SOUTHWEST ALASKA STREET

FAUNTLEROY WAY SOUTHWEST

SEATTLE ELECTRIC COMPANY UTILIDORE

OFFICE

TRENCH DRAIN

MASONIC LODGE

SEWER LINE

PAINT STORAGE

FORMER HULING BODY SHOP

FLOOR DRAIN

CANOPY

PAINT BOOTH

WASTE OIL AST AND OIL/WATER SEPARATOR

WASH AREA

SMW01

FORMER 500-GALLON HEATING OIL UST

SB401

FORMER HOWDEN-KENNEDY FUNERAL HOME

MW107

MW106

SMW04

FORMER 500-GALLON WASTE OIL UST

MW-3

MW-2

FORMER HULING CHEVROLET GARAGE

FORMER 2,500-GALLON GASOLINE UST

STORMWATER DETENTION PIPE

STORMWATER SUMP

SMW03

FORMER SKS SHELL

MW108

MW-3

RW09

GLMW-3

SLMW-2

RW08

MW111

BOILER ROOM AND OIL/WATER SEPARATOR

SHOWROOM

FORMER 1,000-GALLON HEATING OIL UST

SMW02

MW-1

DWN

MW109

RW07

MW110

DW1

DW2

DW3

SLMW-1

RW06

RW01

RW02

RW03

RW04

RW05

MW104

MW105

MW103

MW102

MW101

MW-20

RCO03

LES SCHWAB PROPERTY

FORMER GASOLINE SERVICE STATION

N

0 25 50

APPROXIMATE SCALE IN FEET

FORMER USTs

FORMER GASOLINE SERVICE STATION

B-6/MW-4

FORMER PUMP ISLAND AND UST

SoundEarth Strategies

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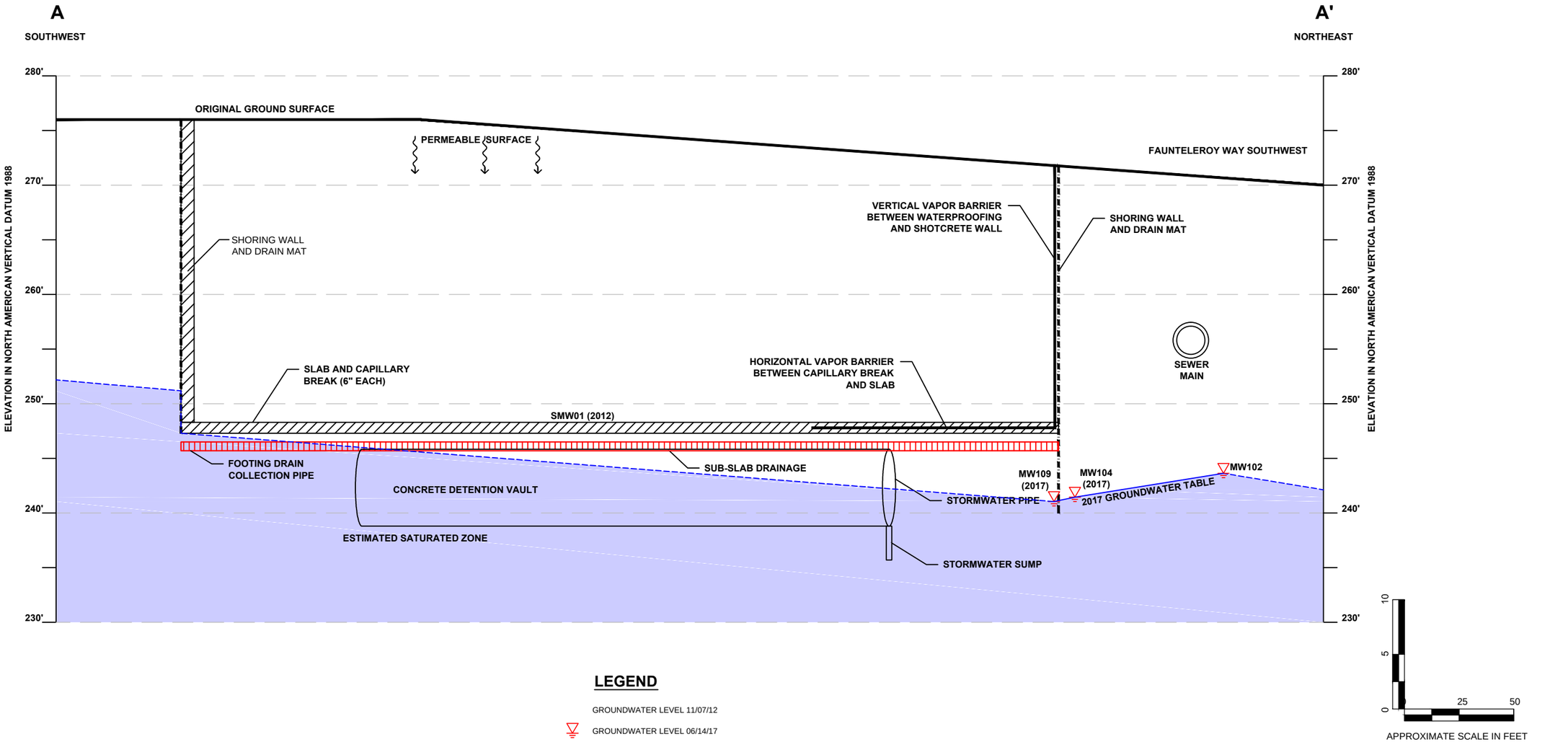
SKS SHELL STATION SITE
3901 SOUTHWEST ALASKA STREET
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0914-001

FIGURE 7

CROSS SECTION AND SUB-SLAB DRAINAGE PLAN

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2017\2017 Q2\0914-004_2017_EL.DWG

9/8/2017



LEGEND

GROUNDWATER LEVEL 11/07/12

GROUNDWATER LEVEL 06/14/17

0 5 10

0 25 50

APPROXIMATE SCALE IN FEET

SoundEarth Strategies

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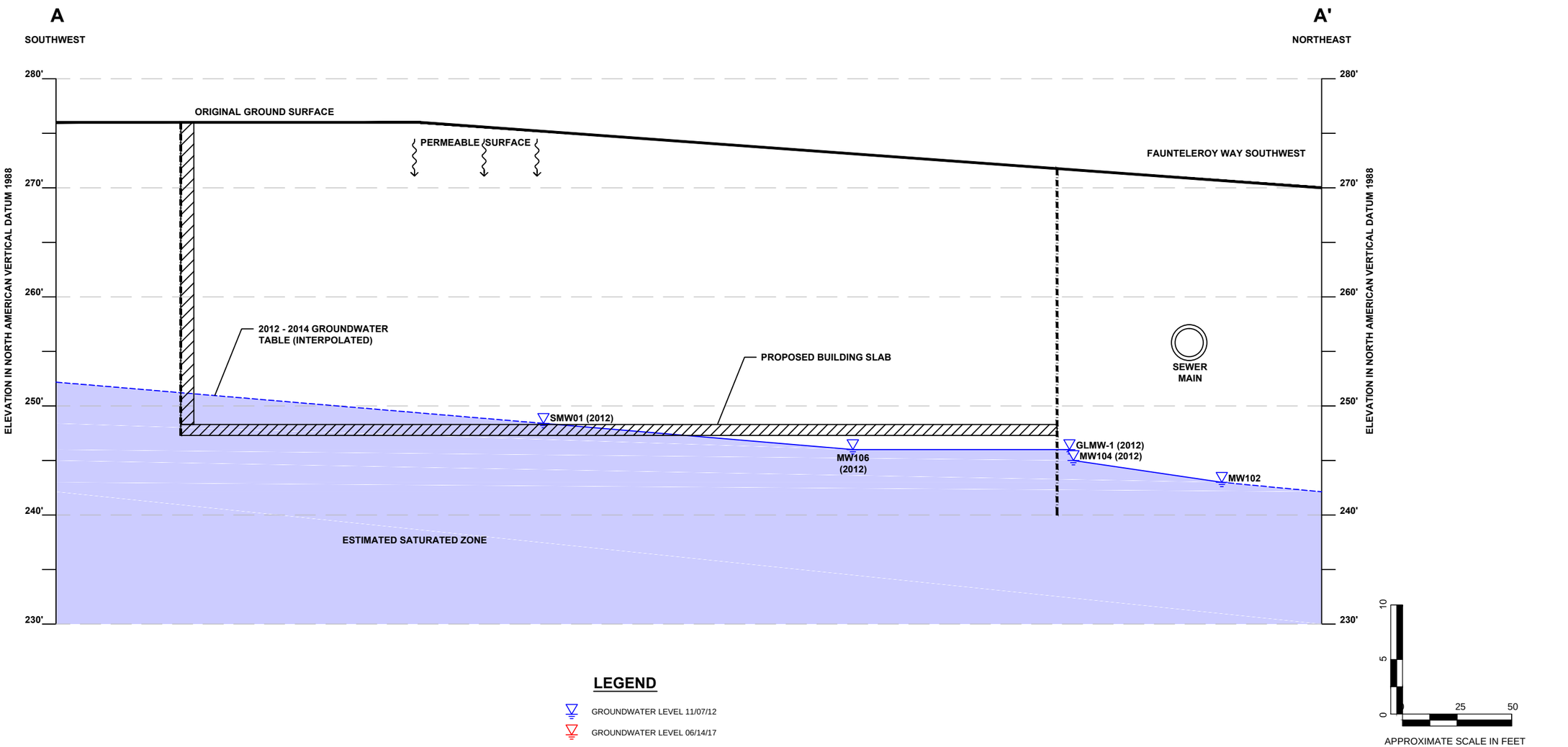
SKS SHELL STATION SITE
3901 SOUTHWEST ALASKA STREET
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #914-001

FIGURE 8
CURRENT CROSS SECTION A-A'

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2017\2017 Q2\0914-004_2017_XAA.DWG

9/8/2017

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROWTECHNICAL\CAD\2017\2017 Q2\0914-004_2017_HISTXAA.DWG



LEGEND

- GROUNDWATER LEVEL 11/07/12
- GROUNDWATER LEVEL 06/14/17

0 5 10

25 50

APPROXIMATE SCALE IN FEET

SoundEarth Strategies

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

FIGURE 9
HISTORICAL CROSS SECTION A-A'

TABLE

SoundEarth Strategies

Table 1
Summary of Groundwater Data
SKS Shell Property
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]
MW101	08/06/12	SoundEarth	24.39	245.15	<100	<0.35	<1	<1	<3	<1	<1	<1	--	--	--	--
	04/01/13	SoundEarth	24.67	244.87	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	06/14/17	SoundEarth	25.80	243.74	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
MW102	11/07/12	SoundEarth	25.41	243.65	<100	<0.35	<1	<1	<3	<1	<1	<1	<50[6]	--	<250[6]	--
	06/13/17	SoundEarth	25.42	243.64	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
MW103	11/07/12	SoundEarth	27.80	241.75	<100	<0.35	<1	<1	<3	<1	<1	<1	<50[6]	--	<250[6]	--
	06/13/17	SoundEarth	28.56	240.99	<100	<1	<1	<1	<3	--	--	--	<60	--	<300	--
MW104	11/07/12	SoundEarth	24.41	244.94	6,100	2,100	10	120	418	<1	<1	<1	4,000	--	<250	--
	03/06/13	SoundEarth	23.24	246.11	9,900	2,300	110	470	870	--	--	--	1,900[x]	--	<250	--
	04/01/13	SoundEarth	23.37	245.98	20,000	2,600	140	640	1,300	--	--	--	--	540[x]	--	<250
	06/12/14	SoundEarth	25.50	243.85	15,000	1,800	120	480	1,330	--	--	<0.01	14,000[x]	--	250[x]	--
	03/17/16	SoundEarth	26.41	242.94	480	1.2	1.8	2.2	5.7	--	--	--	1,200[x]	--	<300	--
	06/24/16	SoundEarth	25.16	244.19	940	2.5	2.0	3.0	9.5	--	--	--	3,200	--	<250	--
	09/28/16	SoundEarth	25.55	243.80	940	7.2	<1	3.7	7.4	--	--	--	4,000[x]	--	340[x]	--
	12/23/16	SoundEarth	27.28	242.07	2,000	2.1	2.1	17	27	--	--	--	16,000	180[x]	380[x]	<250
	03/17/17	SoundEarth	27.55	241.80	1,400	<1	<1	8.5	10	--	--	--	7,900	290[x]	<400	<400
	06/15/17	SoundEarth	27.92	241.45	700	<1	<1	4.0	3.1	--	--	--	3,000	370[x]	<250	<250
MW105	12/13/12	SoundEarth	24.25	245.05	140	<1	<1	<1	<3	--	--	--	<50[6]	--	<250[6]	--
	03/06/13	SoundEarth	23.33	245.97	<100	<0.35	<1	<1	<3	--	--	--	61[x]	--	<250	--
	06/13/17	SoundEarth	27.36	241.94	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
RW02	07/16/14	SoundEarth	--	--	16,000	1.1	2.5	380	1,400	--	--	--	3,200[x]	--	<250	--
	06/14/17	SoundEarth	27.22	241.38	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
RW03	03/17/16	SoundEarth	26.23	--	2,300	41	6.9	51	260	--	--	--	1,400[x]	--	<250	--
	06/24/16	SoundEarth	25.40	--	1,600	27	4.4	27	59	--	--	--	3,600	--	<250	--
	09/28/16	SoundEarth	25.71	--	1,100	6.7	<1	20	45	--	--	--	2,400[x]	--	<300	--
	12/23/16	SoundEarth	26.77	--	9,000	470	16	380	750	--	--	--	11,000	720[x]	<300	<300
	03/02/17	SoundEarth	27.22	--	4,900	150	<10	220	190	--	--	--	11,000[x]	880[x]	<250	<250
	06/14/17	SoundEarth	27.91	241.59	1,300	7.0	<1	32	11	--	--	--	1,500	320[x]	<250	<250
RW04	07/16/14	SoundEarth	--	--	17,000	1,200	270	360	1,700	--	--	--	4,600[x]	--	270[x]	--
	06/14/17	SoundEarth	27.62	241.60	790	2.5	<1	16	<3	--	--	--	400	--	<250	--
RW05	06/14/17	SoundEarth	27.64	241.45	400	<1	<1	4.4	<3	--	--	--	470	--	<250	--
RW07	07/16/14	SoundEarth	--	--	1,600	110	8.3	8.3	17	--	--	--	1,100[x]	--	<250	--
RW09	07/16/14	SoundEarth	--	--	2,600	10	18	70	34	--	--	--	700[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**

SoundEarth Strategies

Table 1
Summary of Groundwater Data
SKS Shell Property
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	--
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	--
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	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	--
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:

[x]The 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

SoundEarth Strategies

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

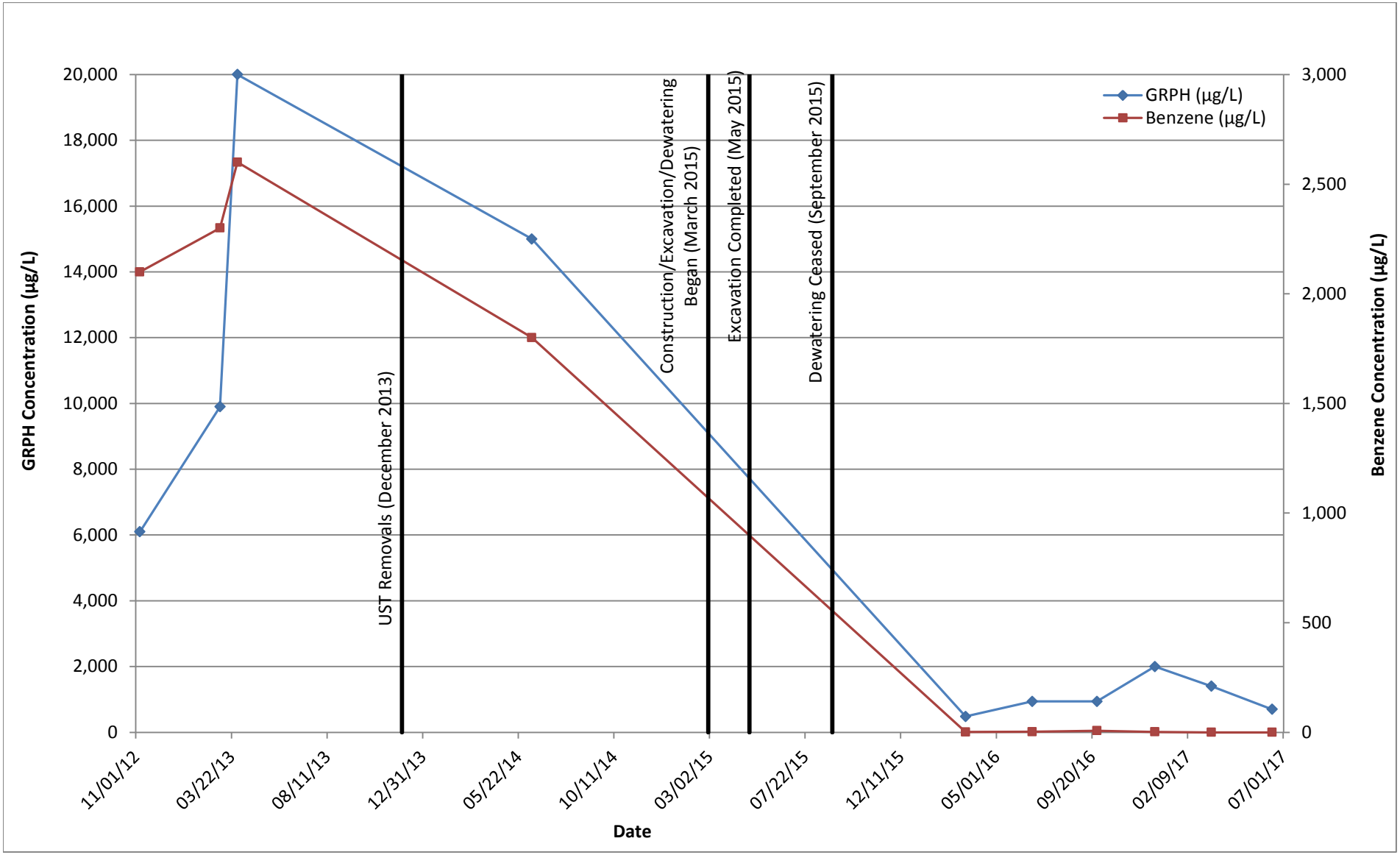


Chart 2
GRPH and Benzene Concentrations - GLMW01/MW109
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

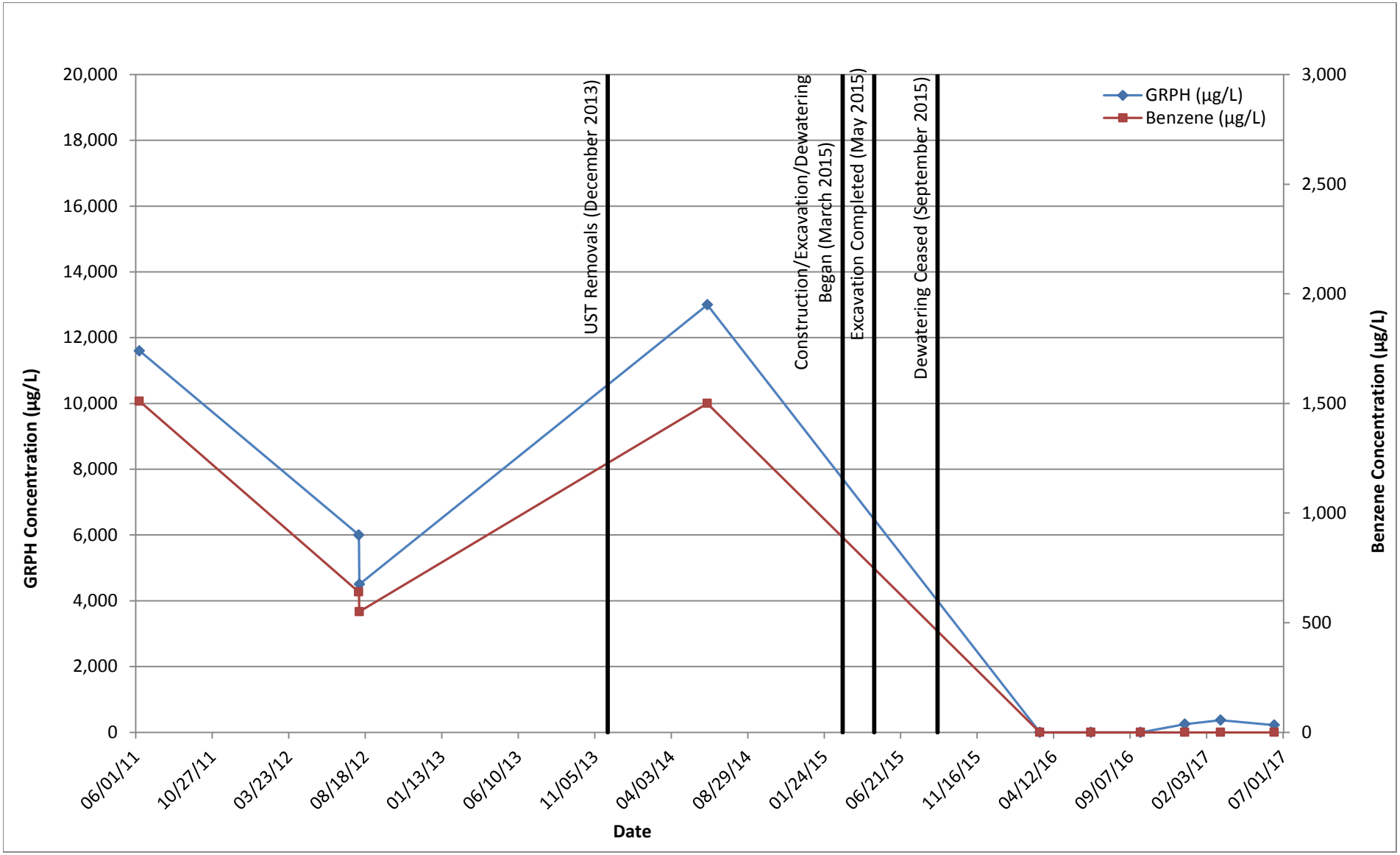


Chart 3
GRPH and Benzene Concentrations - MW110/MW-2
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

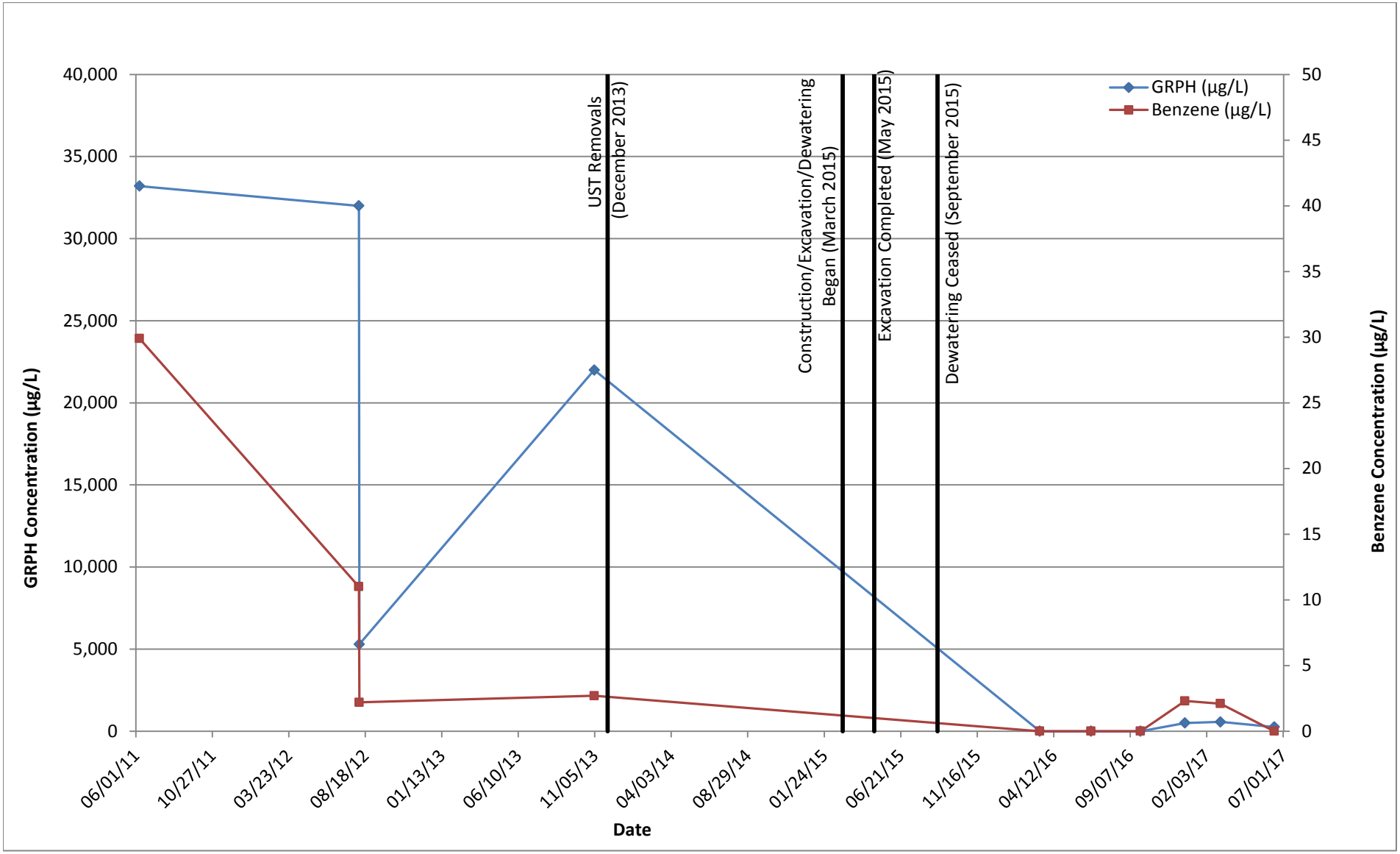
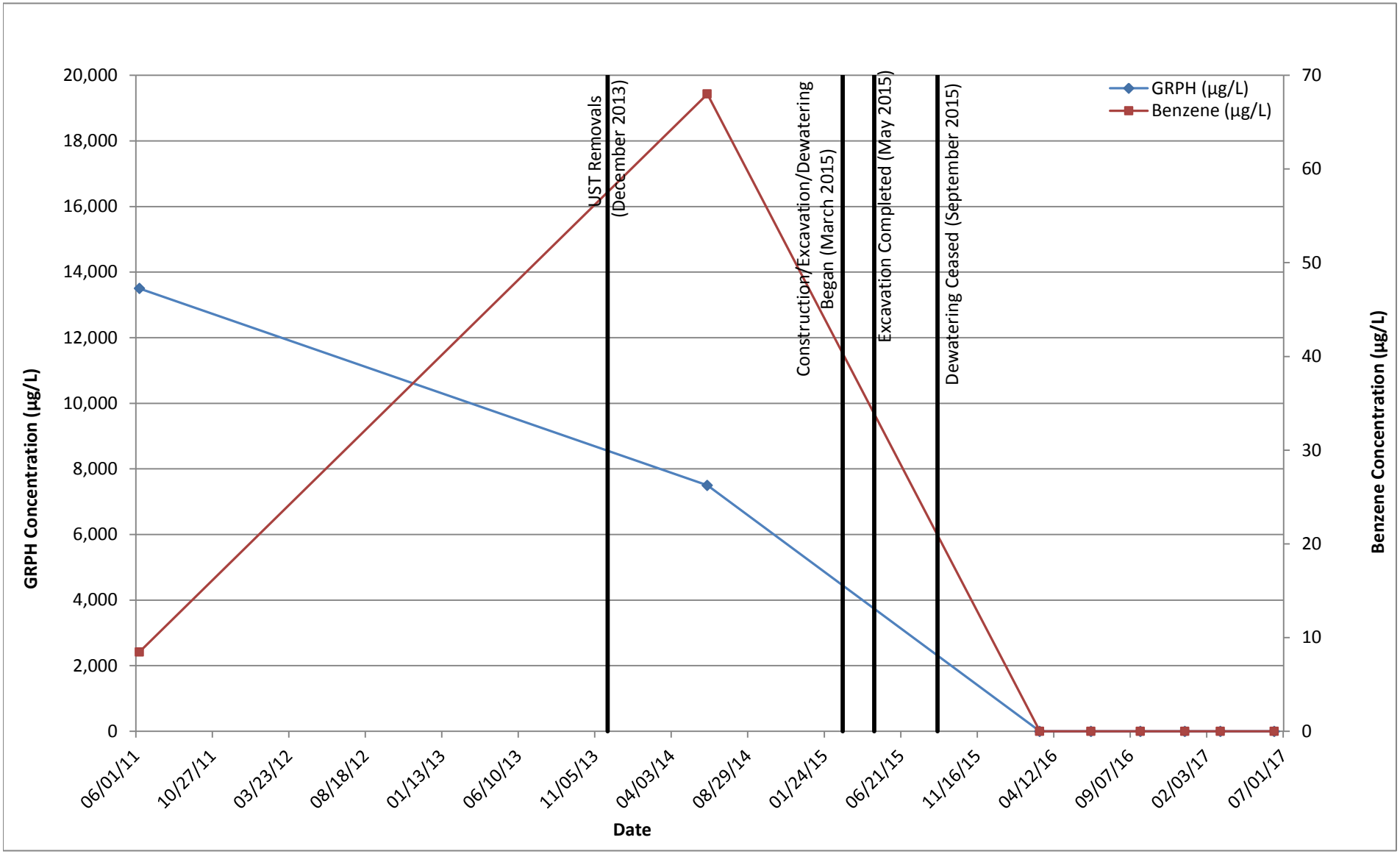


Chart 4
GRPH and Benzene Concentrations - MW-3/MW108
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington



ATTACHMENT A
LABORATORY ANALYTICAL REPORTS

Friedman & Bruya, Inc. #706255 and additional

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
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Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 22, 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 June 15, 2017 from the SOU_0914-001_ 20170615, F&BI 706255 project. There are 8 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, Liz Forbes
SOU0622R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 15, 2017 by Friedman & Bruya, Inc. from the SoundEarth Strategies SOU_0914-001_ 20170615, F&BI 706255 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	SoundEarth Strategies
706255 -01	MW103-20170613
706255 -02	MW105-20170613
706255 -03	MW102-20170613
706255 -04	MW108-20170614
706255 -05	MW104-20170614
706255 -06	RW05-20170614
706255 -07	MW101-20170614
706255 -08	MW109-20170614
706255 -09	MW110-20170614
706255 -10	RW04-20170614
706255 -11	RW03-20170614
706255 -12	RW02-20170614
706255 -13	MW104-20170615
706255 -14	MW99-20170615
706255 -15	Trip Blank

All quality control requirements were acceptable.

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255
Date Extracted: 06/19/17
Date Analyzed: 06/19/17 and 06/20/17

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)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW103-20170613 706255-01	<1	<1	<1	<3	<100	89
MW105-20170613 706255-02	<1	<1	<1	<3	<100	87
MW102-20170613 706255-03	<1	<1	<1	<3	<100	90
MW108-20170614 706255-04	<1	<1	<1	<3	<100	88
RW05-20170614 706255-06	<1	<1	4.4	<3	400	87
MW101-20170614 706255-07	<1	<1	<1	<3	<100	86
MW109-20170614 706255-08	<1	<1	<1	<3	220	86
MW110-20170614 706255-09	<1	<1	2.0	<3	260	87
RW04-20170614 706255-10	2.5	<1	16	<3	790	86
RW03-20170614 706255-11	7.0	<1	32	11	1,300	85

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255
Date Extracted: 06/19/17
Date Analyzed: 06/19/17 and 06/20/17

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)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
RW02-20170614 706255-12	<1	<1	<1	<3	<100	89
MW104-20170615 706255-13	<1	<1	4.0	3.1	700	85
MW99-20170615 706255-14	<1	<1	3.9	3.1	820	83
Trip Blank 706255-15	<1	<1	<1	<3	<100	84
Method Blank 07-1261 MB	<1	<1	<1	<3	<100	86

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255
Date Extracted: 06/16/17
Date Analyzed: 06/16/17

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW103-20170613 706255-01 1/1.2	<60	<300	91
MW105-20170613 706255-02	<50	<250	99
MW102-20170613 706255-03	<50	<250	94
MW108-20170614 706255-04	140 x	<250	93
RW05-20170614 706255-06	470	<250	91
MW101-20170614 706255-07	<50	<250	104
MW109-20170614 706255-08	330	<250	107
MW110-20170614 706255-09	520	<250	109
RW04-20170614 706255-10	400	<250	109
RW03-20170614 706255-11	1,500	<250	96
RW02-20170614 706255-12	<50	<250	104
MW104-20170615 706255-13	3,000	<250	97

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255
Date Extracted: 06/16/17
Date Analyzed: 06/16/17

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW99-20170615 706255-14	3,200	<250	105
Method Blank 07-1305 MB	<50	<250	80

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255

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: 706255-01 (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	105	65-118
Toluene	ug/L (ppb)	50	103	72-122
Ethylbenzene	ug/L (ppb)	50	105	73-126
Xylenes	ug/L (ppb)	150	104	74-118
Gasoline	ug/L (ppb)	1,000	89	69-134

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255

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	93	99	63-142	6

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.

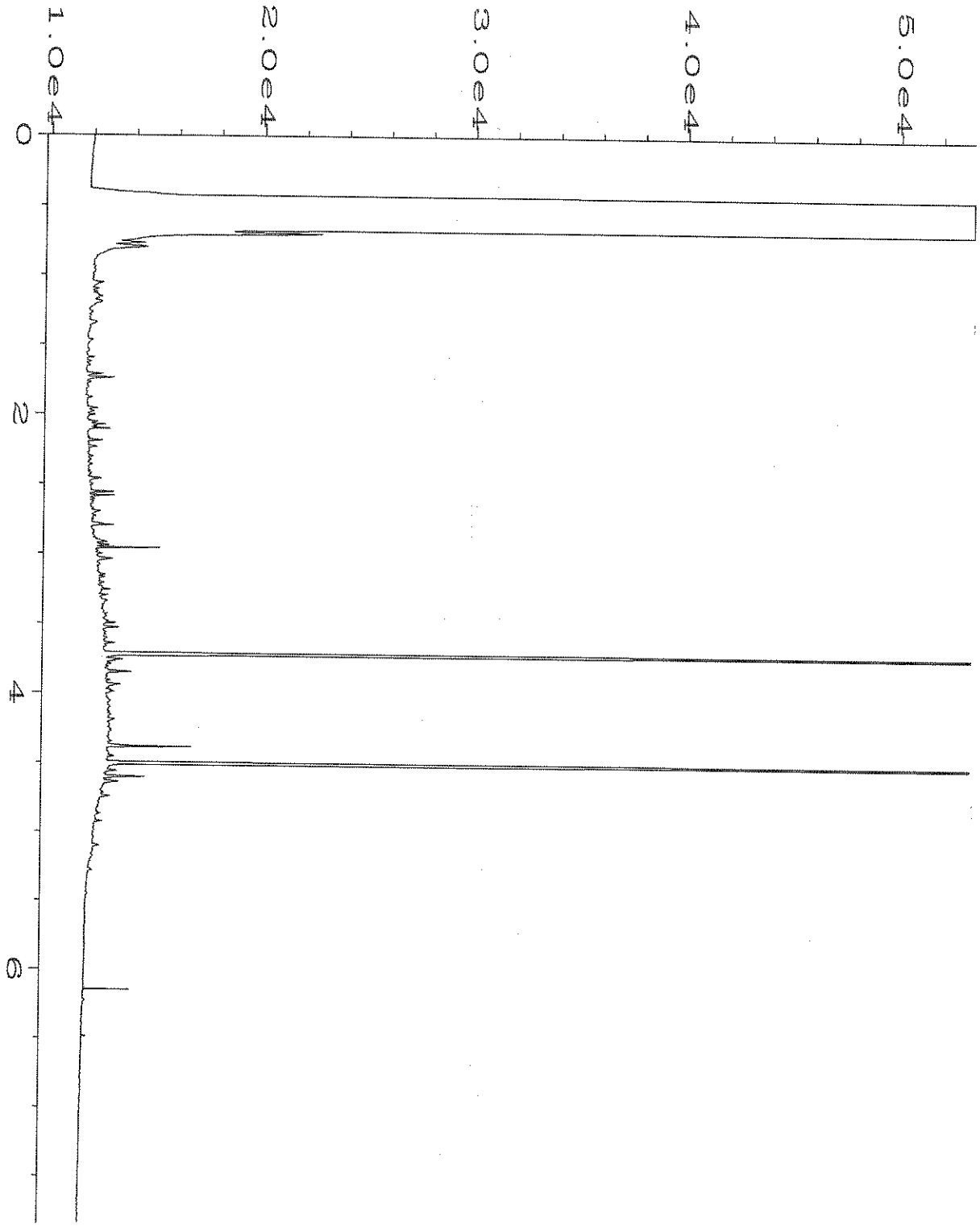
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

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.

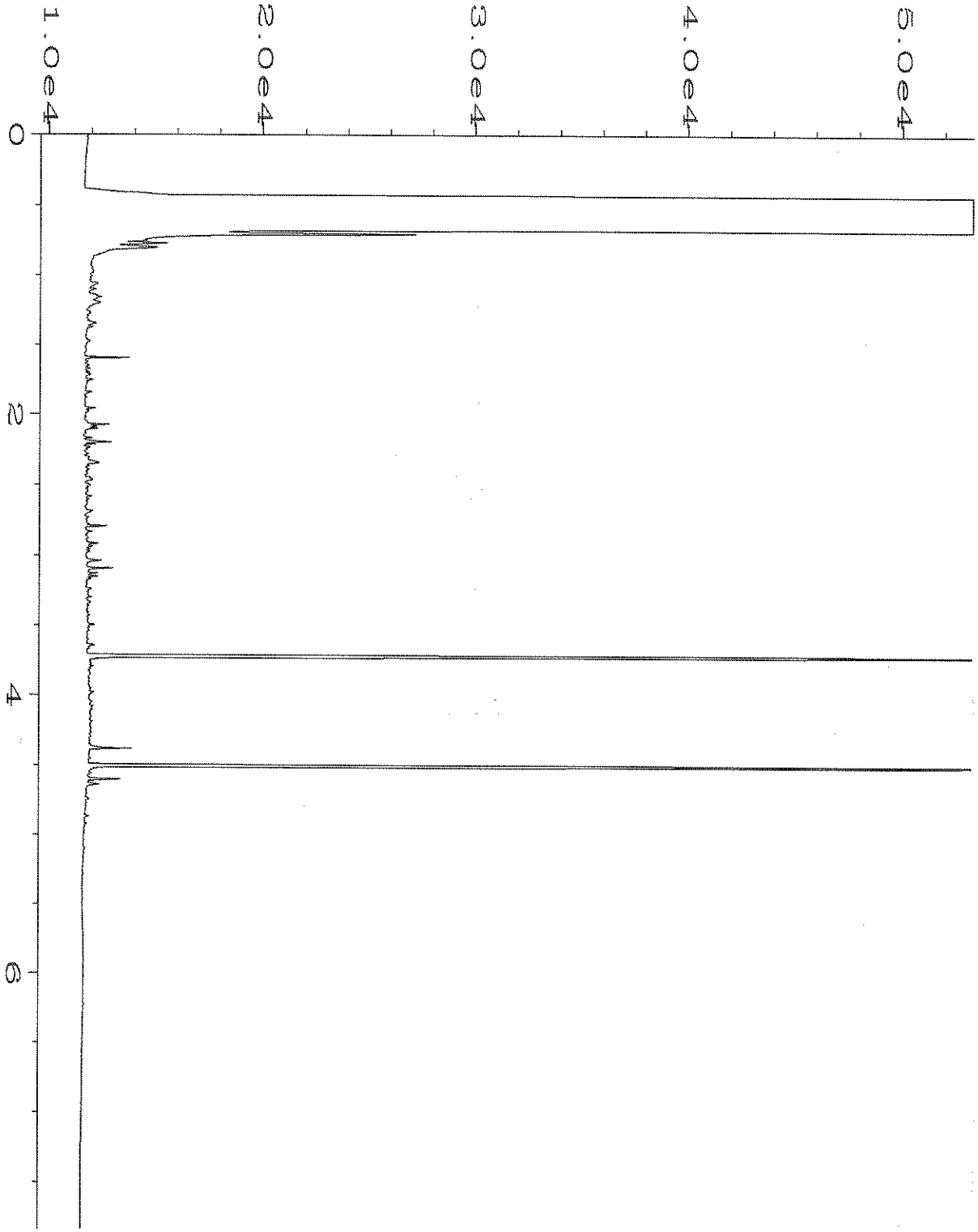
vo - The value reported fell outside the control limits established for this analyte.

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



Data File Name : C:\HPCHEM\1\DATA\06-16-17\031F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-01
Run Time Bar Code:
Acquired on : 16 Jun 17 03:12 PM
Report Created on: 20 Jun 17 08:27 AM

Page Number : 1
Vial Number : 31
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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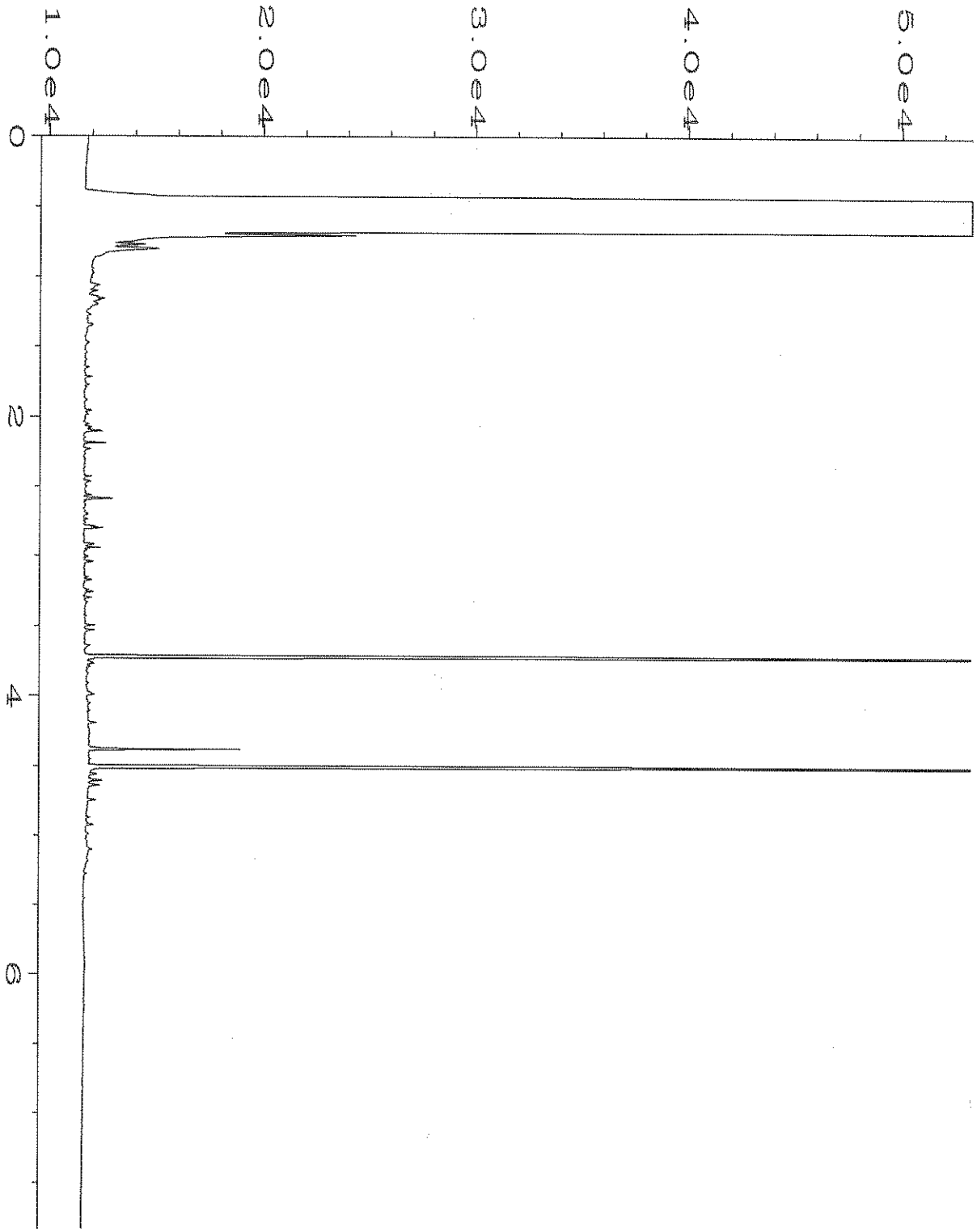
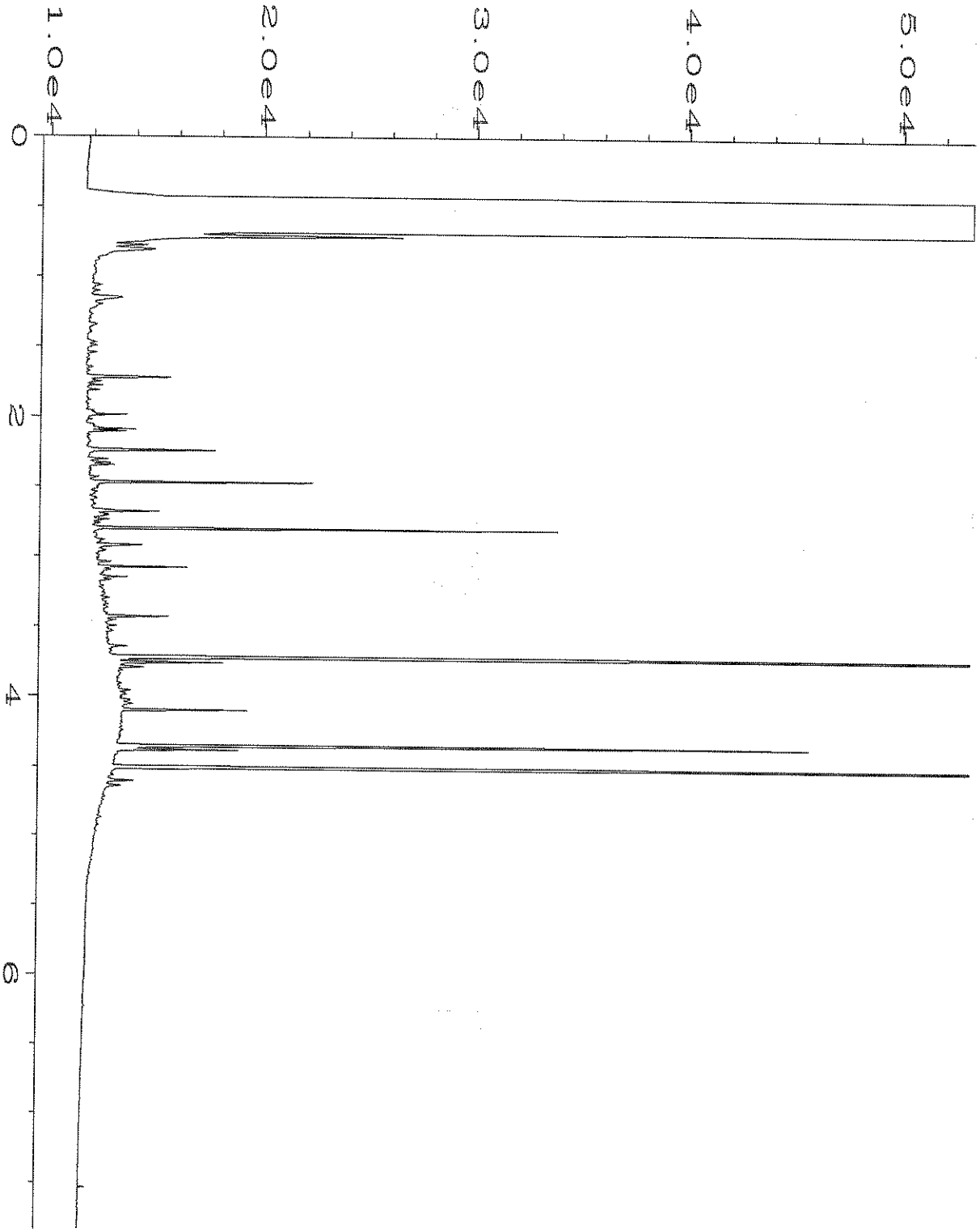
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 32
Sample Name	: 706255-02	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 03:23 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH

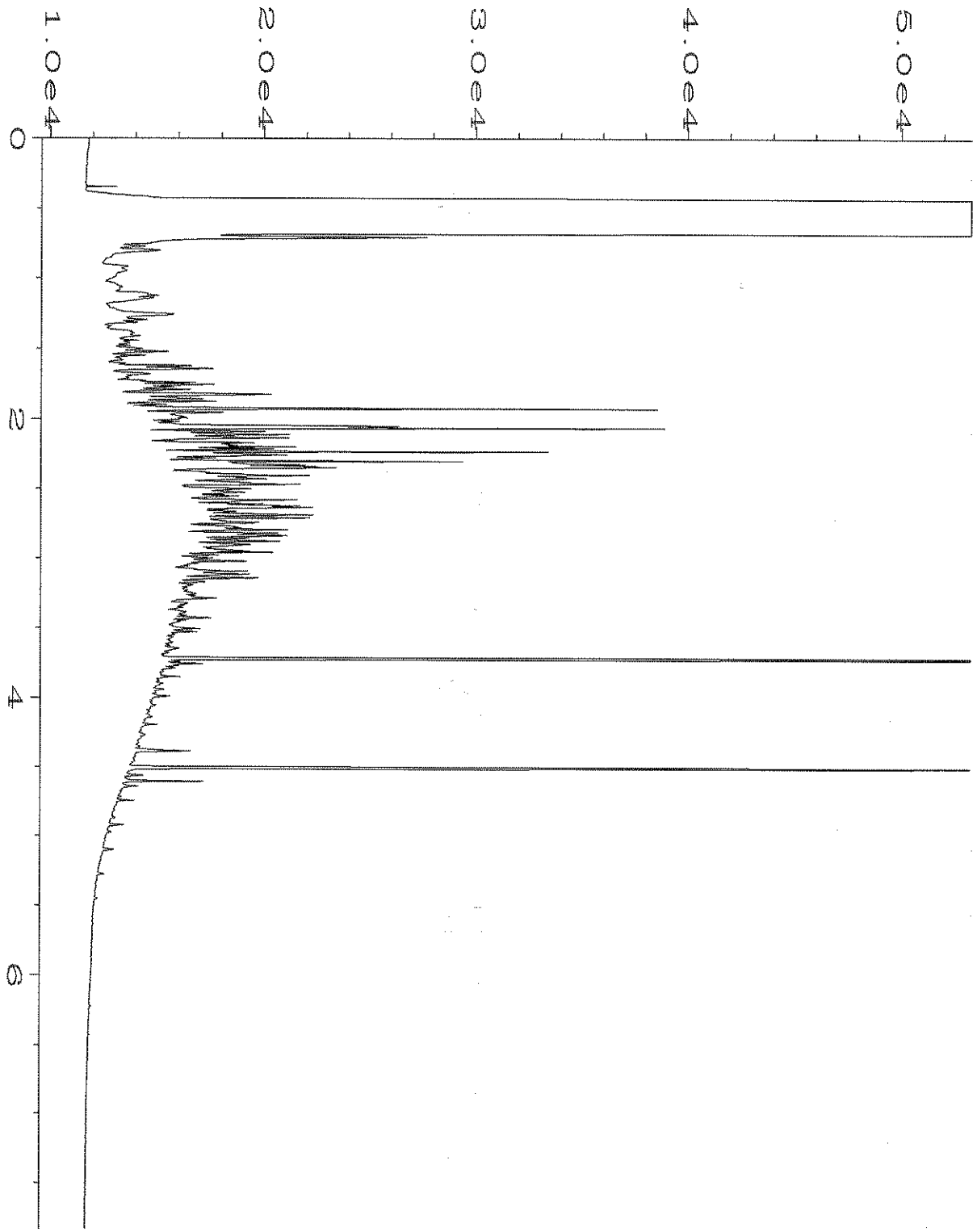


Data File Name	: C:\HPCHEM\1\DATA\06-16-17\033F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 33
Sample Name	: 706255-03	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 03:35 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH

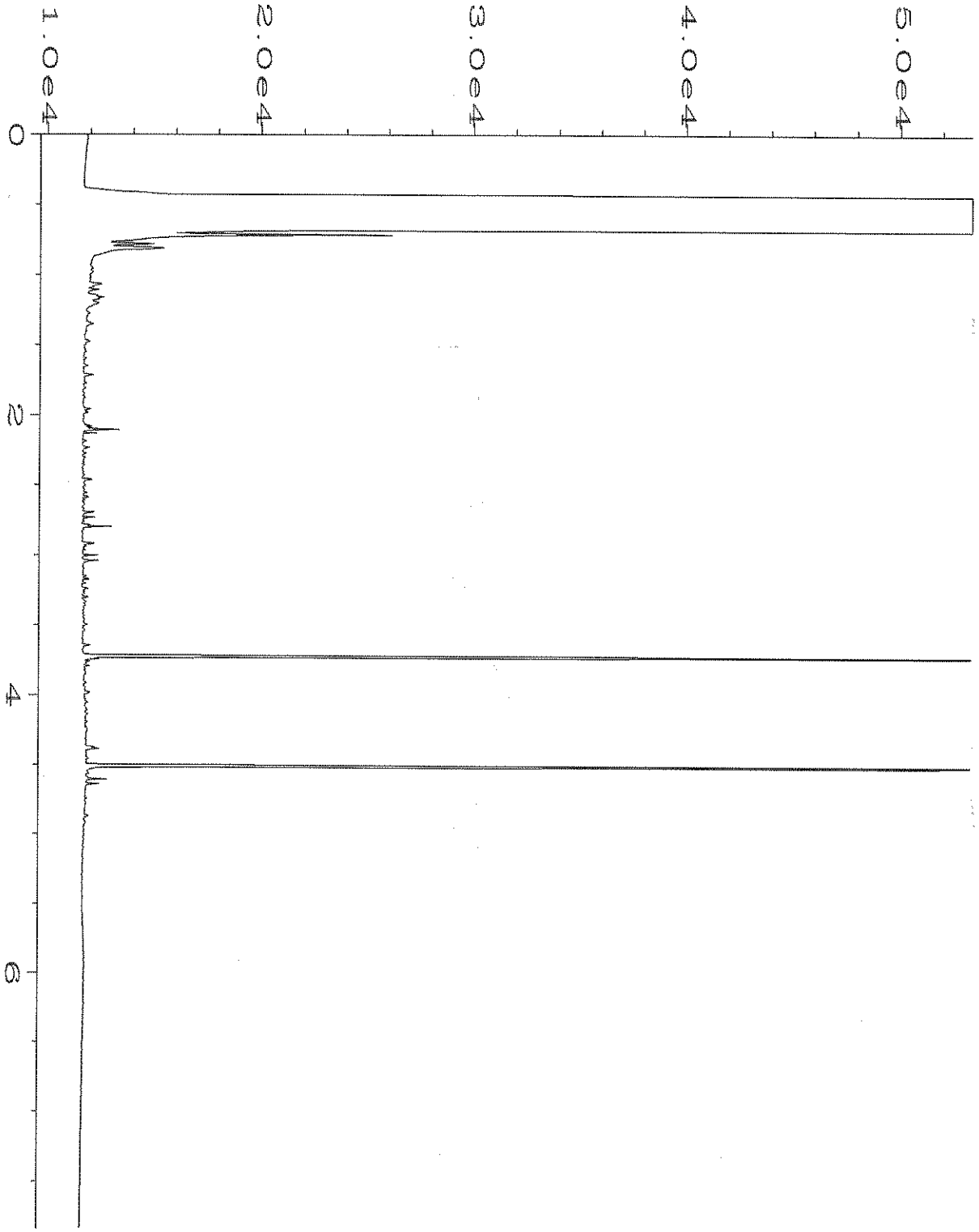


Data File Name : C:\HPCHEM\1\DATA\06-16-17\034F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-04
Run Time Bar Code:
Acquired on : 16 Jun 17 03:47 PM
Report Created on: 20 Jun 17 08:27 AM

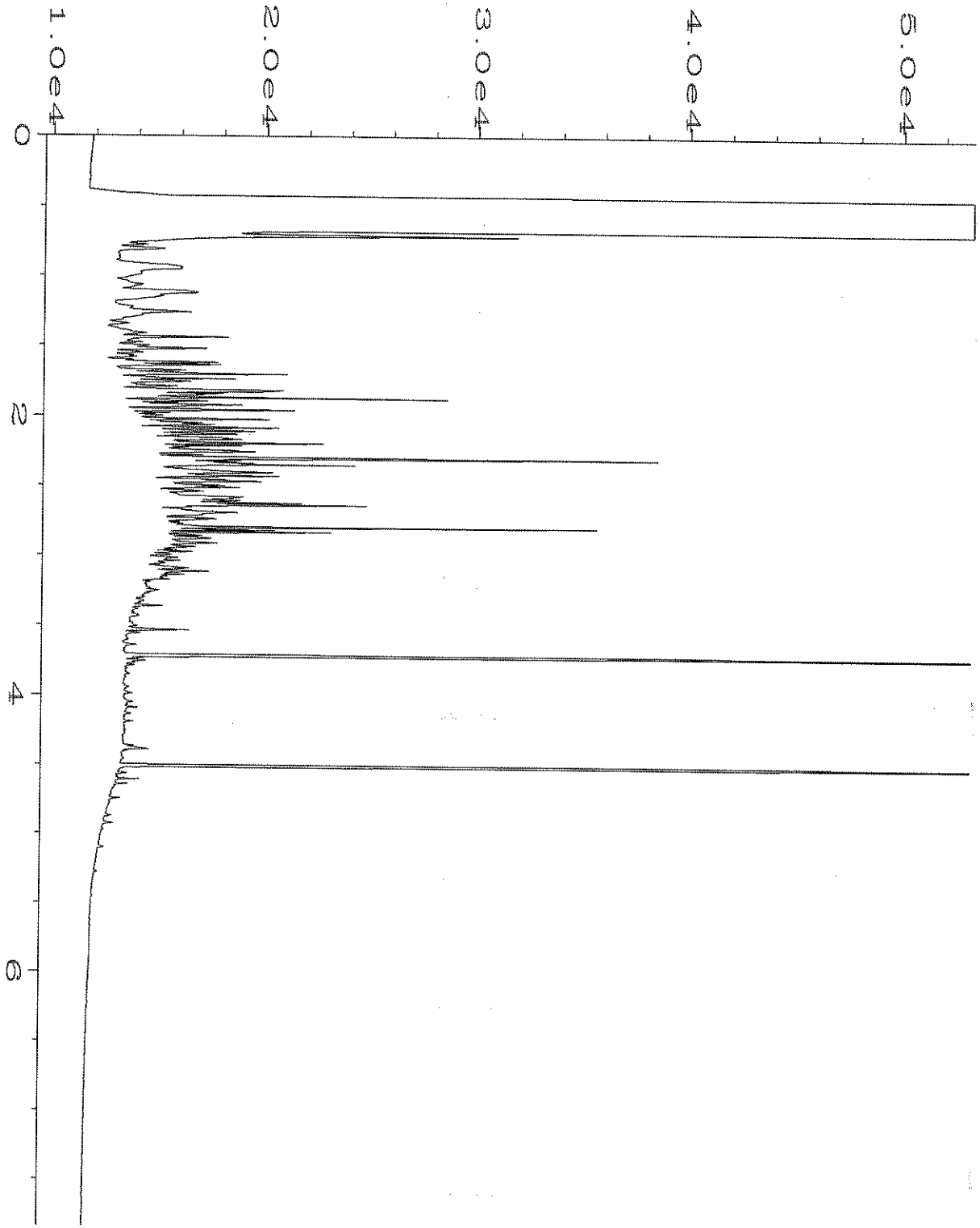
Page Number : 1
Vial Number : 34
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name	: C:\HPCHEM\1\DATA\06-16-17\035F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 35
Sample Name	: 706255-06	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 03:58 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH

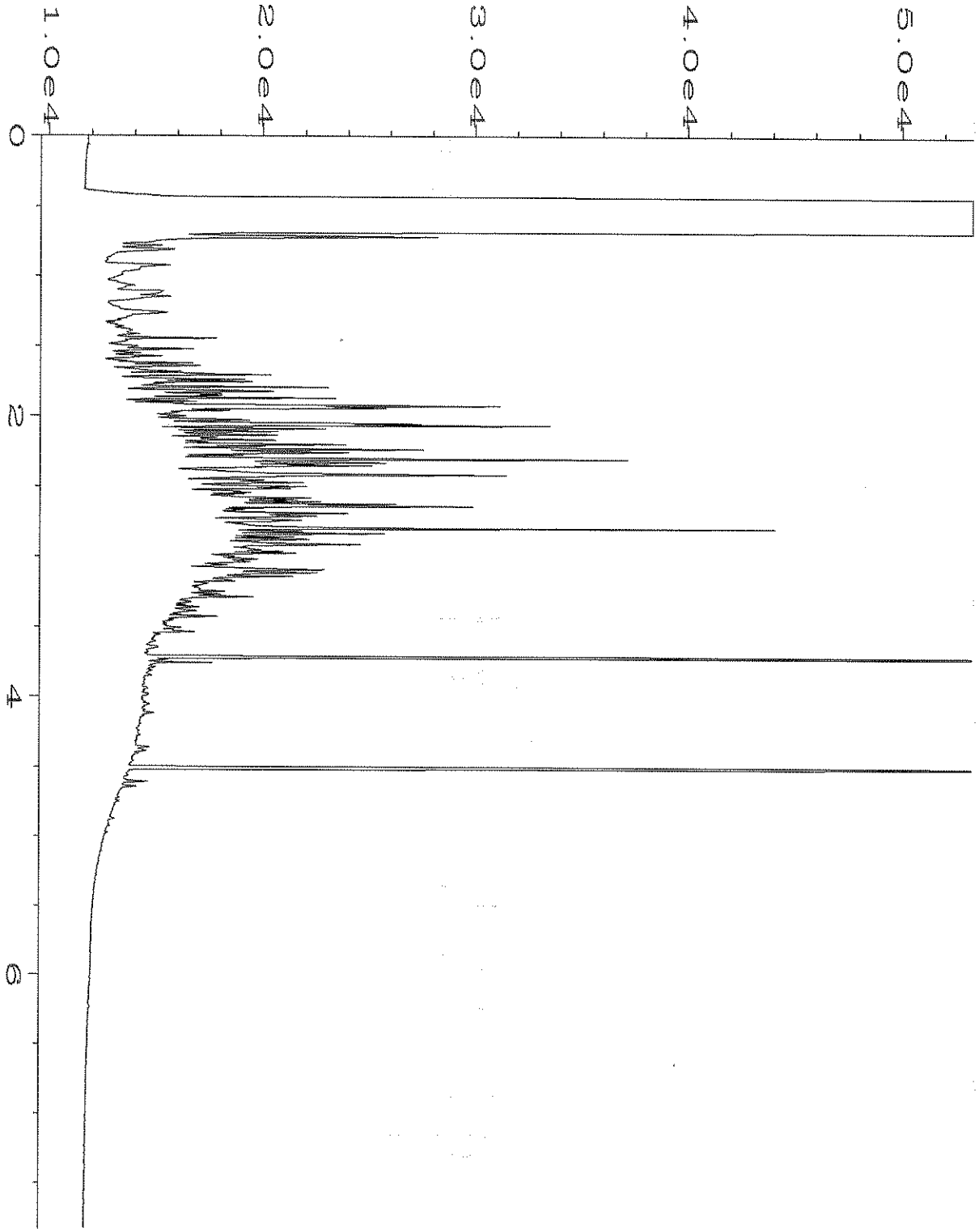


Data File Name	: C:\HPCHEM\1\DATA\06-16-17\036F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 36
Sample Name	: 706255-07	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 04:10 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH



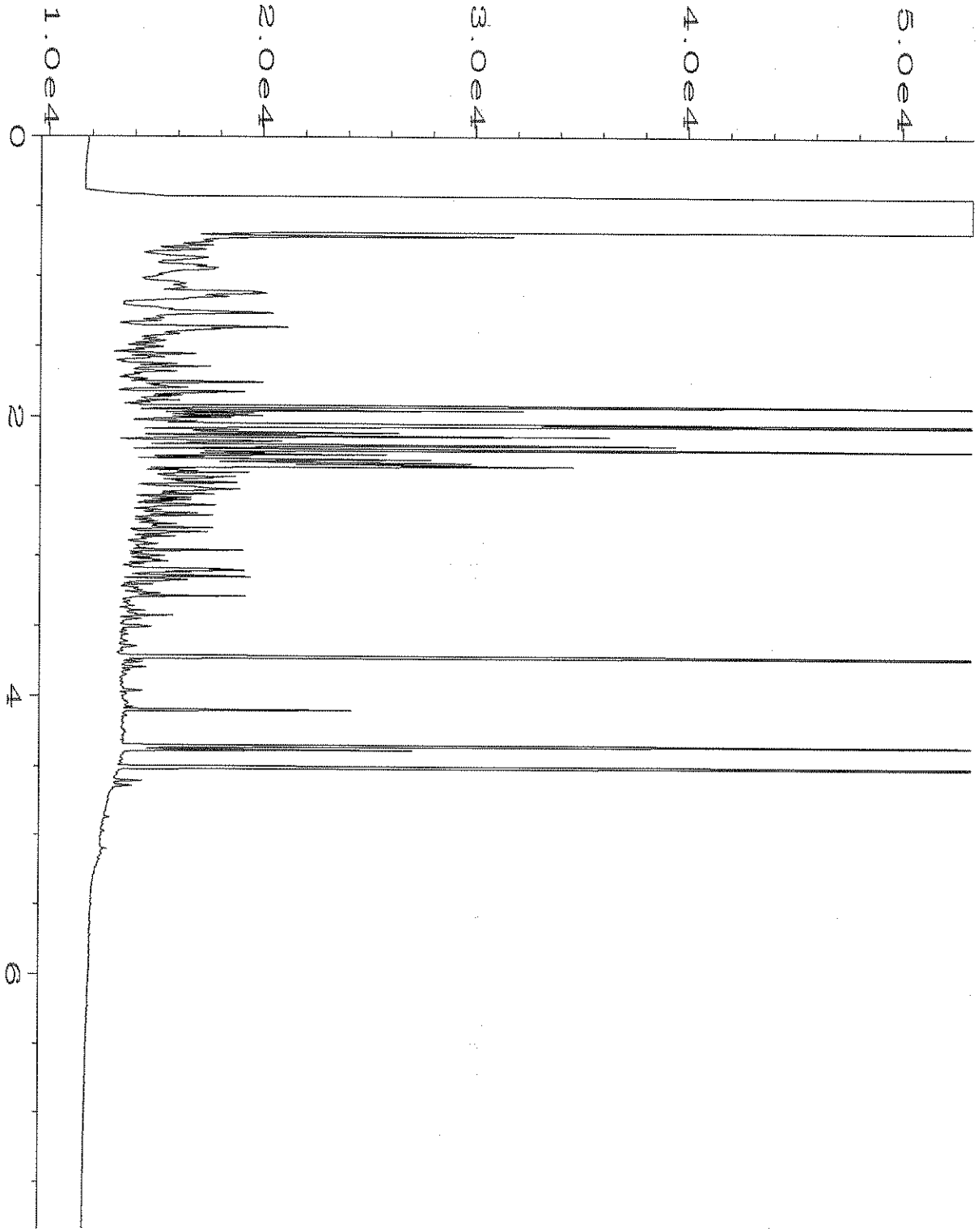
Data File Name : C:\HPCHEM\1\DATA\06-16-17\037F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-08
Run Time Bar Code:
Acquired on : 16 Jun 17 04:22 PM
Report Created on: 20 Jun 17 08:27 AM

Page Number : 1
Vial Number : 37
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH

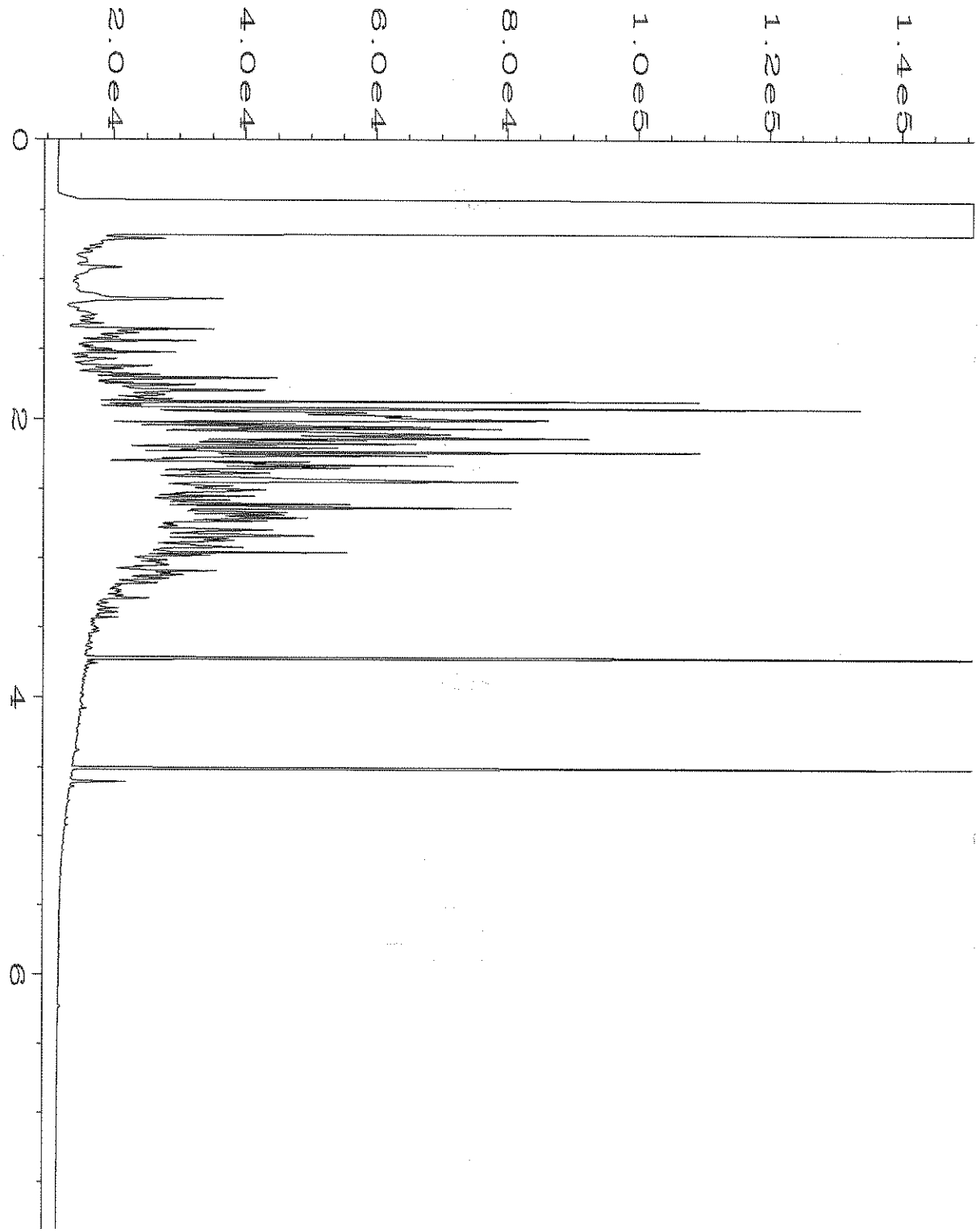


Data File Name : C:\HPCHEM\1\DATA\06-16-17\038F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-09
Run Time Bar Code:
Acquired on : 16 Jun 17 04:34 PM
Report Created on: 20 Jun 17 08:27 AM

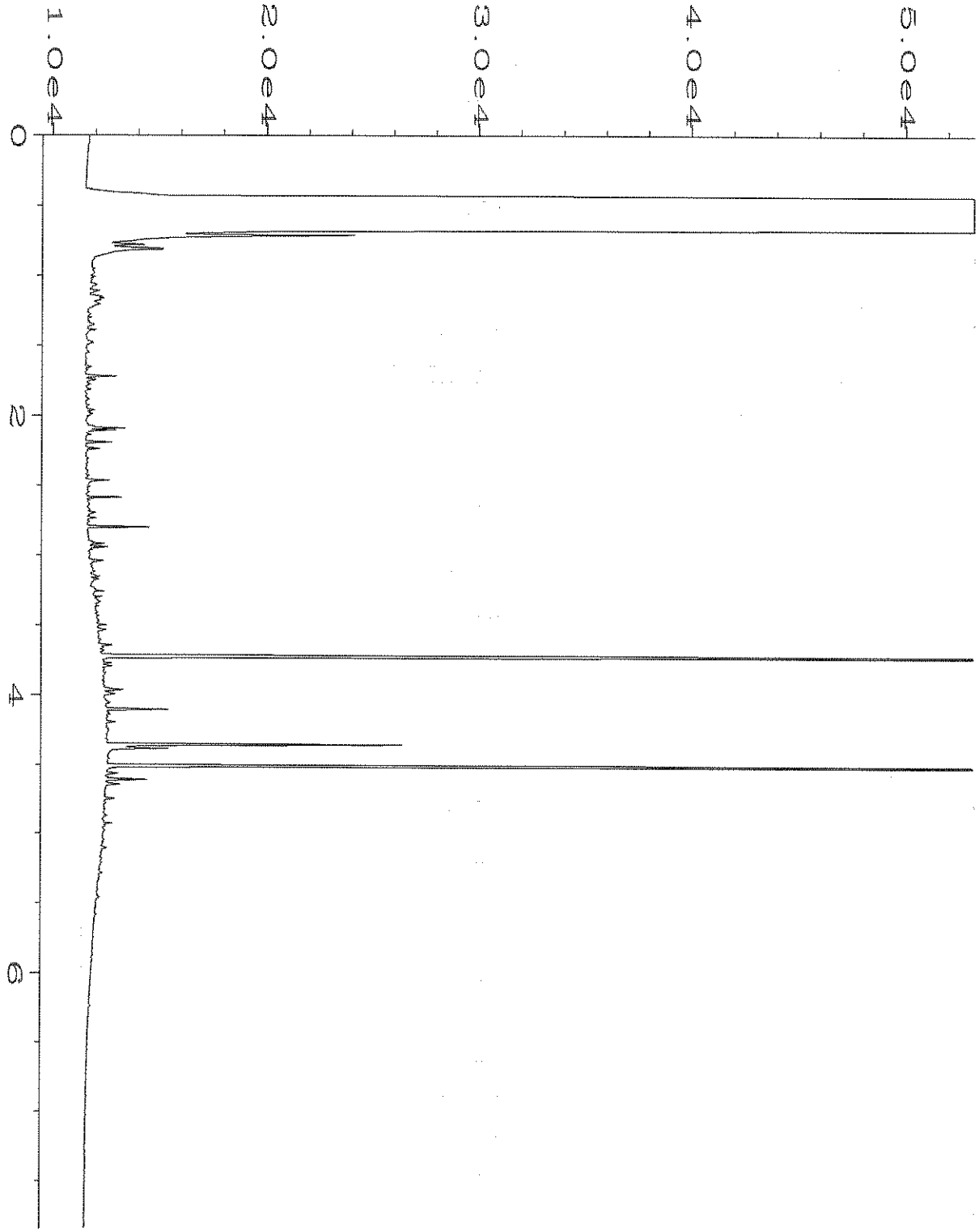
Page Number : 1
Vial Number : 38
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name	: C:\HPCHEM\1\DATA\06-16-17\039F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 39
Sample Name	: 706255-10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 04:45 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH

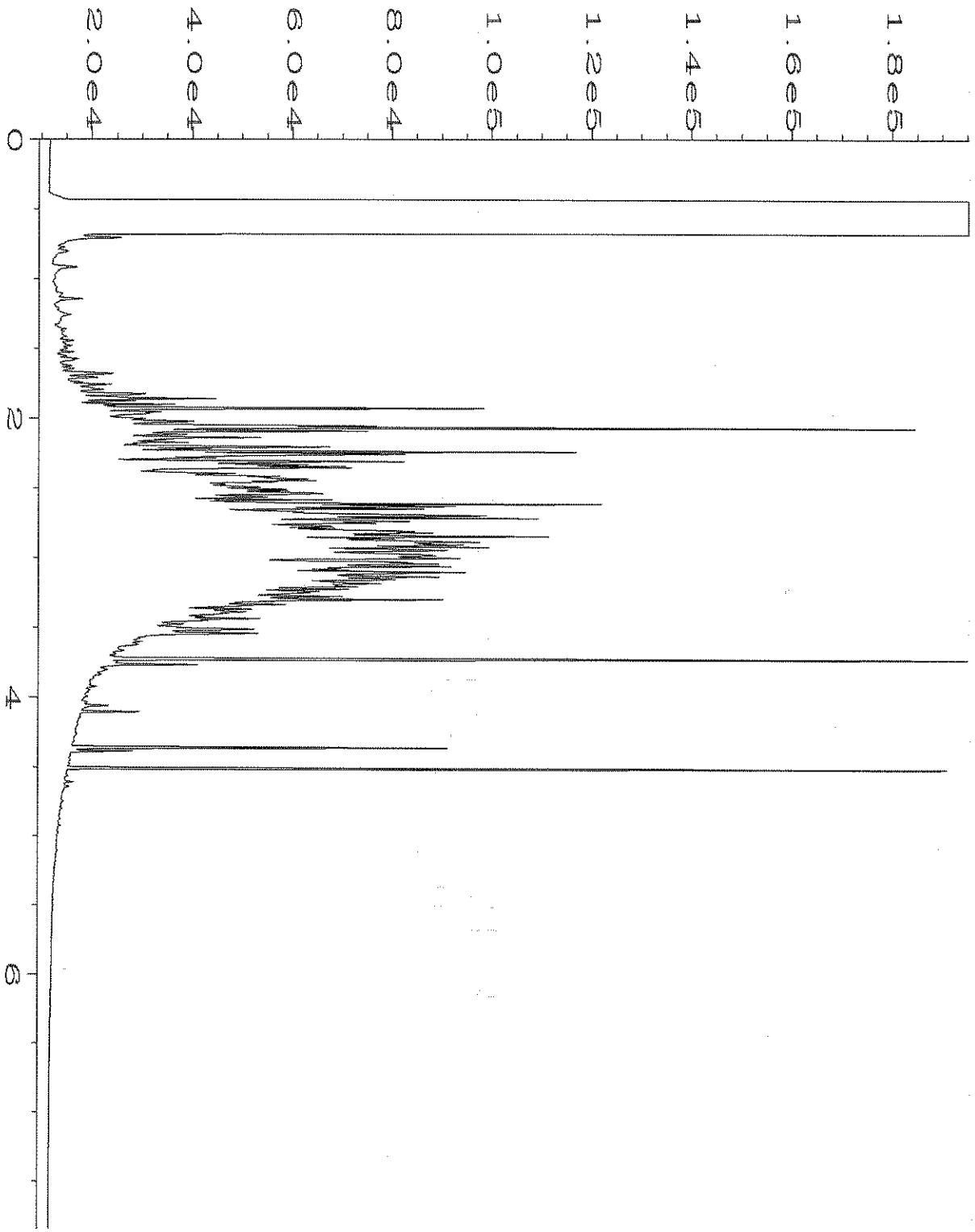


Data File Name	: C:\HPCHEM\1\DATA\06-16-17\040F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 40
Sample Name	: 706255-11	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 04:57 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:28 AM	Analysis Method	: DX.MTH



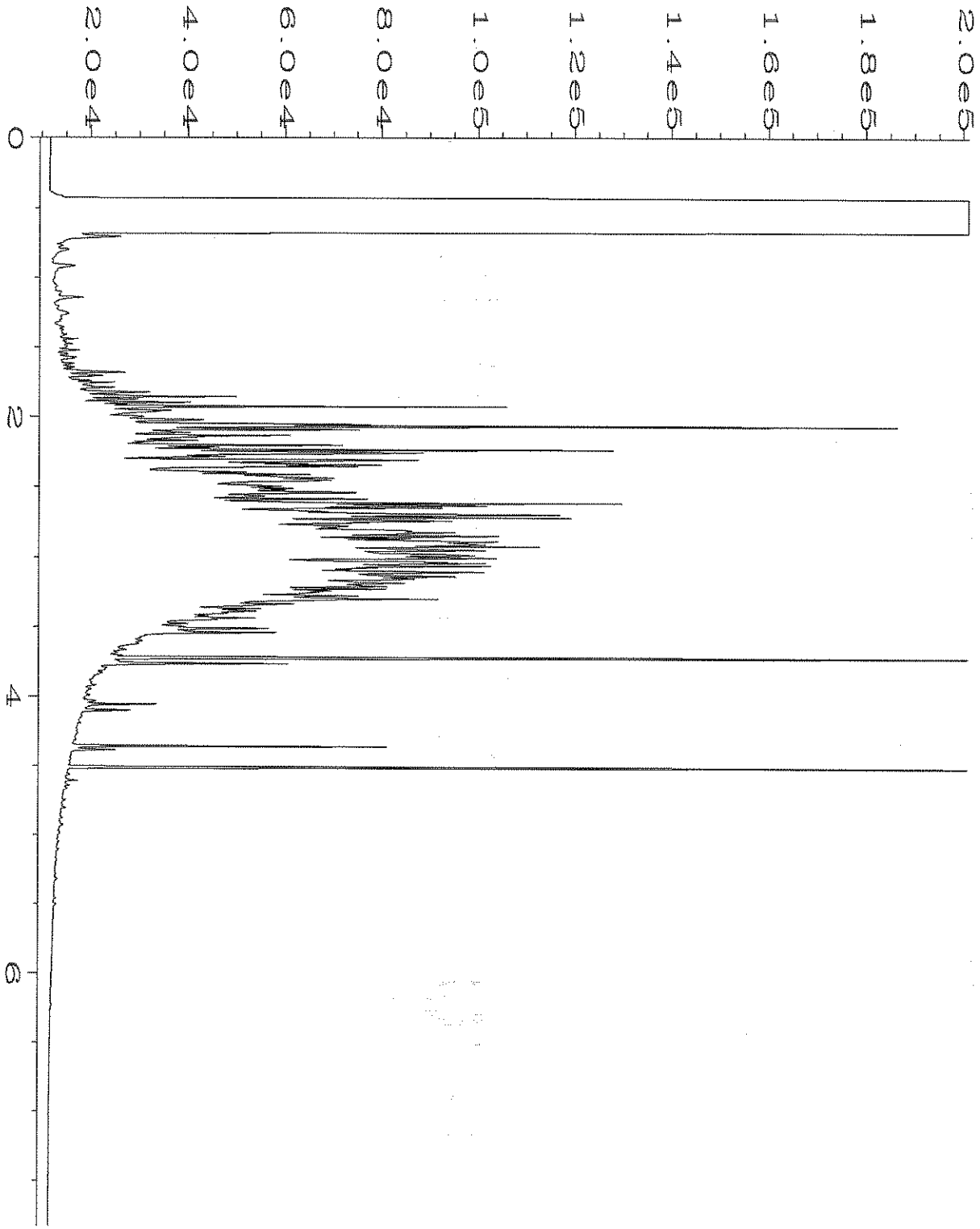
Data File Name : C:\HPCHEM\1\DATA\06-16-17\041F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-12
Run Time Bar Code:
Acquired on : 16 Jun 17 05:08 PM
Report Created on: 20 Jun 17 08:28 AM

Page Number : 1
Vial Number : 41
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



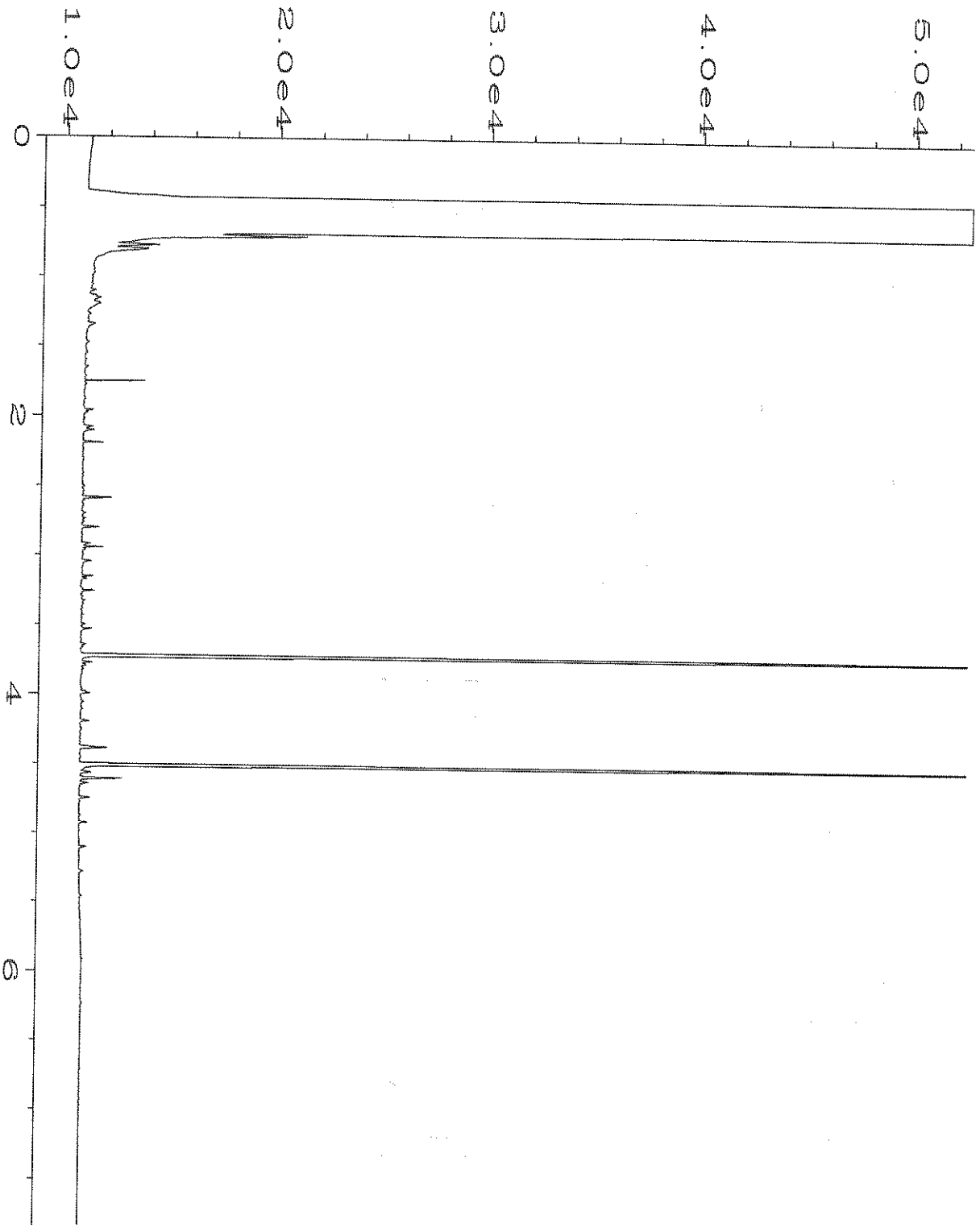
Data File Name : C:\HPCHEM\1\DATA\06-16-17\042F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-13
Run Time Bar Code:
Acquired on : 16 Jun 17 05:20 PM
Report Created on: 20 Jun 17 08:28 AM

Page Number : 1
Vial Number : 42
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



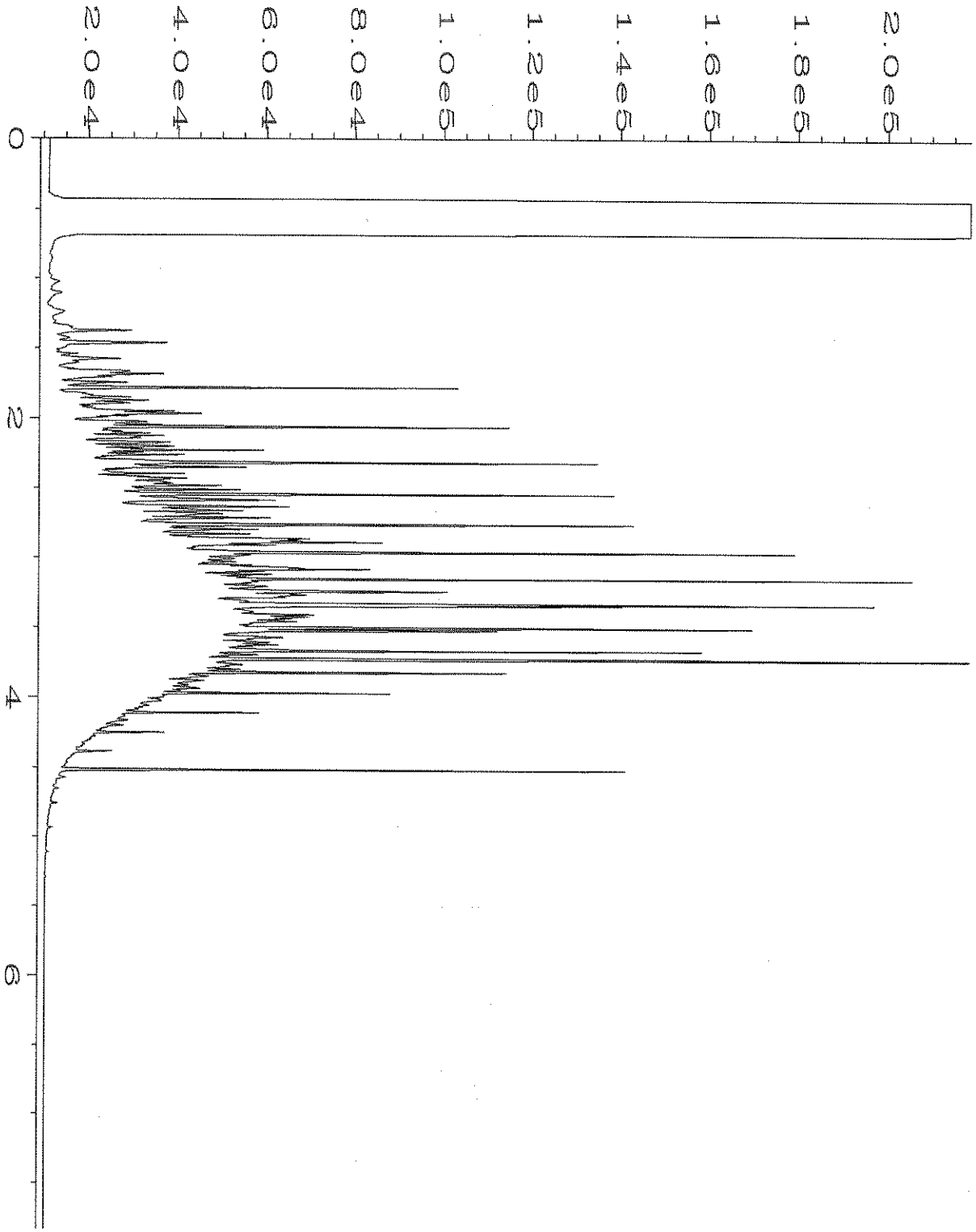
Data File Name : C:\HPCHEM\1\DATA\06-16-17\043F1001.D

Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 43
Sample Name	: 706255-14	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 05:32 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:28 AM	Analysis Method	: DX.MTH



Data File Name : C:\HPCHEM\1\DATA\06-16-17\025F0801.D
Operator : mwdl
Instrument : GC1
Sample Name : 07-1305 mb
Run Time Bar Code:
Acquired on : 16 Jun 17 01:38 PM
Report Created on: 20 Jun 17 08:26 AM

Page Number : 1
Vial Number : 25
Injection Number : 1
Sequence Line : 8
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name : C:\HPCHEM\1\DATA\06-16-17\003F0301.D
Operator : mwdl
Instrument : GC1
Sample Name : 500 Dx 49-188E
Run Time Bar Code:
Acquired on : 16 Jun 17 08:17 AM
Report Created on: 20 Jun 17 08:26 AM

Page Number : 1
Vial Number : 3
Injection Number : 1
Sequence Line : 3
Instrument Method: DX.MTH
Analysis Method : DX.MTH

706255

SAMPLE CHAIN OF CUSTODY

ME 06-15-17

Page # 1 of 3 VWH/BOS

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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)

PROJECT NAME/NO.: SKS SHELL / 0914-001

PO #

REMARKS

TURNAROUND TIME
X 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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C		HOLD	Notes
MW103-20170613	MW103	—	01A-D	6/13/17	1043	WATER	4	X	X	X				
MW105-20170613	MW105	—	02	6/13/17	1214	WATER	4	X	X	X				
MW102-20170613	MW102	—	03	6/13/17	1322	WATER	4	X	X	X				
MW108-20170614	MW108	—	04	6/14/17	1130	WATER	4	X	X	X				
MW104-20170614	MW104	—	05	6/14/17	1256	WATER	4						X	
RW05-20170614	RW05	—	06	6/14/17	1403	WATER	4	X	X	X				
MW101-20170614	MW101	—	07	6/14/17	1500	WATER	4	X	X	X				
														Samples received at 2 °C

Jeff 6/14/17

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	JONATHAN LOEFFLER	SOUNDEARTH	6/15/17	1640
Received by:	Jon Shimazu	FB&T	1	1
Relinquished by:				
Received by:				

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

706225 253 n6/15

SAMPLE CHAIN OF CUSTODY

ME 06-15-17

VW4/B05

Page # 1 of 3

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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)

PROJECT NAME/NO.: SKS SHELL / 0914-001

PO #

REMARKS

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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C			Notes
MW109-20170614	MW109	—	08A-D	6/14/17	0941	H_2O	4	X	X	X				
MW110-20170614	MW110	—	09		1016			X	X	X				
RW04-20170614	RW04	—	10		1311			X	X	X				
RW03-20170614	RW03	—	11		1413			X	X	X				
RW02-20170614	RW02	—	12		1512			X	X	X				
					CJT 6/14/17						Samples received at 2 °C			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Clare Tourje	SoundEarth	6/15/17	1640
Received by:	Jon Shimazu	FB&T	"	"
Relinquished by:				
Received by:				

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

706225 253 6/15

SAMPLE CHAIN OF CUSTODY

ME 06-15-17

VWH/BOS

Page # 3 of 3

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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)* Clare Fochtman

PROJECT NAME/NO. SKS SHELL / 0914-001

PO #

REMARKS

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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C			Notes
MW104-20170615	MW104	—	134-D	6/15/17	1103	H_2O	4	X	X	X				
MW99-20170615	MW99	—	141	6/15/17	1043	H_2O	4	X	X	X				
Trip Blank	—	—	15A-B	6/15/17	—	H_2O	2		X	X				
					CF 6/15/17									Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Clare Fochtman	Clare Fochtman	SoundEarth	6/15/17	1640
Received by:	Jon Schmaltz	FB&T	↓	↓
Relinquished by:				
Received by:				

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

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

June 27, 2017

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

Dear Mr Roberts:

Included are the additional results from the testing of material submitted on June 15, 2017 from the SOU_ 0914-001_ 20170615, F&BI 706255 project. There are 4 pages included in this report.

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
SOU0627R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 15, 2017 by Friedman & Bruya, Inc. from the SoundEarth Strategies SOU_0914-001_ 20170615, F&BI 706255 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	SoundEarth Strategies
706255 -01	MW103-20170613
706255 -02	MW105-20170613
706255 -03	MW102-20170613
706255 -04	MW108-20170614
706255 -05	MW104-20170614
706255 -06	RW05-20170614
706255 -07	MW101-20170614
706255 -08	MW109-20170614
706255 -09	MW110-20170614
706255 -10	RW04-20170614
706255 -11	RW03-20170614
706255 -12	RW02-20170614
706255 -13	MW104-20170615
706255 -14	MW99-20170615
706255 -15	Trip Blank

All quality control requirements were acceptable.

Date of Report: 06/27/17
Date Received: 06/15/17
Project: SOU_ 0914-001_ 20170615, F&BI 706255
Date Extracted: 06/16/17
Date Analyzed: 06/23/17

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx
Sample Extracts Passed Through a Silica Gel Column Prior to Analysis
Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
RW03-20170614 706255-11	320 x	<250	105
MW104-20170615 706255-13	370 x	<250	96
MW99-20170615 706255-14	360 x	<250	94
Method Blank 07-1305 MB	<50	<250	80

Date of Report: 06/27/17
Date Received: 06/15/17
Project: SOU_ 0914-001_ 20170615, F&BI 706255

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 Silica Gel

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	93	91	61-133	2

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.

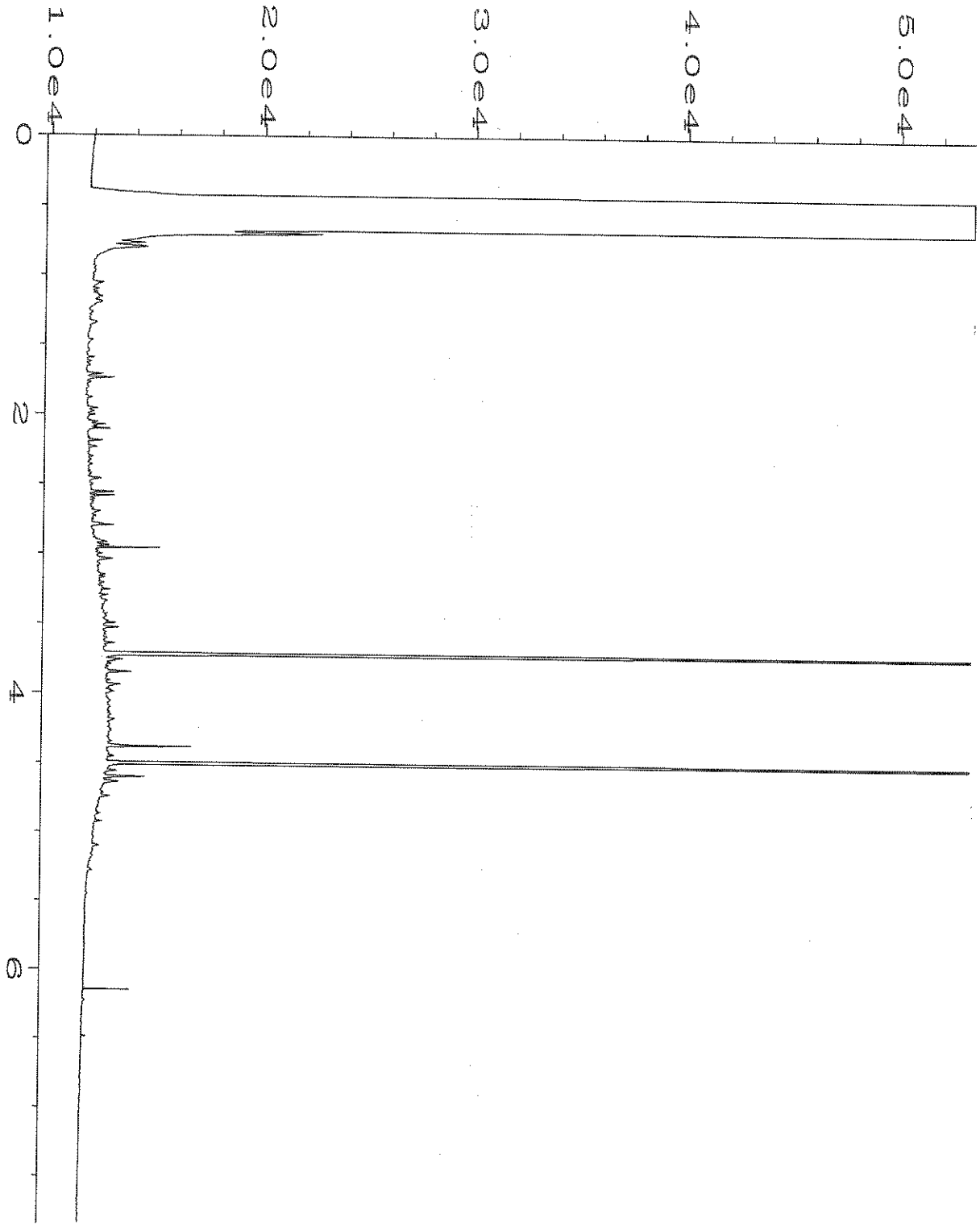
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

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.

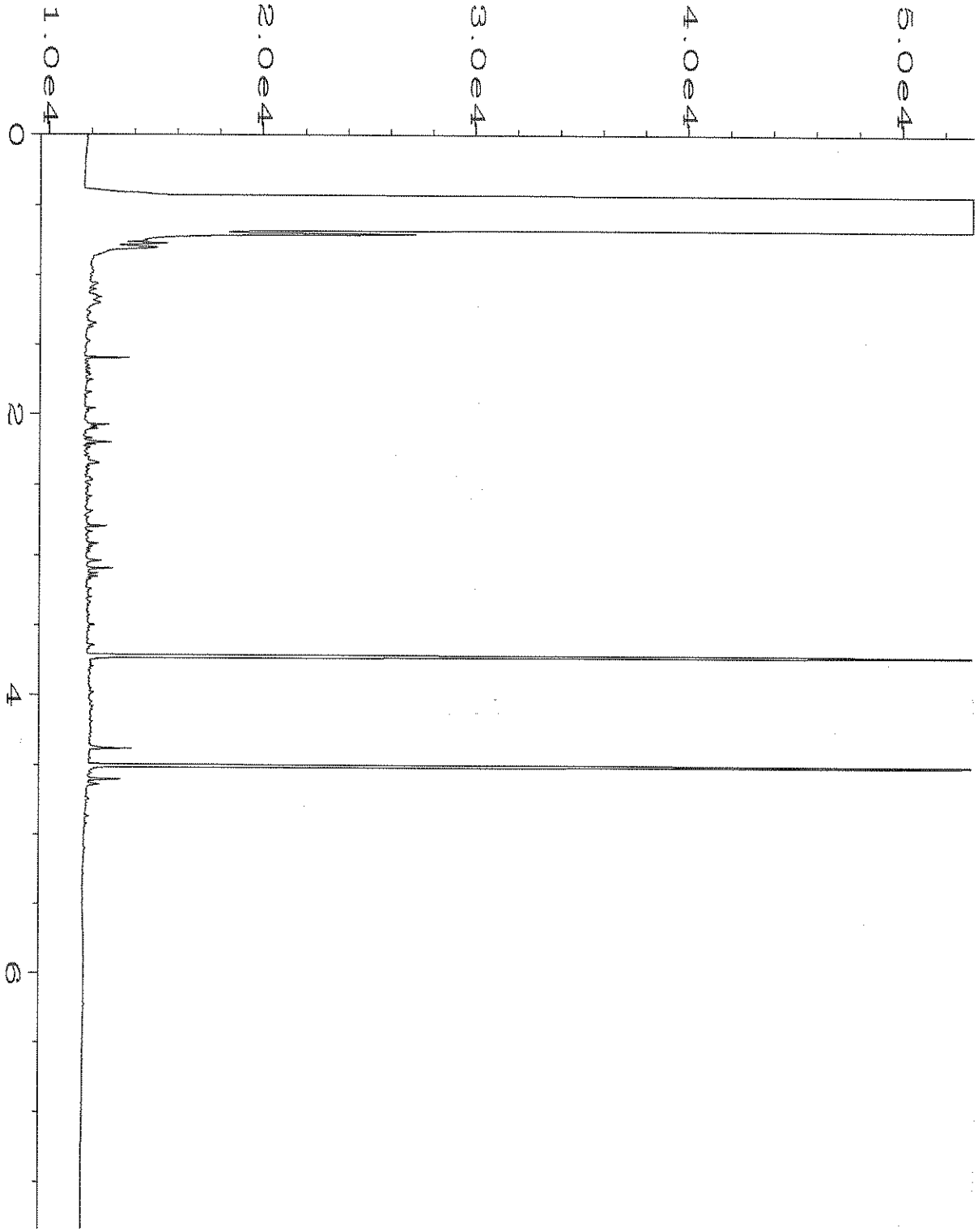
vo - The value reported fell outside the control limits established for this analyte.

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

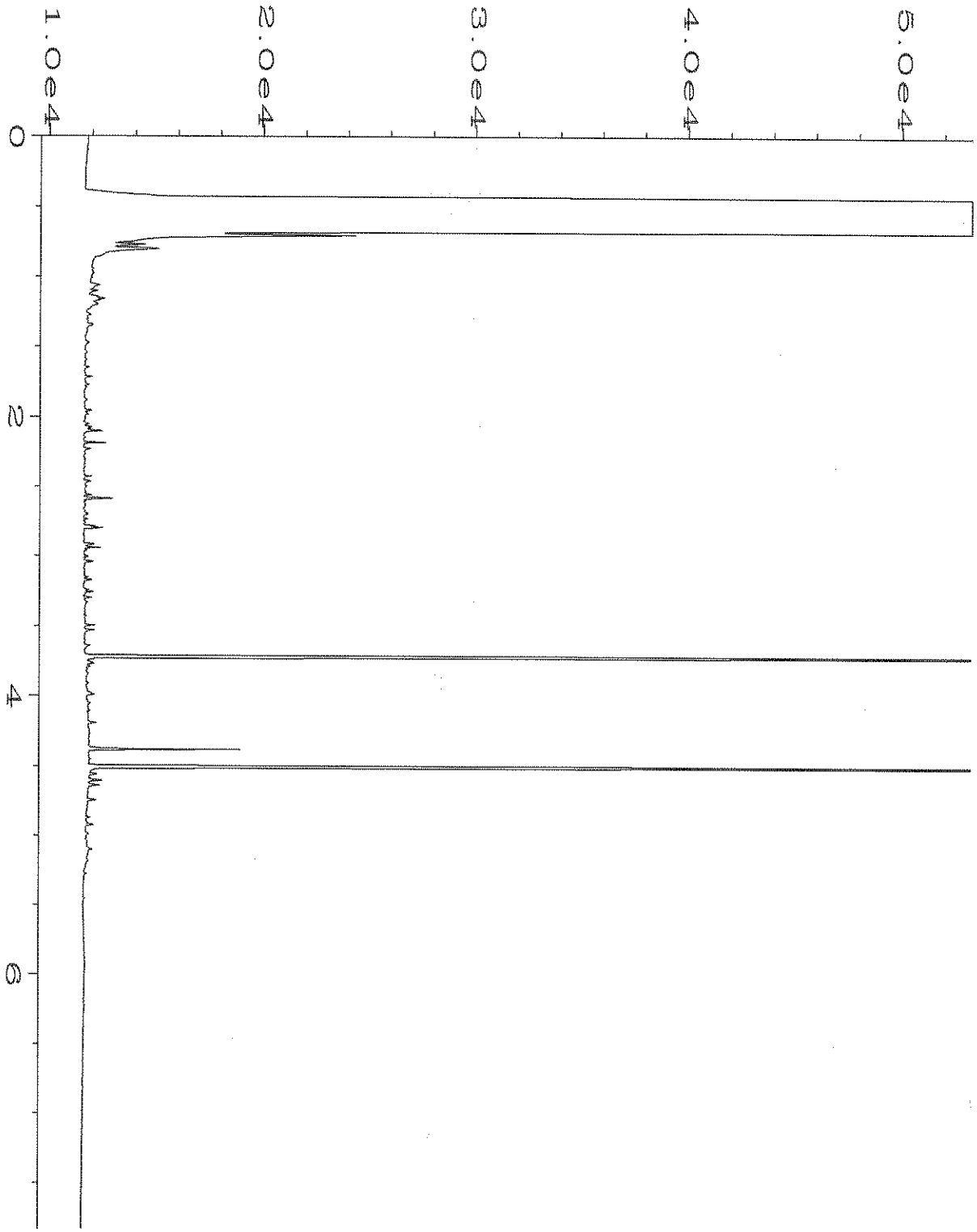


Data File Name : C:\HPCHEM\1\DATA\06-16-17\031F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-01
Run Time Bar Code:
Acquired on : 16 Jun 17 03:12 PM
Report Created on: 20 Jun 17 08:27 AM

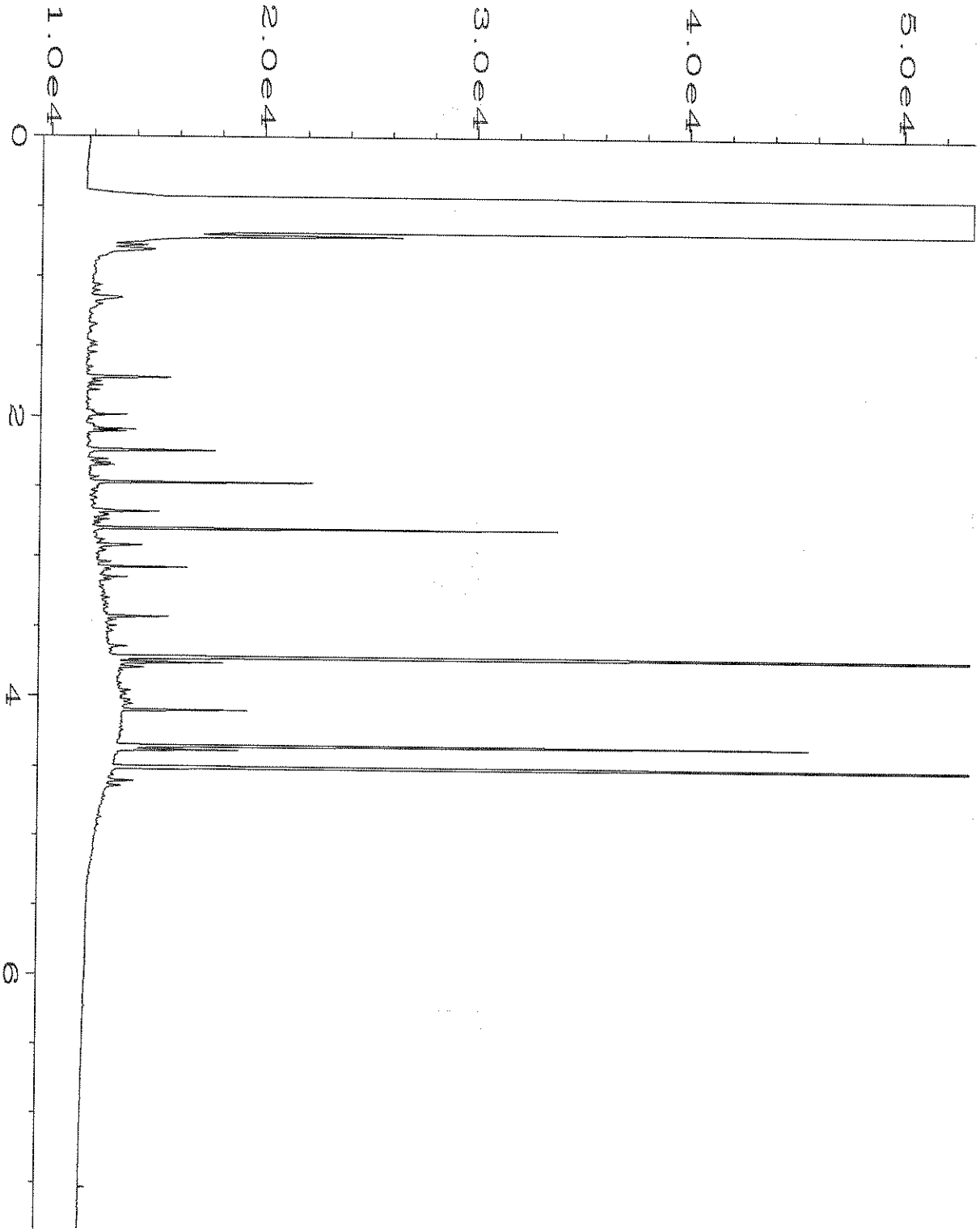
Page Number : 1
Vial Number : 31
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name	: C:\HPCHEM\1\DATA\06-16-17\032F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 32
Sample Name	: 706255-02	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 03:23 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH

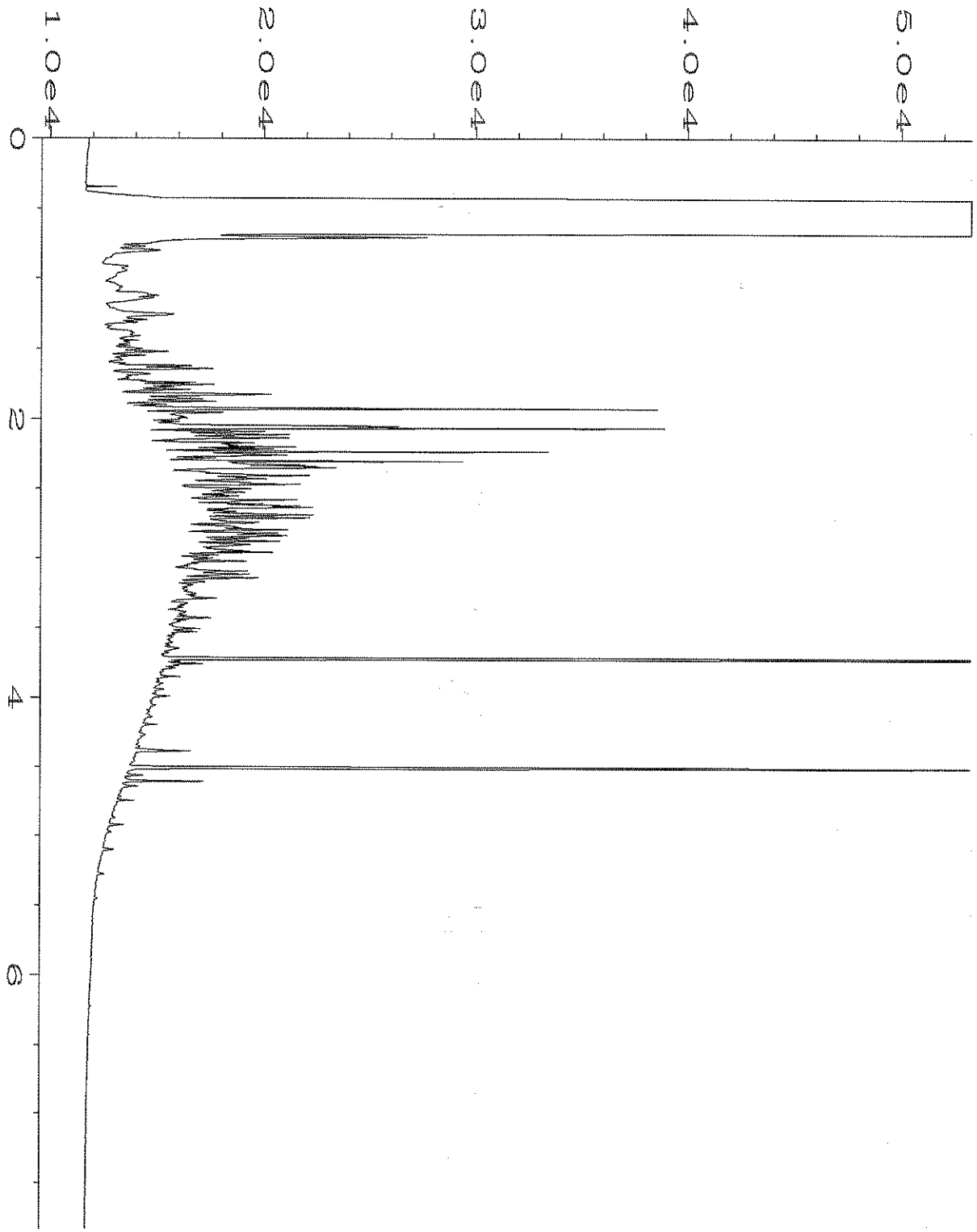


Data File Name	: C:\HPCHEM\1\DATA\06-16-17\033F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 33
Sample Name	: 706255-03	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 03:35 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH

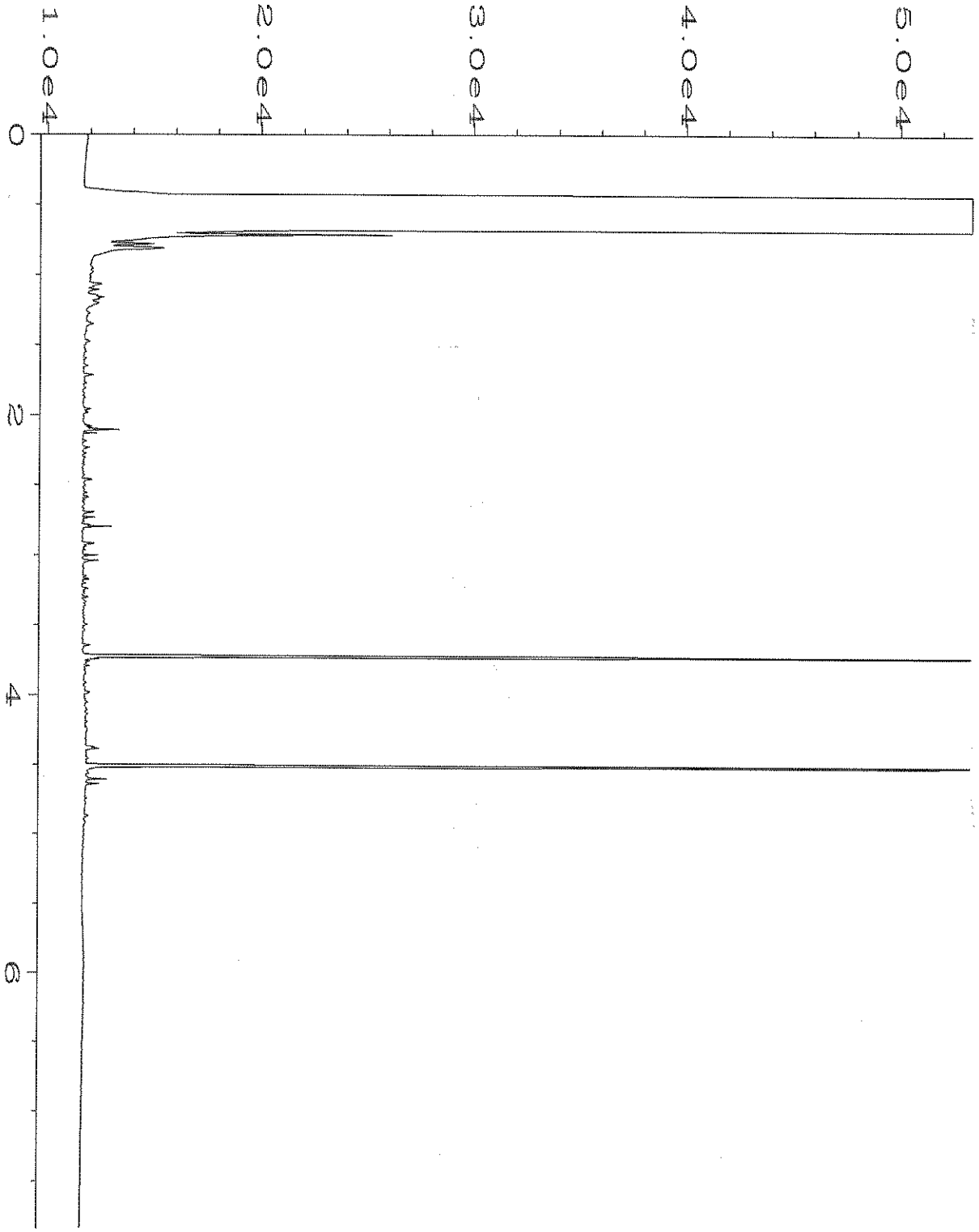


Data File Name : C:\HPCHEM\1\DATA\06-16-17\034F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-04
Run Time Bar Code:
Acquired on : 16 Jun 17 03:47 PM
Report Created on: 20 Jun 17 08:27 AM

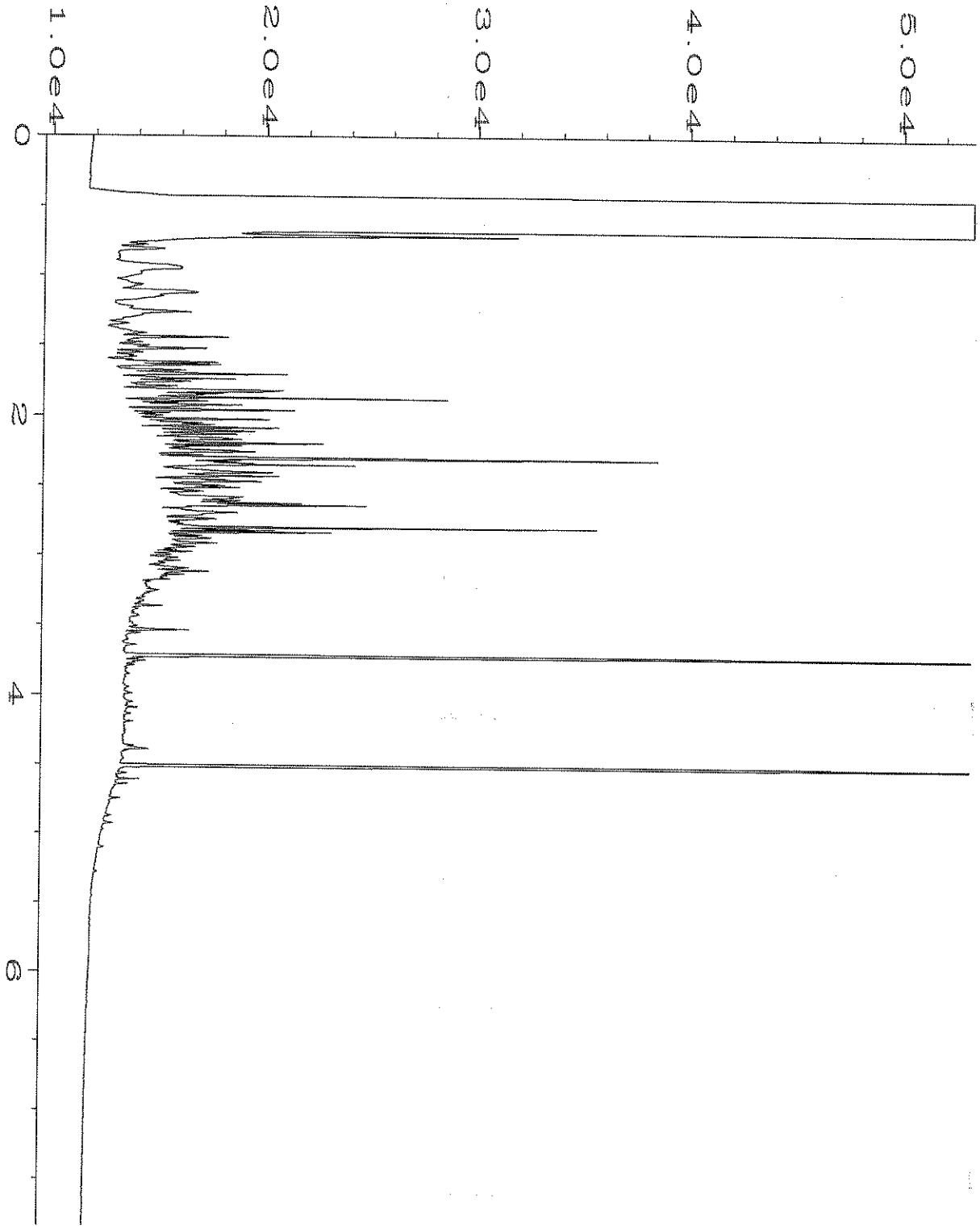
Page Number : 1
Vial Number : 34
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name	: C:\HPCHEM\1\DATA\06-16-17\035F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 35
Sample Name	: 706255-06	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 03:58 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH

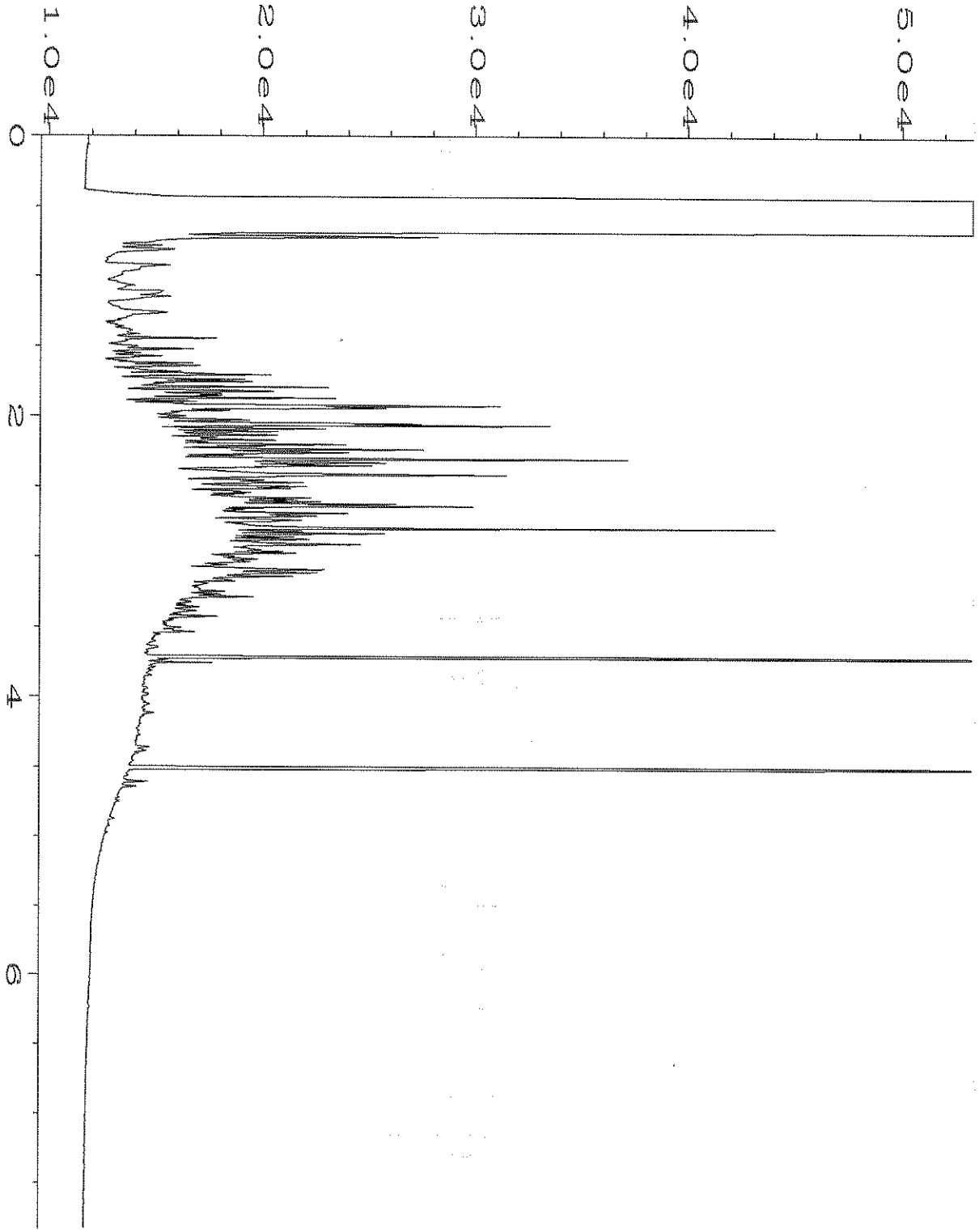


Data File Name	: C:\HPCHEM\1\DATA\06-16-17\036F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 36
Sample Name	: 706255-07	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 04:10 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH



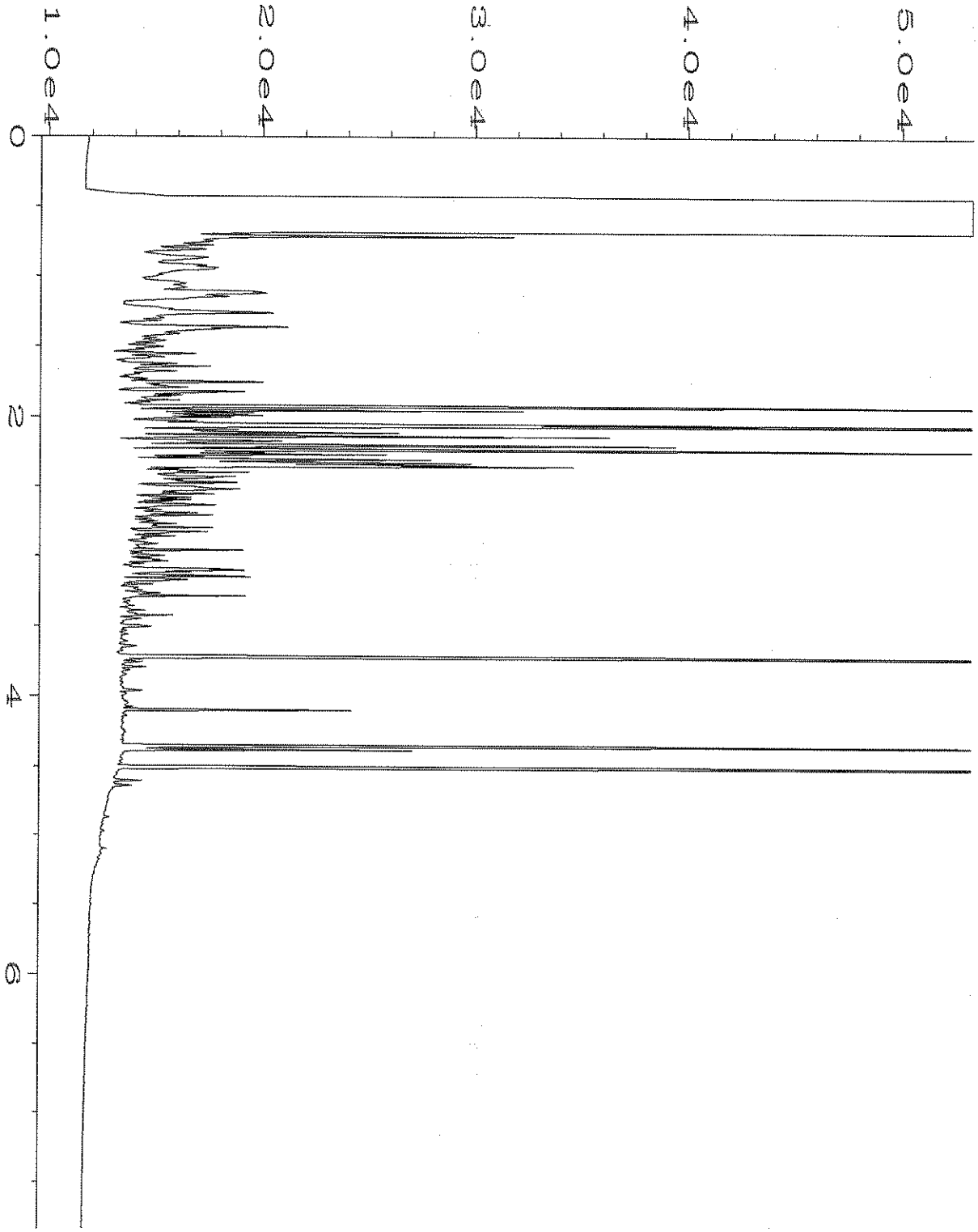
Data File Name : C:\HPCHEM\1\DATA\06-16-17\037F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-08
Run Time Bar Code:
Acquired on : 16 Jun 17 04:22 PM
Report Created on: 20 Jun 17 08:27 AM

Page Number : 1
Vial Number : 37
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH

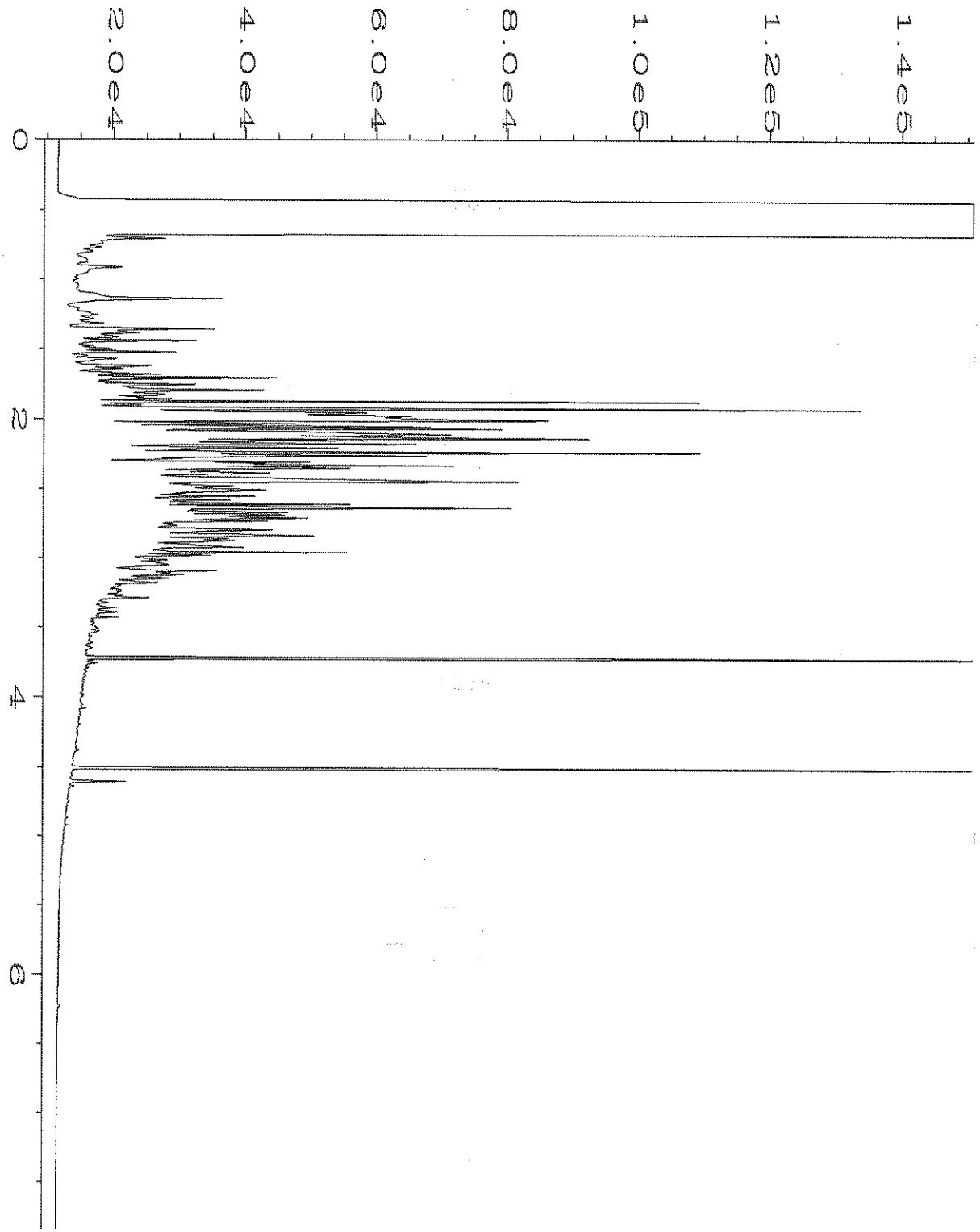


Data File Name : C:\HPCHEM\1\DATA\06-16-17\038F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-09
Run Time Bar Code:
Acquired on : 16 Jun 17 04:34 PM
Report Created on: 20 Jun 17 08:27 AM

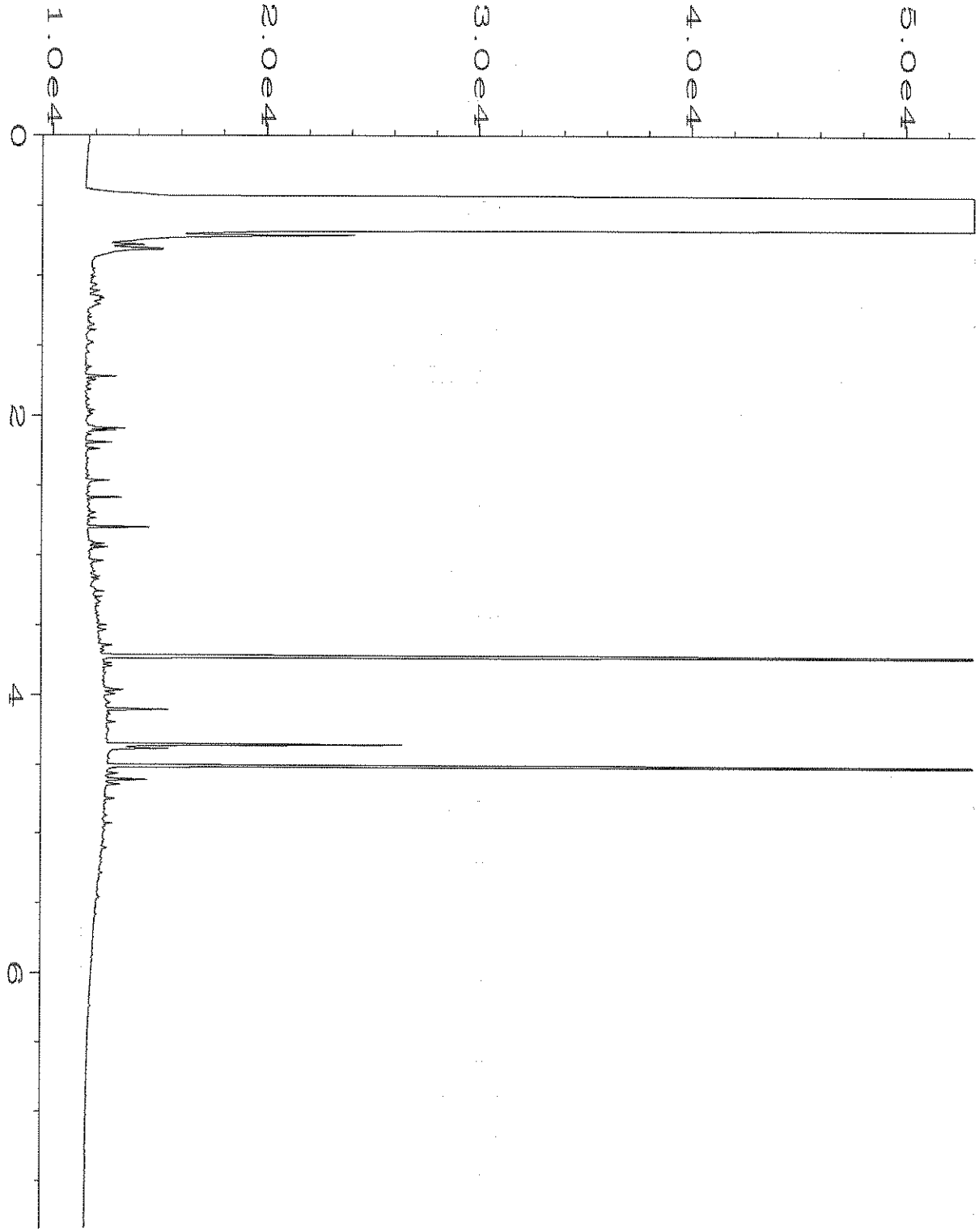
Page Number : 1
Vial Number : 38
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name	: C:\HPCHEM\1\DATA\06-16-17\039F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 39
Sample Name	: 706255-10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 04:45 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:27 AM	Analysis Method	: DX.MTH

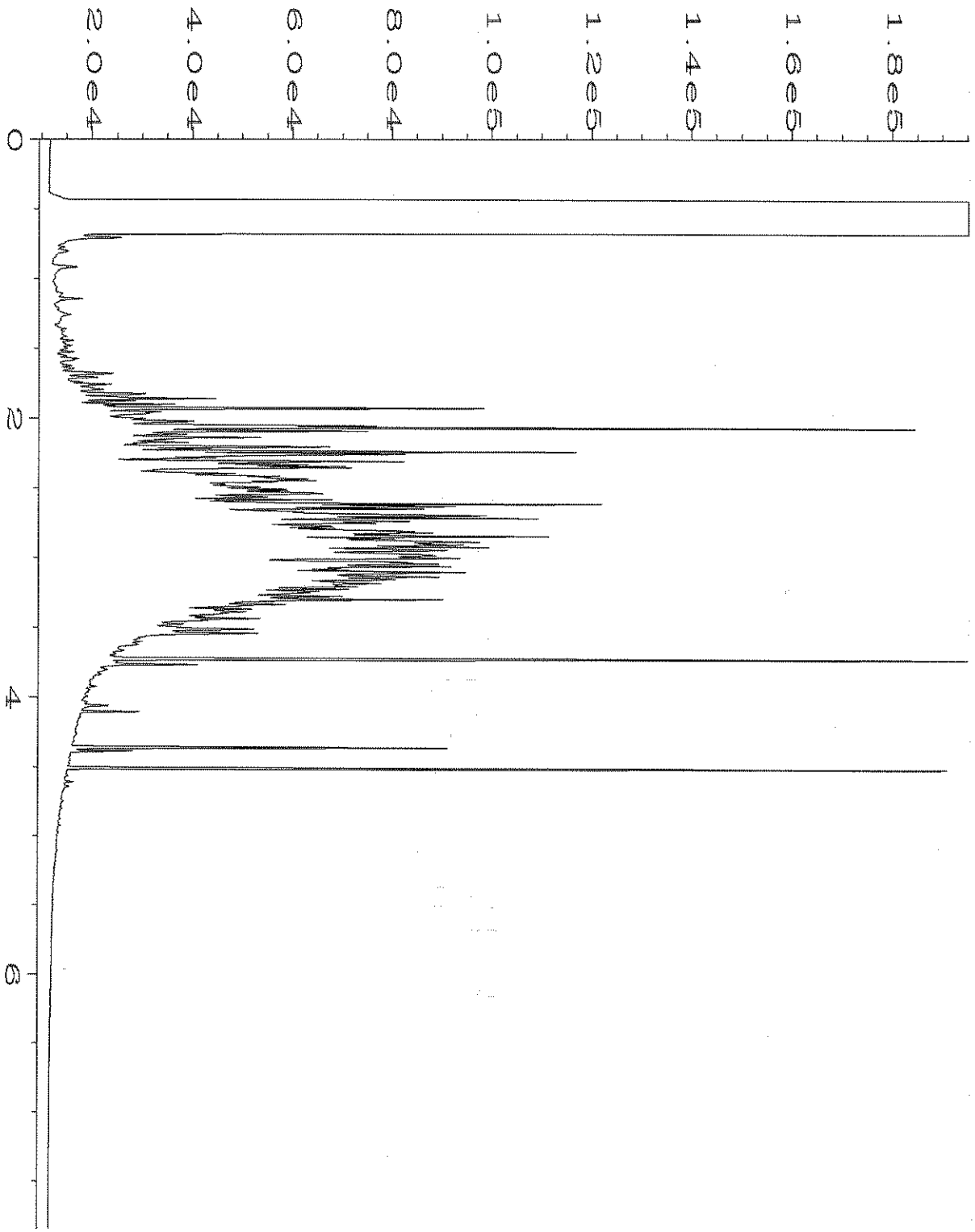


Data File Name	: C:\HPCHEM\1\DATA\06-16-17\040F1001.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 40
Sample Name	: 706255-11	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 04:57 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:28 AM	Analysis Method	: DX.MTH



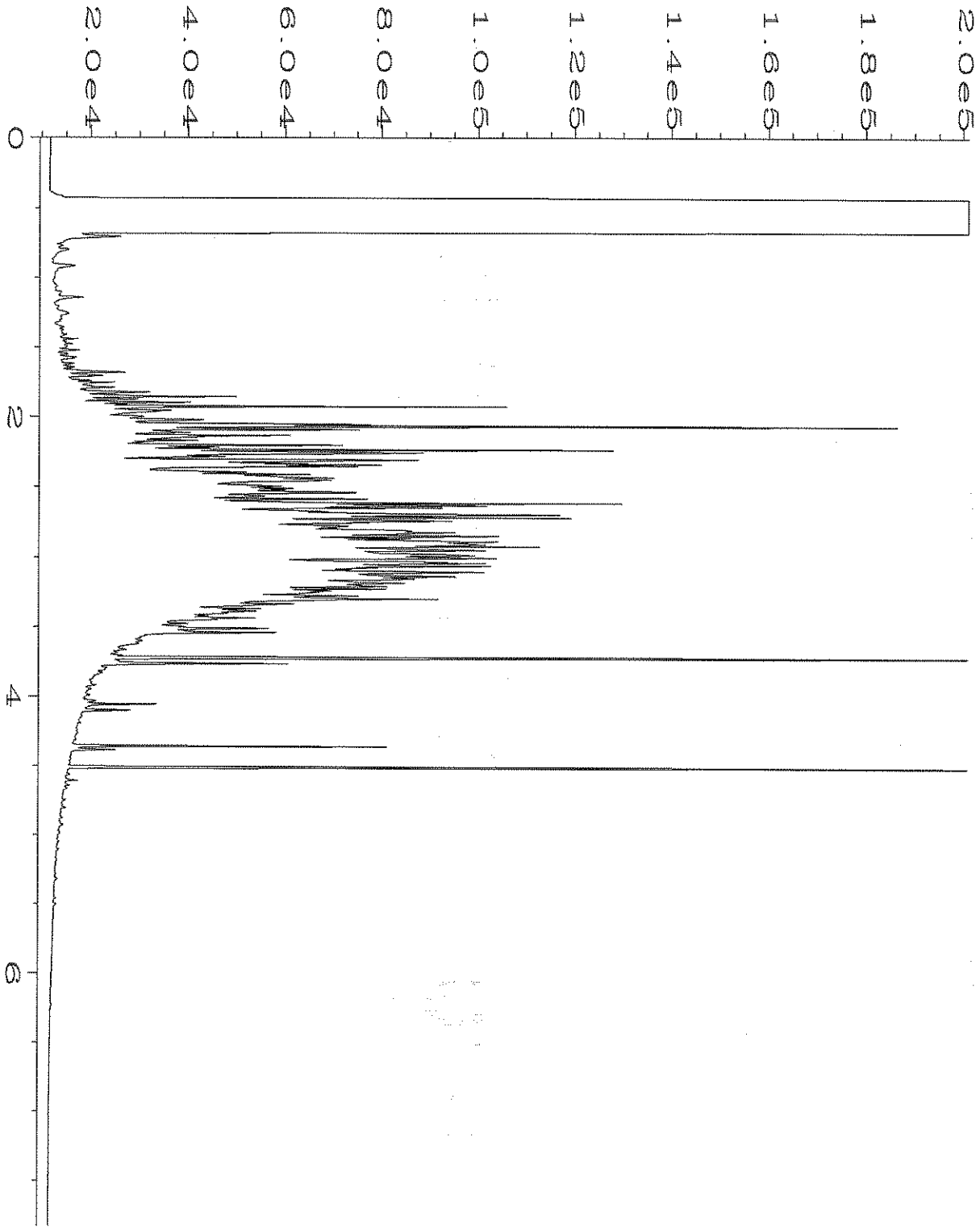
Data File Name : C:\HPCHEM\1\DATA\06-16-17\041F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-12
Run Time Bar Code:
Acquired on : 16 Jun 17 05:08 PM
Report Created on: 20 Jun 17 08:28 AM

Page Number : 1
Vial Number : 41
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



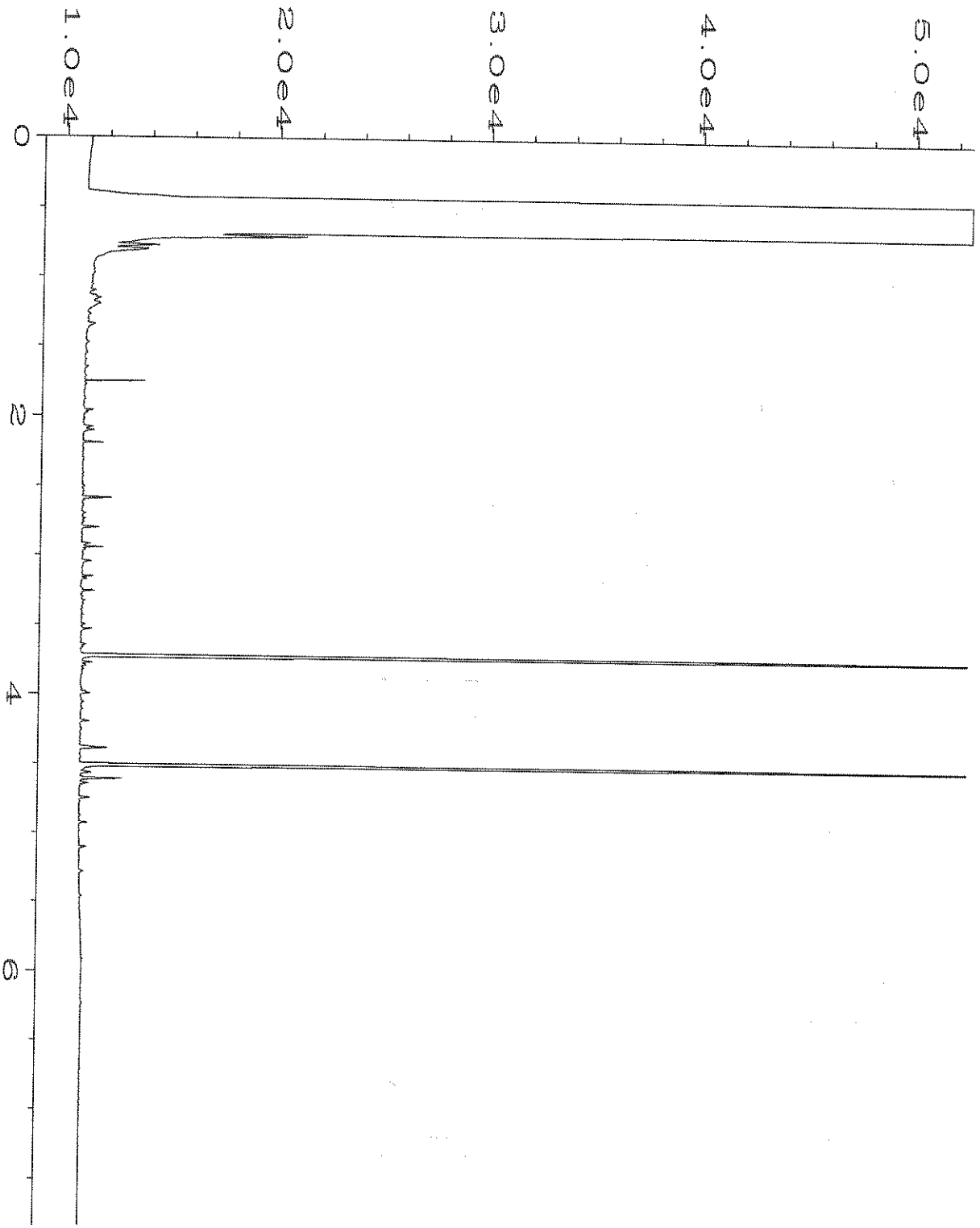
Data File Name : C:\HPCHEM\1\DATA\06-16-17\042F1001.D
Operator : mwdl
Instrument : GC1
Sample Name : 706255-13
Run Time Bar Code:
Acquired on : 16 Jun 17 05:20 PM
Report Created on: 20 Jun 17 08:28 AM

Page Number : 1
Vial Number : 42
Injection Number : 1
Sequence Line : 10
Instrument Method: DX.MTH
Analysis Method : DX.MTH



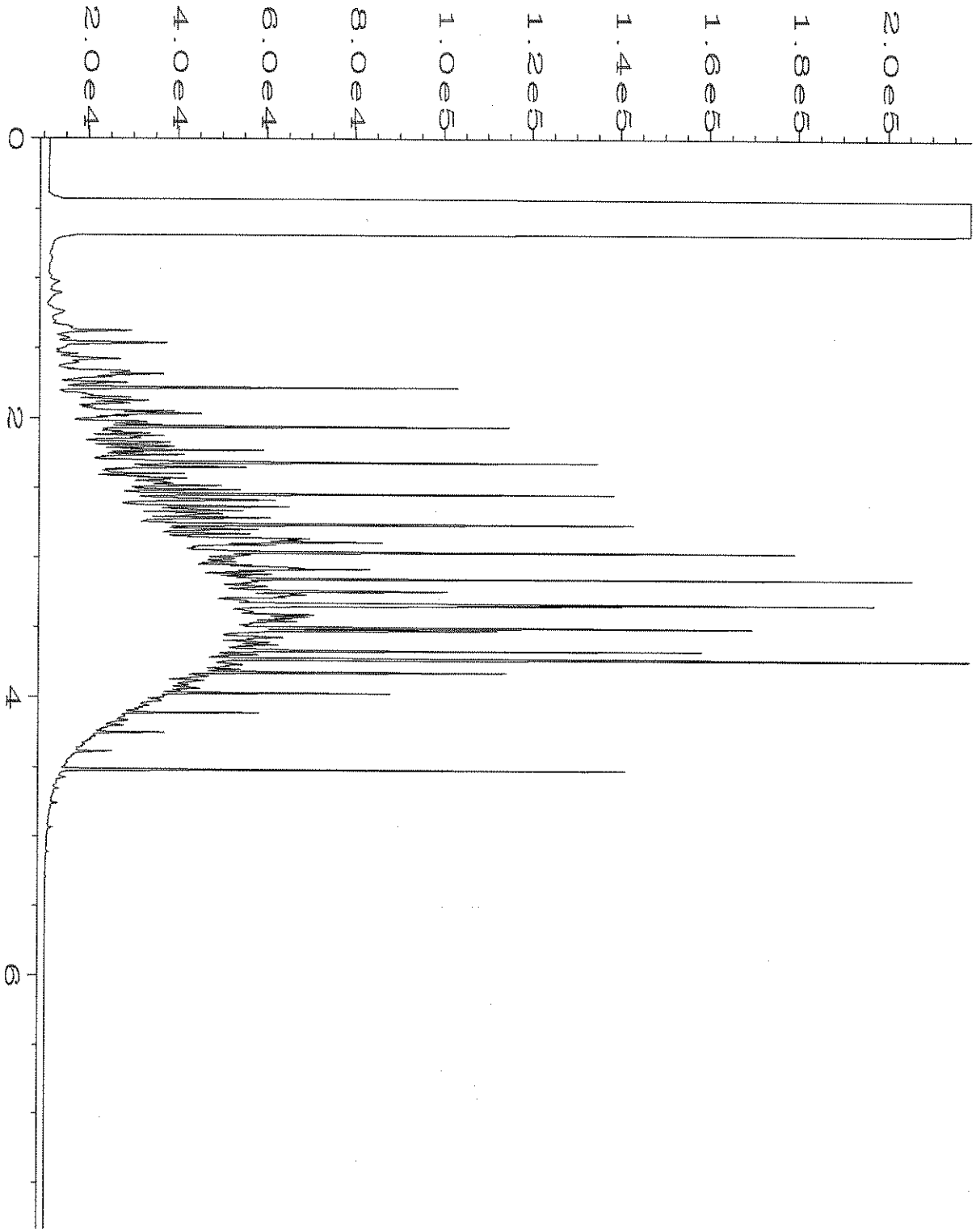
Data File Name : C:\HPCHEM\1\DATA\06-16-17\043F1001.D

Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 43
Sample Name	: 706255-14	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 16 Jun 17 05:32 PM	Instrument Method	: DX.MTH
Report Created on	: 20 Jun 17 08:28 AM	Analysis Method	: DX.MTH



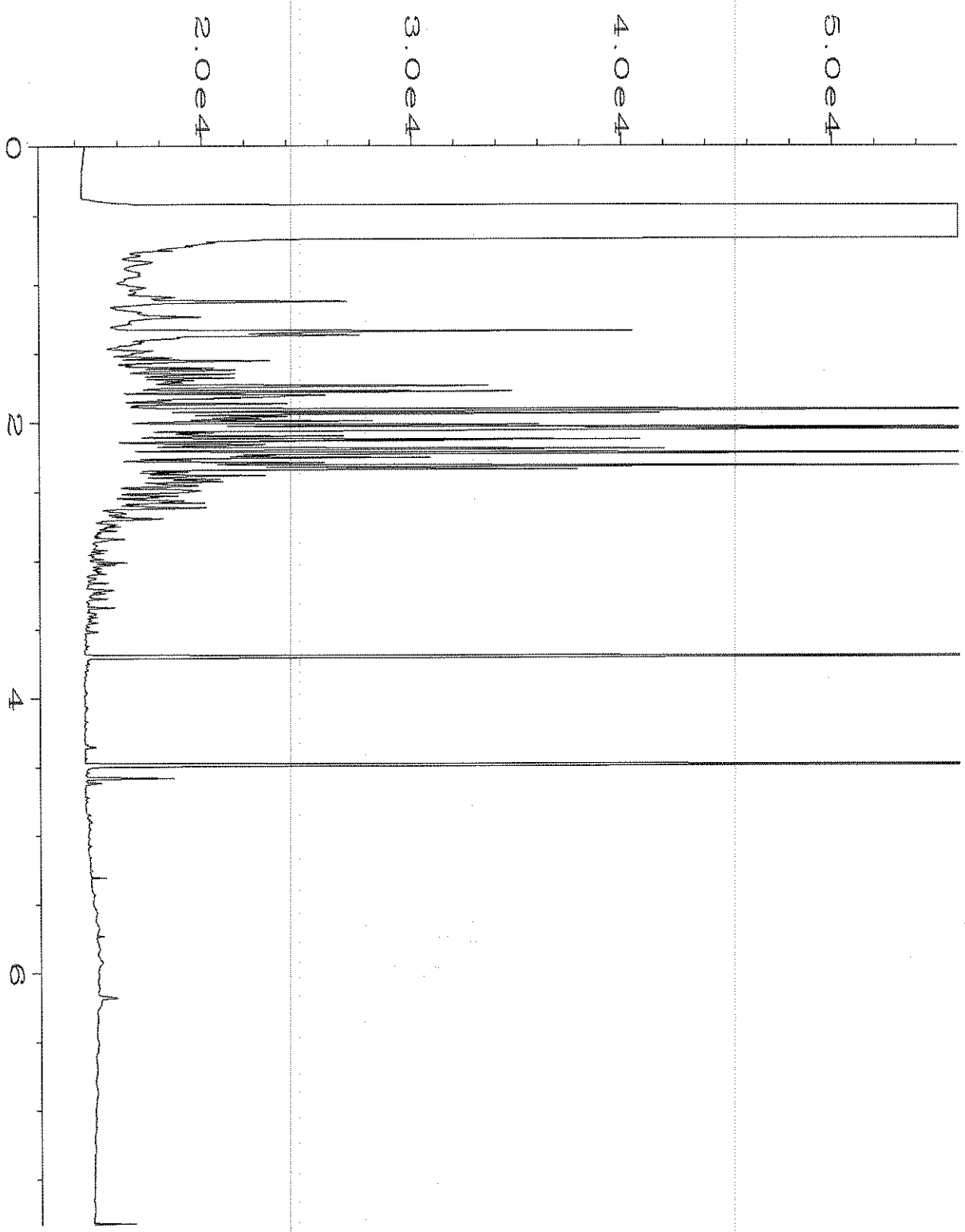
Data File Name : C:\HPCHEM\1\DATA\06-16-17\025F0801.D
Operator : mwdl
Instrument : GC1
Sample Name : 07-1305 mb
Run Time Bar Code:
Acquired on : 16 Jun 17 01:38 PM
Report Created on: 20 Jun 17 08:26 AM

Page Number : 1
Vial Number : 25
Injection Number : 1
Sequence Line : 8
Instrument Method: DX.MTH
Analysis Method : DX.MTH

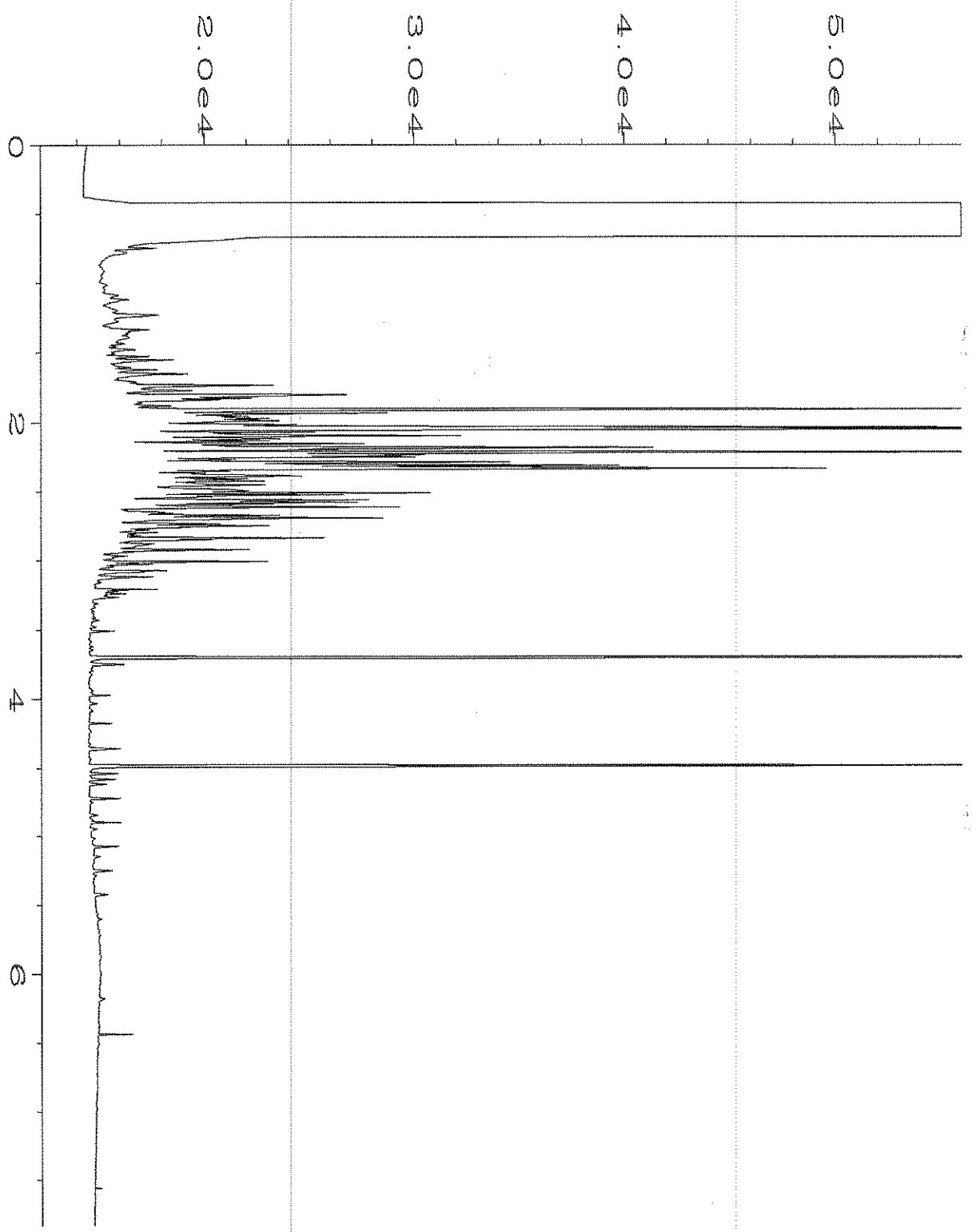


Data File Name : C:\HPCHEM\1\DATA\06-16-17\003F0301.D
Operator : mwdl
Instrument : GC1
Sample Name : 500 Dx 49-188E
Run Time Bar Code:
Acquired on : 16 Jun 17 08:17 AM
Report Created on: 20 Jun 17 08:26 AM

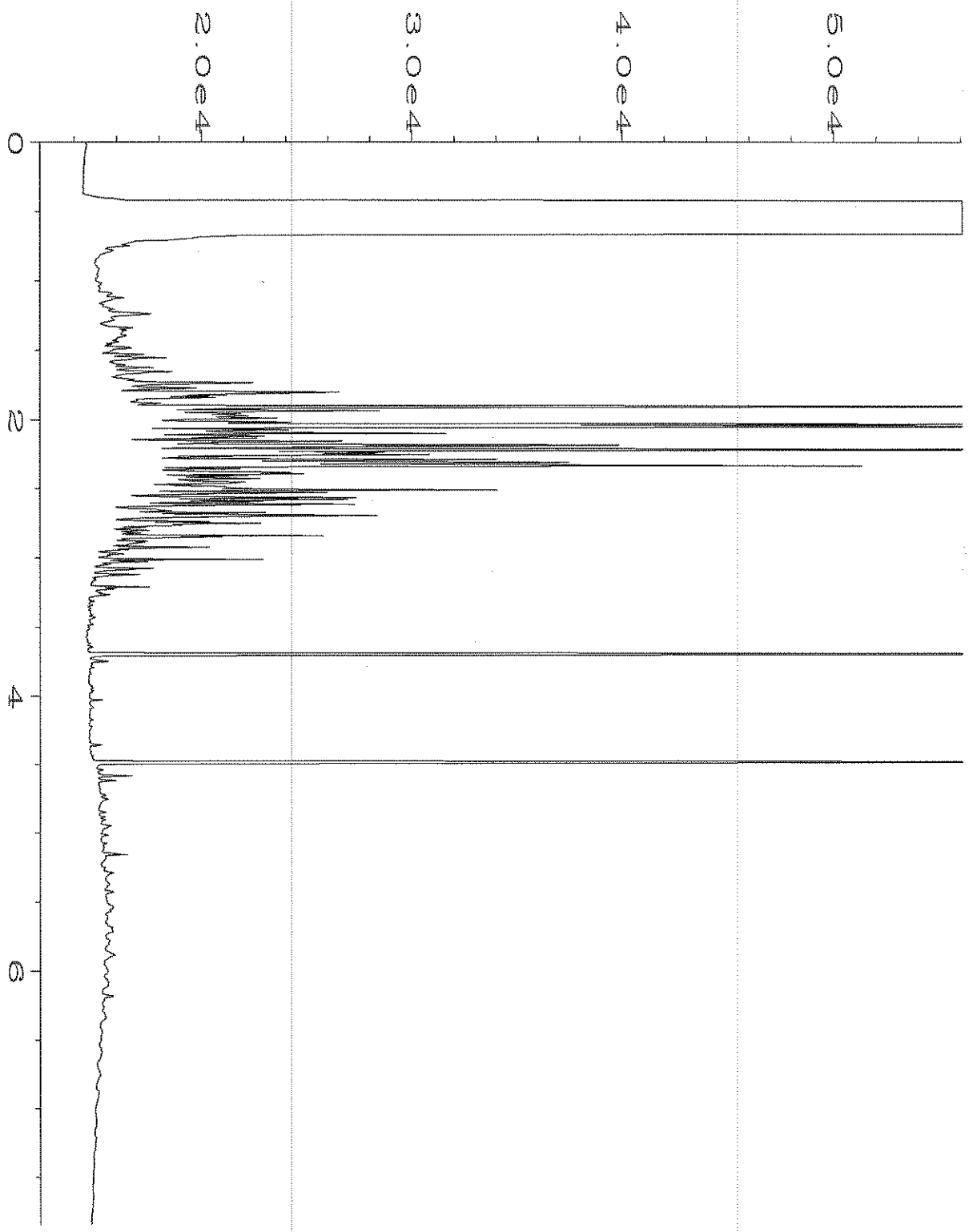
Page Number : 1
Vial Number : 3
Injection Number : 1
Sequence Line : 3
Instrument Method: DX.MTH
Analysis Method : DX.MTH



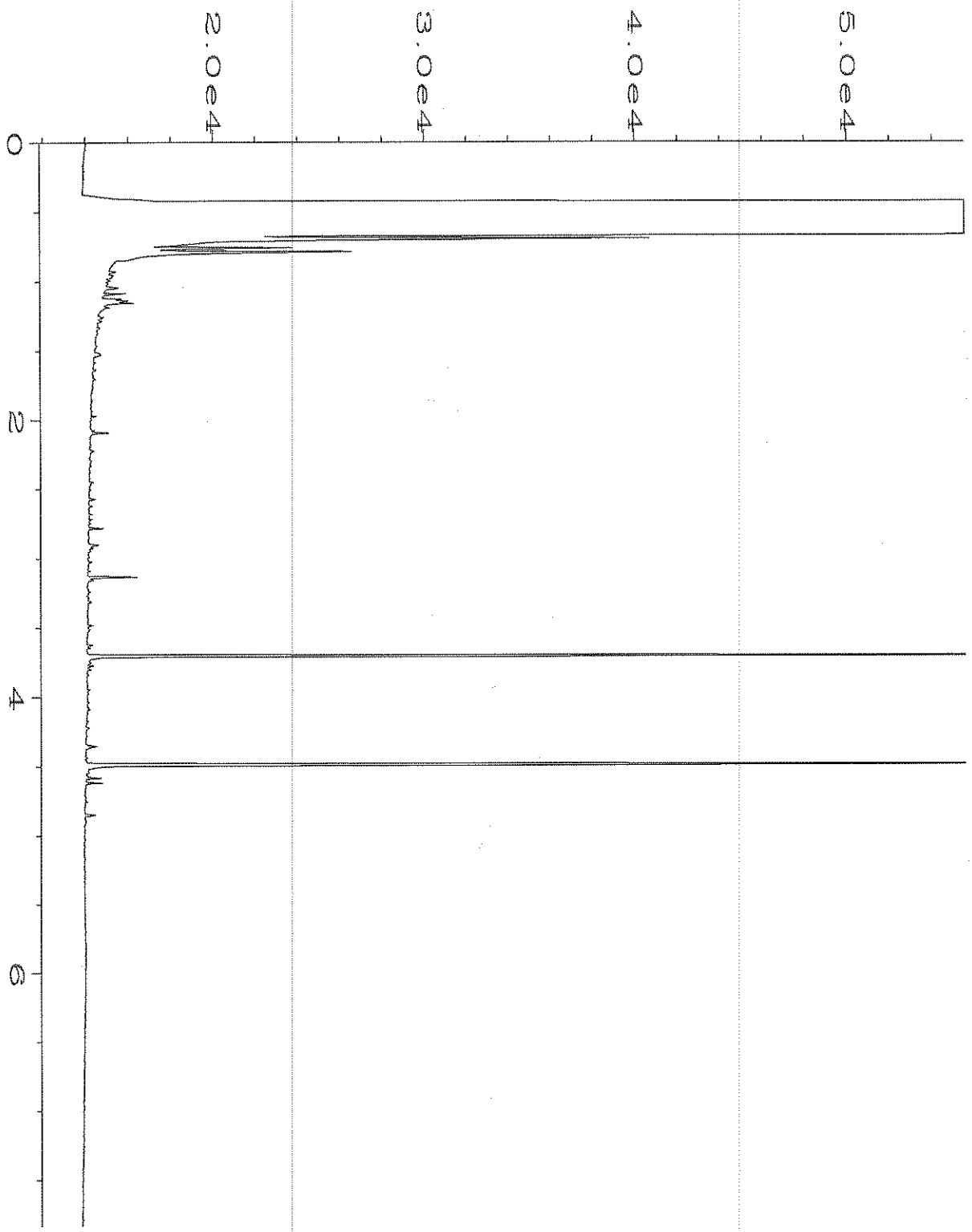
Data File Name	: C:\HPCHEM\1\DATA\06-23-17\027F0901.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 27
Sample Name	: 706255-11 sg	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 9
Acquired on	: 23 Jun 17 03:59 PM	Instrument Method	: DX.MTH
Report Created on	: 26 Jun 17 11:59 AM	Analysis Method	: END.MTH



Data File Name	: C:\HPCHEM\1\DATA\06-23-17\028F0901.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 28
Sample Name	: 706255-13 sg	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 9
Acquired on	: 23 Jun 17 04:11 PM	Instrument Method	: DX.MTH
Report Created on	: 26 Jun 17 12:00 PM	Analysis Method	: END.MTH

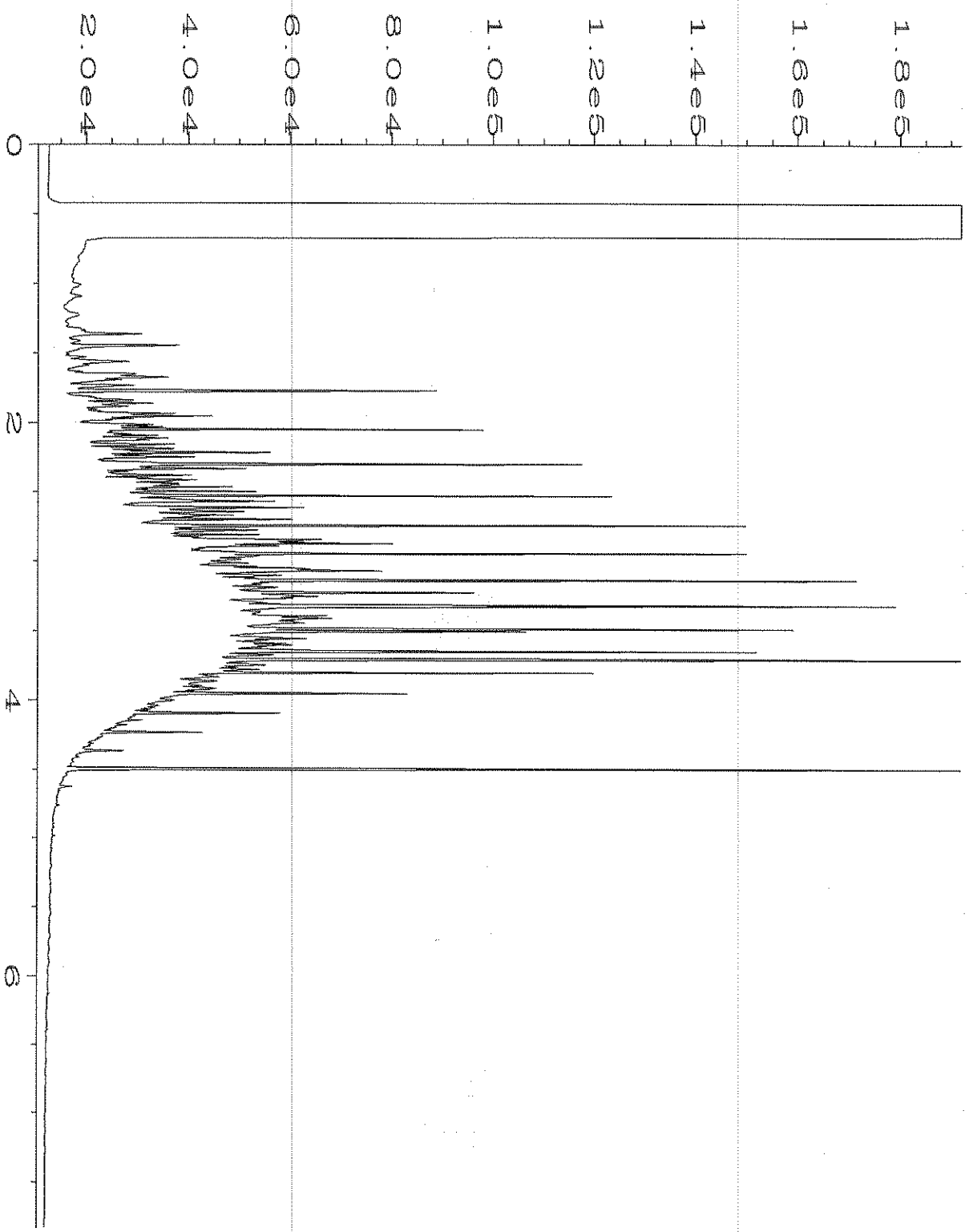


Data File Name	: C:\HPCHEM\1\DATA\06-23-17\029F1101.D		
Operator	: mwdl	Page Number	: 1
Instrument	: GC1	Vial Number	: 29
Sample Name	: 706255-14 sg	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 11
Acquired on	: 23 Jun 17 04:34 PM	Instrument Method	: DX.MTH
Report Created on	: 26 Jun 17 12:00 PM	Analysis Method	: END.MTH



Data File Name : C:\HPCHEM\1\DATA\06-23-17\018F0601.D
Operator : mwdl
Instrument : GC1
Sample Name : 07-1327 mb2
Run Time Bar Code:
Acquired on : 23 Jun 17 12:45 PM
Report Created on: 26 Jun 17 12:19 PM

Page Number : 1
Vial Number : 18
Injection Number : 1
Sequence Line : 6
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name : C:\HPCHEM\1\DATA\06-23-17\003F0201.D
Operator : mwdl
Instrument : GC1
Sample Name : 500 Dx 49-188E
Run Time Bar Code:
Acquired on : 23 Jun 17 06:11 AM
Report Created on: 26 Jun 17 12:19 PM

Page Number : 1
Vial Number : 3
Injection Number : 1
Sequence Line : 2
Instrument Method: DX.MTH
Analysis Method : DX.MTH

706255

SAMPLE CHAIN OF CUSTODY

ME 06-15-17

VWH/BOS

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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)

PROJECT NAME/NO.: SKS SHELL / 0914-001

PO #

REMARKS

TURNAROUND TIME
(X) 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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C		HOLD	Notes
MW103-20170613	MW103	—	01A-D	6/13/17	1043	WATER	4	X	X	X				
MW105-20170613	MW105	—	02	6/13/17	1214	WATER	4	X	X	X				
MW102-20170613	MW102	—	03	6/13/17	1322	WATER	4	X	X	X				
MW108-20170614	MW108	—	04	6/14/17	1130	WATER	4	X	X	X				
MW104-20170614	MW104	—	05	6/14/17	1256	WATER	4						X	
RW05-20170614	RW05	—	06	6/14/17	1403	WATER	4	X	X	X				
MW101-20170614	MW101	—	07	6/14/17	1500	WATER	4	X	X	X				
														Samples received at 2 °C
								6/19/17						

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:	JONATHAN LOEFFLER	SOUNDEARTH	6/15/17	1640
Received by:	Jon Shimazaki	FB&T	1	1
Relinquished by:				
Received by:				

706225 (253) 6/15

SAMPLE CHAIN OF CUSTODY

ME 06-15-17

VW4/BOS

Page # 1 of 3

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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)

PROJECT NAME/NO. SKS SHELL / 0914-001

PO #

REMARKS

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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C	Dx SGC		Notes
MW109-20170614	MW109	—	08A-D	6/14/17	0941	H_2O	4	X	X	X				(5) - per RA 6/22/17 mk
MW110-20170614	MW110	—	09		1016			X	X	X				
RW04-20170614	RW04	—	10		1311			X	X	X				
RW03-20170614	RW03	—	11		1413			X	X	X		(X)		
RW02-20170614	RW02	—	12		1512			X	X	X				
					CJT 6/14/17						Samples received at 2 °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:	Clare Fox	SoundEarth	6/15/17	1640
Received by:	Jon Shimazu	FB&I	1	1
Relinquished by:				
Received by:				

706225 253 6/15

SAMPLE CHAIN OF CUSTODY

ME 06-15-17

VWA/BOS

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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) Clare Tochin

PROJECT NAME/NO. SKS SHELL / 0914-001

PO #

REMARKS

Page # 3 of 3

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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C	D,M,S,G		Notes
MW104-20170615	MW104	—	134-D	6/15/17	1023	H_2O	4	X	X	X		(1)		
MW99-20170615	MW99	—	141	6/15/17	1043	H_2O	4	X	X	X		(2)		
Trip Blank	—	—	15A-B	6/15/17	—	H_2O	2		X	X				
					CT	6/15/17								

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Clare Tochin	Clare Tochin	SoundEarth	6/15/17	1640
Received by:	Jon Shimazu	FB&T	1	1
Relinquished by:				
Received by:				

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

FORMS\COC\COC.DOC

ATTACHMENT B
DATA VALIDATION REPORT

Validata, LLC #706255

DATA VALIDATION REPORT

SKS SHELL
Second 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
706255	MW103-20170613	706255-01	X	X	X
706255	MW105-20170613	706255-02	X	X	X
706255	MW102-20170613	706255-03	X	X	X
706255	MW108-20170614	706255-04	X	X	X
706255	RW05-20170614	706255-06	X	X	X
706255	MW101-20170614	706255-07	X	X	X
706255	MW109-20170614	706255-08	X	X	X
706255	MW110-20170614	706255-09	X	X	X
706255	RW04-20170614	706255-10	X	X	X

706255	RW03-20170614	706255-11	X	X	X
706255	RW02-20170614	706255-12	X	X	X
706255	MW104-20170615	706255-13	X	X	X
706255	MW99-20170615	706255-14	X	X	X
706255	Trip Blank	706255-15	X	X	X

DATA VALIDATION REPORT

Volatile Organic Compounds - Method SW8081B – 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
706255	15	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.

EDD TO 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

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.

SDG 706255: The cooler temperatures were within the recommended temperature range.

Method and Field Blanks

The method blanks were all reported as undetected for target compounds. A trip blank was submitted with this sampling event and all compounds were reported as undetected.

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) 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 706255: Sample pair MW104-20170615/MW99-20170615 were identified as a field duplicate pair. Field precision was acceptable and are summarized below:

Sample ID	lab ID	analyte	706255-13	706255-14	RPD
MW104-20170615	706255-13	benzene	0	0	0.0%
MW99-20170615	706255-14	toluene	0	0	0.0%
		ethyl benzene	4	3.1	0.0%
		xylenes	3.9	3.1	22.9%
		GRO	700	820	15.8%

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

The laboratory reporting limits were sufficiently above 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
706255	15	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.

EDD TO 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 706255: The cooler temperatures were within the recommended temperature range.

Method and Field Blanks

The method blanks were all reported as undetected for target compounds. A trip blank was collected for this sampling event. The trip blank did not contain gasoline range 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 samples (LCS) 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 706255: Sample pair MW104-20170615/MW99-20170615 were identified as a field duplicate pair. Field precision was acceptable.

Sample ID	lab ID	analyte	706255-13	706255-14	RPD
MW104-20170615	706255-13	GRO	700	820	15.8%
MW99-20170615	706255-14				

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

The laboratory reporting limits were sufficiently above 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
706255	13	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.

SDG 706255: No problems were noted.

SDG 706255 additional report: The laboratory analyzed samples RW03-20170614, MW99-20170615 and MW104-20170615 following the standard methodology and additionally by passing the samples through a silica gel column prior to analysis. Both sets of results are included in this validation report.

EDD TO 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.

SDGs 706255: 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 706255: Sample pair MW104-20170615/MW99-20170615 were identified as a field duplicate pair. Field precision was acceptable.

Sample ID	lab ID	analyte	706255-13	706255-14	RPD
MW104-20170615	706255-13	Diesel Range	3000	3200	6.5%
MW99-20170615	706255-14	Motor Oil	0	0	0

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

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

Reported Results

SDG 706255: Samples MW108-20170615 was 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.

SDG 706255 additional report: Samples RW03-20170615, MW104-02170615 and MW99-02170615 were qualified as estimated (J+) and reason code 2 for the sample extracts that were passed through a silica gel column 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	6	Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.)
Blank Contamination	7	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 ethod/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% OR difference < 1X RL (for results < 5X RL)	Standard review		J (pos)/UJ (ND) Qualify only parent and field duplicate samples	9	Use project limits if specified

		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	Standard review		Qualify J (pos)	20	If result from dilution analysis is not reported.
Dilutions, Reextractions and/or Reanalyses	Report only one result per analyte	Standard 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: 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 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 ≥ 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 ≤ 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

l ID	Sample Date	GRPH[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Total Xylenes[3]	DRPH[2]	validation qualifier	DRPH with Silica Gel[4]	validation qualifier	ORPH[2]	ORPH with Silica Gel[4]
MW101	6/14/2017	<100	<1	<1	<1	<3	<50				<250	
MW102	6/13/2017	<100	<1	<1	<1	<3	<50				<250	
MW103	06/13/17	<100	<1	<1	<1	<3	<60				<300	
MW104	06/15/17	700	<1	<1	4.0	3.1	3,000		370x	J+ 2	<250	<250
MW105	06/13/17	<100	<1	<1	<1	<3	<50				<250	
RW02	06/14/17	<100	<1	<1	<1	<3	<50				**<250**	
RW03	06/14/17	1,300	7.0	<1	32	11	1,500		**320x**	J+ 2	**<250**	**<250**
RW04	06/14/17	790	2.5	<1	16	<3	400		**<250**			
RW05	06/14/17	400	<1	<1	4.4	<3	470				**<250**	
MW108	06/14/17	<100	<1	<1	<1	<3	140[x]	J+ 2			**<250**	
MW109	06/14/17	220	<1	<1	<1	<3	330				**<250**	
MW110	06/14/17	260	<1	<1	2.0	<3	520				**<250**	
MTCA GW criteria		**1,000/800[6]**	**5**	**1,000**	**700**	**1,000**	**500**		**500**		**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:

[x]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: BTEX / GRO
Date Reviewed: 7/27/17
Sample Collection Dates: 6/13/17 - 6/15/17

SDG: 706255
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 MW105-20170613	2 MW105-20170613	3 MW102-20170613	4 MW146-20170614	5 MW05-20170614	6 MW101-20170614	7 MW104-20170614	8 MW116-20170614	9 MW04-20170614	10 MW03-20170614	11 MW02-20170614	12 MW104-20170615	13 MW99-20170615	14 Trip Blank	15	16	17	18	19	20
Sample results	A													→						
Holding Times	A													→						
Completion	A													→						
Method Blanks	A													→						
LCS	A													→						
duplicate RPD	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:

surrogates - ok

FD pair MW104-20170615 / MW99-20170615
Summarized in report. acceptable, within RPD.

TB - all ND

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255
Date Extracted: 06/19/17
Date Analyzed: 06/19/17 and 06/20/17

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)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW103-20170613 706255-01	<1	<1	<1	<3	<100	89
MW105-20170613 706255-02	<1	<1	<1	<3	<100	87
MW102-20170613 706255-03	<1	<1	<1	<3	<100	90
MW108-20170614 706255-04	<1	<1	<1	<3	<100	88
RW05-20170614 706255-06	<1	<1	4.4	<3	400	87
MW101-20170614 706255-07	<1	<1	<1	<3	<100	86
MW109-20170614 706255-08	<1	<1	<1	<3	220	86
MW110-20170614 706255-09	<1	<1	2.0	<3	260	87
RW04-20170614 706255-10	2.5	<1	16	<3	790	86
RW03-20170614 706255-11	7.0	<1	32	11	1,300	85

9-7-3/4

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255
Date Extracted: 06/19/17
Date Analyzed: 06/19/17 and 06/20/17

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)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
RW02-20170614 706255-12	<1	<1	<1	<3	<100	89
MW104-20170615 706255-13	<1	<1	4.0	3.1	700	85
MW99-20170615 706255-14	<1	<1	3.9	3.1	820	83
Trip Blank 706255-15	<1	<1	<1	<3	<100	84
Method Blank 07-1261 MB	<1	<1	<1	<3	<100	86

6.23.17

VALIDATION WORKSHEET

Method: DRO/MO

Date Reviewed: 9.30.17

Sample Collection Dates: 6.13.17-6.15.17

SDG: 7062555

Reviewer: C Jensen

The following data validation areas were reviewed:

silica

Sample Identification / Validation Criteria	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	MW103-20170613	MW105-20170613	MW102-20170613	MW108-20170614	MW05-20170614	MW101-20170614	MW107-20170614	MW110-20170614	RW04-20170614	RW03-20170614	RW02-20170614	MW104-20170615	MW99-20170615		RW03-20170614	MW104-20170615	MW99-20170615			
Sample results	A →												→		A →		→			
Holding Times	A →												→		A →		→			
Completion	A →												→		A →		→			
Method Blanks	A →												→		A →		→			
LCS /LCSD duplicate RPD	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:

J+, 2 X flag (NB) MW108-20170614 original

RW03-20170614 }
MW104-20170615 } silica cleanup
MW99-20170615 }

VW

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255
Date Extracted: 06/16/17
Date Analyzed: 06/16/17

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW103-20170613 706255-01 1/1.2	<60	<300	91
MW105-20170613 706255-02	<50	<250	99
MW102-20170613 706255-03	<50	<250	94
MW108-20170614 706255-04	140 x J-2	<250	93
RW05-20170614 706255-06	470	<250	91
MW101-20170614 706255-07	<50	<250	104
MW109-20170614 706255-08	330	<250	107
MW110-20170614 706255-09	520	<250	109
RW04-20170614 706255-10	400	<250	109
RW03-20170614 706255-11	1,500	<250	96
RW02-20170614 706255-12	<50	<250	104
MW104-20170615 706255-13	3,000	<250	97

97.3.17

Date of Report: 06/22/17
Date Received: 06/15/17
Project: SOU_0914-001_ 20170615, F&BI 706255
Date Extracted: 06/16/17
Date Analyzed: 06/16/17

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW99-20170615 706255-14	3,200	<250	105
Method Blank 07-1305 MB	<50	<250	80

6.7.17

Date of Report: 06/27/17
Date Received: 06/15/17
Project: SOU_ 0914-001_ 20170615, F&BI 706255
Date Extracted: 06/16/17
Date Analyzed: 06/23/17

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx
Sample Extracts Passed Through a Silica Gel Column Prior to Analysis
Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
RW03-20170614 706255-11	320 x J Z	<250	105
MW104-20170615 706255-13	370 x J Z	<250	96
MW99-20170615 706255-14	360 x J Z	<250	94
Method Blank 07-1305 MB	<50	<250	80

97.3.1F

706255

SAMPLE CHAIN OF CUSTODY

ME 06-15-17

Page # 1 of 3 VWA/BOS

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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)

PROJECT NAME/NO. SKS SHELL / 0914-001

PO #

REMARKS

TURNAROUND TIME
X 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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C		HOLD	Notes
MW103-20170613	MW103	—	01A-D	6/13/17	1043	WATER	4	X	X	X				
MW105-20170613	MW105	—	02	6/13/17	1214	WATER	4	X	X	X				
MW102-20170613	MW102	—	03	6/13/17	1322	WATER	4	X	X	X				
MW108-20170614	MW108	—	04	6/14/17	1130	WATER	4	X	X	X				
MW104-20170614	MW104	—	05	6/14/17	1256	WATER	4						X	
RW05-20170614	RW05	—	06	6/14/17	1403	WATER	4	X	X	X				
MW101-20170614	MW101	—	07	6/14/17	1500	WATER	4	X	X	X				
														Samples received at 2 °C
							6/14/17							

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	JONATHAN LOEFFLER	SOUNDEARTH	6/15/17	1640
Received by:	Jon Sherman	FB&T	1	1
Relinquished by:				
Received by:				

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

706225 253 n6/15

SAMPLE CHAIN OF CUSTODY ME 06-15-17

VW4/605

Page # 2 of 3

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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)

PROJECT NAME/NO. SKS SHELL / 0914-001

PO #

REMARKS

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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C			Notes
MW109-20170614	MW109	—	08A-D	6/14/17	0941	H_2O	4	X	X	X				
MW110-20170614	MW110	—	09		1016			X	X	X				
RW04-20170614	RW04	—	10		1311			X	X	X				
RW03-20170614	RW03	—	11		1413			X	X	X				
RW02-20170614	RW02	—	12		1512			X	X	X				
					CJT 6/14/17						Samples received at 2 °C			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Clare Tavares	SoundEarth	6/15/17	1640
Received by:	Jon Shimazu	FB&T	"	"
Relinquished by:				
Received by:				

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

706225 255 @ 6/15

SAMPLE CHAIN OF CUSTODY

ME 06-15-17

VWW/BDS

Page # 3 of 3

Send Report to Rob Roberts, cc: Jonathan Loeffler, Liz Forbes

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)

PROJECT NAME/NO. SKS SHELL / 0914-001

PO #

REMARKS

TURNARQUND 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: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C			Notes
MW104-20170615	MW104	—	13A-D	6/15/17	1103	H_2O	4	X	X	X				
MW99-20170615	MW99	—	14	6/15/17	1043	H_2O	4	X	X	X				
Trip Blank	—	—	15A-B	6/15/17	—	H_2O	2		X	X				

CJ 6/15/17

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Clare Tochin	SoundEarth	6/15/17	1640
Received by:	Jon Schmanz	FB&T	↓	↓
Relinquished by:				
Received by:				

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

FORMS\COC\COC.DOC

ATTACHMENT C
SKS SHELL SITE HISTORICAL GROUNDWATER CONTOUR MAPS AND ROSE DIAGRAM

5/24/2013

RETAIL STORE

EXISTING UST

SEWER LINE

FUNERAL HOME

SKS SHELL

B-4

B-3

B-1

GLMW-3 (77.12')

MW-3 (76.32')

GLMW-2

GLMW-1

USTs

MW-2 (76.75')

MW-1 (76.75')

DW-4

DW-3

DW-2

DW-1

SIDEWALK

SOUTHWEST ALASKA STREET

FAUNTLEROY WAY SOUTHWEST

39TH AVENUE SOUTHWEST

MW101 (75.31')

MW-X (74.35')

LES SCHWAB PROPERTY

PRODUCE STORE

BP-ARCO PROPERTY

MW-5

MW-4

MW-3

B-7/MW-5

B-4/MW-3

B-6/MW-4

B-3/MW-2

FORMER USTs

FORMER PUMP ISLAND USTs

PLANTER

N

275

270

77.00

76.50

76.00

75.50

75.00

74.50

LEGEND

⊕	HSA SOIL BORING LOCATION (PROPOSED)
⊙	GEOPROBE SOIL BORING LOCATION (PROPOSED)
⊕ B-4	SOIL BORING LOCATION (RILEY, 2007)
MW-X	EXISTING MONITORING WELL
GLMW-1	MONITORING WELL (G LOGICS, 2011)
DW-1	EXTRACTION WLL (ALISTO, 1997)
	PROPERTY BOUNDARY
	PARCEL BOUNDARY
SS	SEWER LINE
	GROUND SURFACE ELEVATION
HSA	HOLLOWSTEM AUGER
ROW	RIGHT OF WAY
UST	UNDERGROUND STORAGE TANK
	0.5-FOOT-INTERVAL GROUNDWATER CONTOUR
(76.32')	GROUNDWATER SURFACE ELEVATION (AUGUST 7, 2012)
	GROUNDWATER FLOW ARROW

SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

DATE: 08/29/12
DRAWN BY: BLR
CHECKED BY: CER
CAD FILE: 0914-004_CM_2012 AUG

PROJECT NAME: WEST SEATTLE
PROJECT NUMBER: 0914-004
STREET ADDRESS: **4755 FAUNTLEROY WAY SOUTHWEST**
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 20 40 80
APPROXIMATE SCALE IN FEET

FIGURE 1
SKS SHELL GROUNDWATER ELEVATIONS
(AUGUST 7, 2012)

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\GW CONTOURS\0914-004_CM_2012 AUG.DWG

WWW.SOUNDEARTHINC.COM

5/24/2013

DRAFT FOR ECOLOGY REVIEW

FUNERAL HOME

SKS SHELL

FORMER GASOLINE SERVICE STATION

FORMER USTs

FORMER PUMP ISLAND USTs

B-4/MW-3

B-6/MW-4

B-3/MW-2

MW106

SMW04

SMW03 (246.00')

GLMW-3 (245.74')

MW-3 (245.47')

GLMW-2

DW-1

GLMW-1 (244.92')

MW-1 (244.54')

RW01

DW-4

MW-2 (245.44')

DW-3

DW-2

MW104 (244.94')

MW105

MW103 (241.75')

MW102 (243.65')

MW101 (244.12')

MW-X (243.29')

MW-5

MW-4

MW-3

246.00

245.00

244.00

243.00

242.00

SIDEWALK

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

FAUNTLEROY WAY SOUTHWEST

39TH AVENUE SOUTHWEST

PLANTER

LES SCHWAB PROPERTY

FORMER GASOLINE SERVICE STATION

BP-ARCO PROPERTY

LEGEND

- MW104 MONITORING WELL (SOUNDEARTH, 2012)
- GLMW-3 MONITORING WELL (G-LOGICS, 2011)
- B-6/MW-4 FORMER MONITORING WELL (LSI ADAPT INC, 2005)
- DW-4 EXTRACTION WELL (ALISTO, 1997)
- MW-3 MONITORING WELL (EAI, 1995)
- MW-5 MONITORING WELL (RZA AGRA INC, 1993)
- MW-X MONITORING WELL (ARCADIS, 2012)
- RW01 REMEDIATION WELL (SOUNDEARTH, 2013)
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SS SEWER LINE
- W WATER LINE
- GAS NATURAL GAS LINE
- HISTORIC UTILITY LINES
- EAI ENVIRONMENTAL ASSOCIATES, INC.
- UST UNDERGROUND STORAGE TANK
- GROUNDWATER FLOW DIRECTION
- UNDERGROUND STORAGE TANK
- 1.00-FOOT-INTERVAL GROUNDWATER CONTOUR
- (241.75') GROUNDWATER SURFACE ELEVATION (NOVEMBER 7, 2012)

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DATE: 12/27/12
DRAWN BY: BLR/JQC/NAC
CHECKED BY: CER
CAD FILE: 0914-004_CM_2012_NOV

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 15 30 60
APPROXIMATE SCALE IN FEET

FIGURE 2
SKS SHELL GROUNDWATER ELEVATIONS (NOVEMBER 7, 2012)

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\GW CONTOURS\0914-004_CM_2012_NOV.DWG

WWW.SOUNDEARTHINC.COM

5/24/2013

DRAFT FOR ECOLOGY REVIEW

FUNERAL HOME

SKS SHELL

FORMER GASOLINE SERVICE STATION

FORMER USTs

B-4/MW-3

B-6/MW-4 FORMER PUMP ISLAND USTs

B-3/MW-2

MW106 (247.68')

SMW04 (246.92')

SMW03 (247.69')

GLMW-3 (247.49')

GLMW-2

MW-3 (246.42')

DW-1

GLMW-1

DW-4

DW-3

DW-2

MW-1

MW-2 (246.84')

MW104 (246.11')

PW01

MW105 (245.97')

MW103

MW102

MW101

MW-X

MW-5

MW-4

MW-3

247.50

247.00

246.50

246.00

SIDEWALK

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

PLANTER

FAUNTLEROY WAY SOUTHWEST

39TH AVENUE SOUTHWEST

LES SCHWAB PROPERTY

FORMER GASOLINE SERVICE STATION

BP-ARCO PROPERTY

LEGEND

- MW104 MONITORING WELL (SOUNDEARTH, 2012)
- PW01 4 INCH DEWATERING WELL
- GLMW-3 MONITORING WELL (G-LOGICS, 2011)
- B-6/MW-4 FORMER MONITORING WELL (LSI ADAPT INC, 2005)
- DW-4 EXTRACTION WELL (ALISTO, 1997)
- MW-3 MONITORING WELL (EAI, 1995)
- MW-5 MONITORING WELL (RZA AGRA INC, 1993)
- MW-X MONITORING WELL (ARCADIS, 2012)
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- NATURAL GAS LINE
- HISTORIC UTILITY LINES
- EAI ENVIRONMENTAL ASSOCIATES, INC.
- UST UNDERGROUND STORAGE TANK
- GROUNDWATER FLOW DIRECTION
- UNDERGROUND STORAGE TANK
- 0.50-FOOT-INTERVAL GROUNDWATER CONTOUR
- (246.11') GROUNDWATER SURFACE ELEVATION (MARCH 6, 2013)

SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

DATE: 03/08/13
DRAWN BY: JQC
CHECKED BY: KKG
CAD FILE: 0914-004_CM_2013_MAR

PROJECT NAME: SKS SHELL REDEVELOPMENT
PROJECT NUMBER: 0914-004
STREET ADDRESS: 4724 40TH AVENUE SOUTHWEST
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 15 30 60
APPROXIMATE SCALE IN FEET

FIGURE 3
SKS SHELL GROUNDWATER ELEVATIONS (MARCH 6, 2013)

P:\0914 LENNAR SHELL\0914-004 RI\FSCAR\TECHNICAL\CAD\GW CONTOURS\0914-004_CM_2013_MAR.DWG

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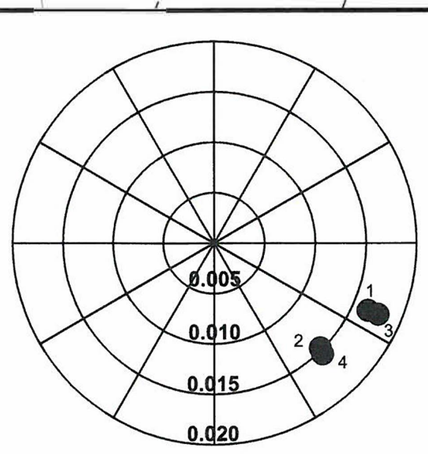
5/24/2013

DRAFT FOR ECOLOGY REVIEW

SMW01
RETAIL STORE
EXISTING HEATING OIL UST
KENNEDY FUNERAL HOME
MW106
SMW04
SMW03
SKS SHELL
GLMW-3
MW-3
GLMW-2
DW-1
GLMW-1
MW-1
RW01
MW-2
DW-4
DW-3
DW-2
MW104
MW105
MW103
SOUTHWEST ALASKA STREET
SEATTLE ELECTRIC COMPANY UTILIDORE
B-7/MW-5
FORMER USTs
B-4/MW-3
FORMER GASOLINE SERVICE STATION
B-6/MW-4
FORMER PUMP ISLAND AND UST
B-3/MW-2
MW102
MW101
MW-X
MW-5
MW-4
MW-3
LES SCHWAB PROPERTY
FORMER GASOLINE SERVICE STATION
BP - ARCO PROPERTY (CURRENT SHELL)



LEGEND

- SMW04 — MONITORING WELL
- RW01 — REMEDIATION WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS — NATURAL GAS LINE
- UST — UNDERGROUND STORAGE TANK
- 1 — MAY 6, 2012
- 2 — AUGUST 7, 2012
- 3 — NOVEMBER 7, 2012
- 4 — MARCH 6, 2013

SoundEarth Strategies
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DATE: 05/22/13
DRAWN BY: NAC
CHECKED BY: KKG
CAD FILE: 0914-004_2013_ROSE

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 20 40 80
APPROXIMATE SCALE IN FEET

FIGURE 4
ROSE DIAGRAM

P:\0914 LENNAR SHELL\0914-004 RI\FSCAP\TECHNICAL\CAD\GW CONTOURS\0914-004_2013_ROSE.DWG

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