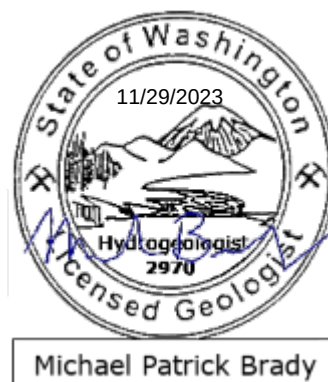


DATE: November 29, 2023
TO: Dave Dinkuhn, PE City of Bremerton
FROM: Michael Brady, LG/LHG
SUBJECT: Long Term Monitoring Event 15 (2023)
PROJECT NUMBER: 233-1896-107
PROJECT NAME: Former Chevron Tank Farm Property



Introduction

This technical memorandum presents a summary of the results of the annual long-term groundwater monitoring event conducted in July 2023 at the Former Chevron Tank Farm Property (Site), located in the Evergreen Rotary Park near the address of 1301 Highland Avenue in Bremerton, Washington (Figure 1). Long-term monitoring is being performed under the Site's Agreed Order Number DE-12TCPHQ-9509 and in accordance with the Site's Long-Term Groundwater Monitoring Plan (LTGMP; Parametrix 2013). Data from these long-term monitoring events is intended to be used to evaluate groundwater quality trends at the Site and confirm the continued occurrence of natural attenuation related to remedial actions and characterization completed between 2007 and 2012.

Background

The Site operated as a 1.4-acre bulk fuel facility from 1946 through 1988. Products handled at the facility during operation consisted primarily of diesel and gasoline (Hart Crowser 1989). Originally, the facility included an upper yard and lower yard. The upper yard contained twelve large above-ground storage tanks (ASTs). The lower yard was used for fuel loading and offloading operations. Portions of the lower yard were originally part of the Port of Washington Narrows and were filled in between 1946 and 1963. Figure 2 displays the former wooden bulkhead separating the original shoreline from the filled areas. During removal of structures of the fuel facility in 1988, petroleum contamination and free-phase liquids were discovered at the Site. In 2005, the City purchased the property for planned redevelopment and incorporation into the Evergreen Rotary Park. Parametrix assisted the City with the Remedial Investigation/Feasibility Study (RI/FS) and Interim Cleanup Actions which included removal of hot spot contaminated soils and in-situ chemical oxidation (ISCO) using soil mixing with Regenox® and injection of Oxygen-Release Compound Advanced® (ORC-A). In 2010, data indicated natural attenuation was occurring and Ecology and the City developed a long-term monitoring plan for the Site.

Monitoring Wells

There are twelve monitoring wells located at the Site. The wells include:

- | | | | |
|----------|----------|----------|----------|
| ■ MW-4R | ■ MW-11 | ■ MW-21R | ■ MW-25 |
| ■ MW-9R | ■ MW-13R | ■ MW-22R | ■ MW-26R |
| ■ MW-10R | ■ MW-20R | ■ MW-23 | ■ MW-27 |



All the wells except MW-9R in the lower yard and MW-23 in the upper yard are sampled annually. Monitoring well MW-9R was damaged in 2015 and is no longer used as part of the long-term monitoring program. Figure 2 displays the location of the wells.

Contaminants of Concern

The primary contaminants of concern (COCs) for the Site include gasoline-, diesel-, and oil-range total petroleum hydrocarbons (TPH), benzene (B), toluene (T), ethylbenzene (E), and xylenes (X). Naphthalene (N) was historically investigated and found well below applicable cleanup levels. Lead was also previously investigated and found exceeding cleanup levels in three monitoring wells MW-9R, MW-20, and MW-21R.

2023 Sampling Event (Event #15)

Groundwater samples were collected on July 11 and 12, 2023 using a peristaltic pump and low-flow sampling techniques. Samples were collected from ten designated long-term monitoring wells (MW-4R, MW-10R, MW-11, MW-13R, MW-20R, MW-21R, MW-22R, MW-25, MW-26R, and MW-27). A duplicate sample (DUP) was collected at MW-25.

Prior to the start of sampling, all wells were opened and allowed to equilibrate with atmospheric pressure. Approximate time-synchronous water levels were then measured in each well to determine the groundwater gradient at the Site. The potentiometric surface observed for this event is displayed on Figure 2. The gradient observed at the Site shows groundwater flows primarily westerly and northerly away from the contaminated groundwater plume.

Following measurement of groundwater levels, each of the wells was purged with a peristaltic pump with new polyethylene tubing until measured water quality parameters of pH, conductivity, dissolved oxygen (DO), temperature, turbidity, and oxidation-reduction potential (ORP) stabilized according to criteria specified in the LTGMP. Water levels were also measured during purging to record drawdown in accordance with low-flow sampling techniques. During the 2023 event, MW-4R, MW-13R, and MW-22R all went dry during purging prior to reaching stabilization. These wells were allowed to recover prior to sample collection.

Upon well stabilization, groundwater samples were collected in clean, laboratory-supplied containers. Three volatile organic analysis (VOA) containers preserved with hydrochloric acid were filled for gasoline-range TPH and BTEX; two 500 milliliter (mL) glass amber containers preserved with hydrochloric acid were filled for diesel-range and oil-range TPH; two to three 500-mL polyethylene containers were filled for nitrate, sulfate, alkalinity, and chloride; three VOC containers preserved with hydrochloric acid were filled for dissolved methane; one 500 mL preserved with hydrochloric acid was filled for total ferrous iron; and a 45-micron filter was placed on the tubing to fill one 500 mL polyethylene container for dissolved manganese. Wells MW-4R, MW-13R, and MW-22R produced insufficient water to fill all the containers, and these wells were only analyzed for gasoline/BTEX and diesel/oil-range TPH.

The final set of measurements for water quality stabilization parameters are provided in Table 1. Field sampling forms related to the sample collection are provided in Attachment A.

Groundwater samples were submitted to Onsite Environmental of Redmond, Washington, for chemical analysis of gasoline-range TPH and BTEX, diesel- and lube oil-range TPH with and without



silica gel treatment, and general chemistry parameters (including dissolved methane). Total ferrous iron analysis was subcontracted to Analytical Resources Incorporated of Tukwila, Washington. A summary of analytical results is presented in Table 1. An analytical data validation review memorandum for the monitoring event and laboratory reports are provided in Attachments B and C.

Results

Table 1 summarizes the results of the sampling event compared to Model Toxics Control Act (MTCA; Chapter 173-340 WAC) Method A cleanup levels and MTCA Method B cleanup levels for protection of Marine Aquatic Life (Ecology 2018, 2020). Time series plots summarizing historical data are included in Attachment D. Analysis for diesel- and oil-range TPH was completed both with and without silica gel treatment. Previous events have utilized silica gel treatment for analysis of diesel- and oil-range TPH due to the prior remedial activities of injected compounds producing polar metabolites. Analysis this event included both with and without silica gel treatment in response to the 2020 evaluation and updating the compliance evaluation for the groundwater to surface water pathway.

MTCA Method A cleanup levels were exceeded for the following analytes:

- Gasoline-range TPH: MW-10R and MW-21R
- Diesel-range TPH: MW-4R, MW-10R, MW-11, MW-13R, MW-21R, and MW-25
- Oil-Range TPH: MW-4R, MW-11, MW-13R, MW-21R, MW-22R, and MW-27R
- Diesel + Oil TPH: MW-4R, MW-10R, MW-11, MW-13R, MW-20R, MW-21R, MW-22R, MW-25, MW-26R, and MW-27
- Benzene: MW-4R and MW-21R

The MTCA Method B cleanup levels for protection of Marine Aquatic Life were exceeding for the following analytes:

- Diesel-range TPH: MW-4R and MW-13R
- Oil-range TPH: MW-4R and MW-13R
- Diesel + Oil TPH: MW-4R, MW-13R, and MW-21R
- Benzene: MW-4R

All the samples were found above the MTCA Method A cleanup level when combining diesel and oil-range TPH. When using silica gel cleanup only five wells exceeded cleanup levels for diesel + oil-range TPH: MW-4R, MW-10R, MW-13R, MW-22R, and MW-25.

Comparison of the diesel- and oil-range TPH concentrations with and without silica gel cleanup indicates the majority of the contaminants at the Site are polar compounds from degraded, highly weathered diesel and oil, consistent with the historical cleanup actions. The following summarizes the ratio of polar to non-polar compounds for each of the wells combining the diesel and oil-range TPH. Silica gel cleanup removes polar hydrocarbons from NWTPH-Dx, using the laboratory data the ratio of polar to non-polar compounds was calculated. Higher ratios indicate the plume is very weathered/degraded. Lower ratios indicate less weathering and degradation:

- MW-4R 18 (Polar) : 1 (NonPolar)
- MW-10R 2:1
- MW-11 2:1
- MW-13R 7:1

■ MW-20R	4:1
■ MW-21R	12:1
■ MW-25	0.5:1
■ MW-26R	5:1
■ MW-27	2:1

Discussion

Concentration trends versus time for diesel-range TPH with silica gel cleanup, oil-range TPH with silica gel cleanup, gasoline, and benzene are included in Appendix D. The figures are plotted on a log scale to evaluate degradation rate constants. The data appear to show relatively low degradation rates at the Site with contaminant concentrations appearing to stabilize from 2015 through the present.

Anaerobic respiration appears to be on-going with low dissolved oxygen concentrations (less than 1.0 mg/L in several wells including: MW-10R, MW-11, MW-13R, MW-20R, MW-21R, MW-25, and MW-27).

Similarly, ferrous iron, dissolved manganese, and dissolved methane concentrations are associated with negative oxidation-reduction potential values across the Site (Table 1). Anaerobic degradation of petroleum hydrocarbons is much slower than aerobic degradation. This is likely a result of the historical oxygen being depleted over time due to the bacterial demand in degradation of the plume.

Figure 2 displays the gradient at the Site. As depicted, there is a ridge in the center of the Site near the lower yard. Groundwater then moves predominantly to three discharge points. In evaluation of contaminants and cleanup levels, the highest concentrations of COCs occur within the ridge of the lower yard near MW-4R and likely east of the former bulkhead (Figure 2). The contaminants are then migrating out to MW-13R (to the north) and MW-21R (to the west). The results from this investigation are similar to previous annual monitoring events.

The exceedances of MTCA Method A cleanup levels as well as cleanup levels for protection of aquatic marine life indicate continued requirements for annual monitoring in accordance with the LTGMP.

Closing

This report documents Event 15 of long-term groundwater monitoring at the Former Chevron Tank Farm Property that was redeveloped as part of Evergreen Rotary Park. Results from this investigation found all ten monitoring wells above MTCA Method A cleanup levels for diesel+oil-range TPH, two wells above MTCA cleanup levels for gasoline range TPH (MW-10R and MW-21R), and two wells above MTCA Method A cleanup levels for benzene (MW-4R and MW-21R). When using silica gel acid cleanup only five wells exceeded MTCA Method A cleanup levels for diesel+oil (MW-4R, MW-10R, MW-13R, MW-22R, and MW-25).

The majority of contaminants at the Site are polar compounds from the degraded fuels. Degradation is currently anaerobic for the majority of the Site and relatively slow and stable. Continued annual monitoring is recommended.

References

Parametrix. 2013. Former Chevron Property Long-Term Groundwater Monitoring Plan. Prepared for Washington State Department of Ecology on behalf of City of Bremerton. July 8. Seattle, WA.

Washington State Department of Ecology. 2018. Environmental Effects-Based Concentrations for Total Petroleum Hydrocarbons (TPH). Publication No. 18-03-002. Olympia, WA.

Washington State Department of Ecology. 2020. Environmental Effects-Based Concentrations for Weathered Diesel-Range Organics – Toxicity in Marine Water and Freshwater. Publication No. 20-03-008. Olympia, WA.

Attachments

Figure 1 – Project Vicinity

Figure 2 – Site Detail Map

Table 1 – Event 15 Groundwater Results Summary

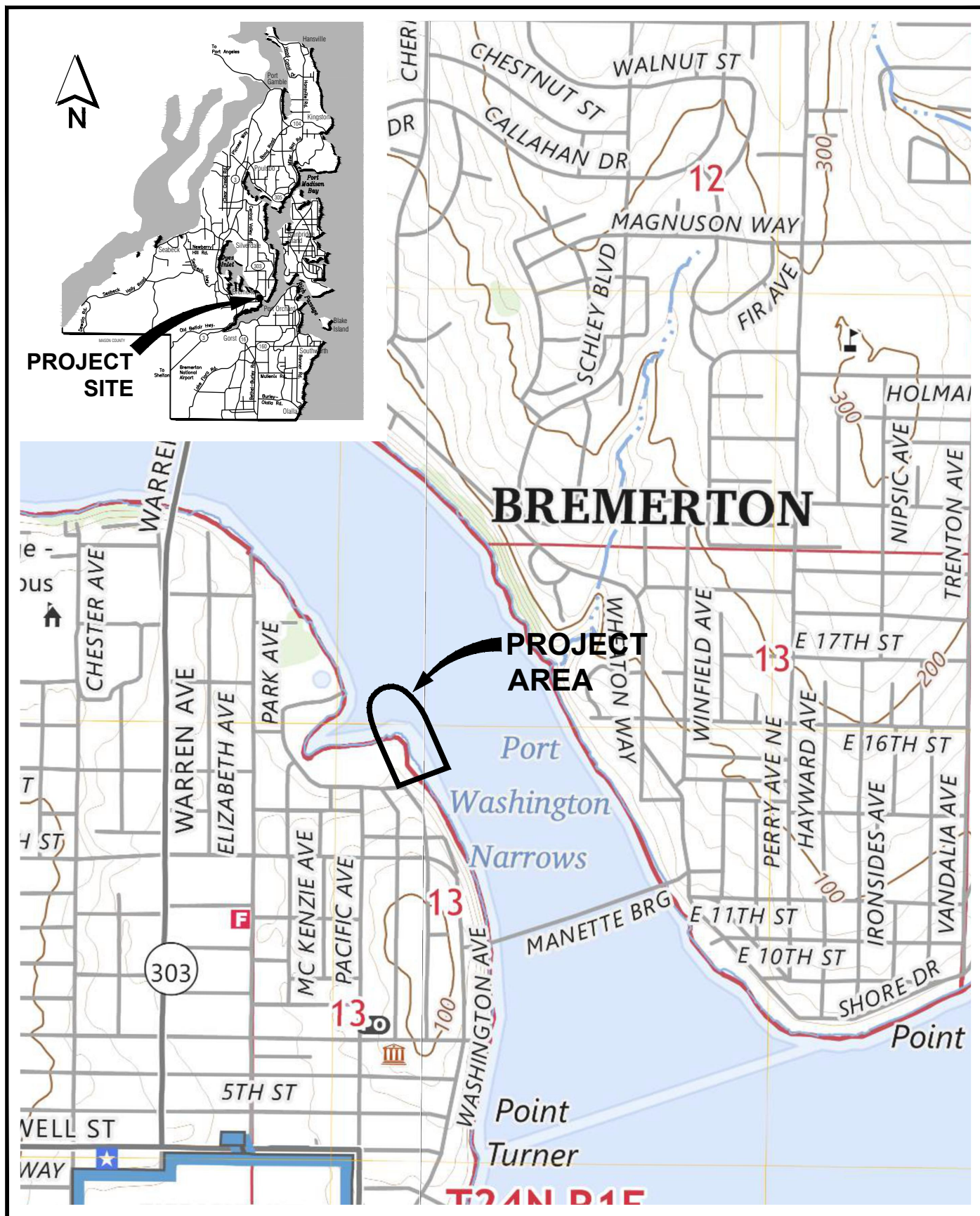
Attachment A – Field Sampling Forms

Attachment B – Data Validation Technical Memorandum

Attachment C – Laboratory Reports

Attachment D – Time Series Plots

Figures



Parametrix DATE: Nov 02, 2023 FILE: BR1896107-F01_20231102

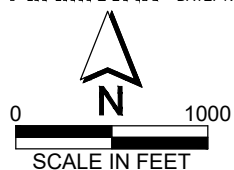


Figure 1
Former Chevron Property
Long-Term Groundwater Monitoring
Project Vicinity



LEGEND:

- EXISTING CHAIN LINK FENCE
- EXISTING MONITORING WELL
- SOIL EXCAVATION AREA
- WELL REMOVED DURING INTERIM ACTION
- LONG TERM MONITORING WELL
- 5.08'
- R
- INDICATES REPLACEMENT WELL
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER SURFACE ELEVATION CONTOUR

- GENERAL NOTES:**
- CONTOUR DATUM NAVD 88
 - GROUNDWATER ELEVATION MEASUREMENTS COLLECTED 7/11/23

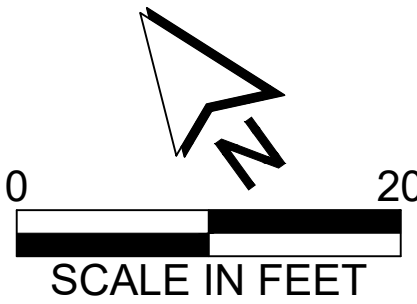


Figure 2
Former Chevron Property
Long-Term Groundwater Monitoring Event 15
Site Detail Map - July 2023

Table

Table 1 Event 15 Groundwater Results Summary

PARAMETERS	Monitoring Well No.	Units	MTCA Method A Unrestricted	Protect Marine Aquatic Life^	MW-4R 7/11-7/12/23	MW-10R 7/11/23	MW-11 7/11/23	MW-13R 7/11-7/12/23	MW-20R 7/12/23	MW-21R 7/11/23	MW-22R 7/12/23	MW-25 7/12/23	*DUP 7/12/23	MW-26R 7/11/23	MW-27 7/12/23
TOTAL PETROLEUM HYDROCARBONS															
Gasoline (Gx)		µg/L	800	1,700	470	1,400	140	<100	100	1,600	<100	420 J	240 J	<100	<100
Weathered Diesel (Dx)		µg/L	500	2,100	6,000	1,400	600	2,400	280	1,400	370	690 J	280 J	160	200
Weathered Diesel (Dx) w/ Silica Gel Acid Cleanup		µg/L	500	2,100	240	620	170	210	<100	<480	89	630 J	170 J	<110	<100
Lube Oil		µg/L	500	2,100	5,100	480	620	2,600	460	860	1,200	400	420	340	580
Lube Oil w/ Silica Gel Acid Cleanup		µg/L	500	2,100	350	<200	220	390	<210	<210	440	<210	<230	<210	220
Total Weathered Dx + Oil		µg/L	500	2,100	11,100	1,880	1,220	5,000	740	2,260	1,570	1,090 J	700 J	500	780
Total Weathered Dx + Oil w/ Silica Gel Acid Cleanup		µg/L	500	2,100	590	720	390	600	<155	<345	529	735 J	285 J	<160	270
VOLATILE ORGANICS (BTEX)															
Benzene		µg/L	5	23	64	<1.0	<1.0	<1.0	1.6	18	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene		µg/L	1,000	102	2.4	<1.0	<1.0	<1.0	<1.0	6.8	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene		µg/L	700	21	1.2	<1.0	<1.0	<1.0	<1.0	6.9	<1.0	<1.0	<1.0	<1.0	<1.0
m,p-Xylene		µg/L	1,000	106	1.3	1.4	<1.0	<1.0	<1.0	12	<1.0	1.2	<1.0	<1.0	<1.0
o-Xylene		µg/L	1,000	106	1.3	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
METALS															
Total Ferrous Iron		mg/L			--	11.7 D	23.1 D	--	18.6 D	4.92 D	--	0.653	0.655	0.195	23.9 D
Dissolved Manganese		mg/L			--	1.1	1.9	--	1.6	1.3	--	0.049	0.051	0.099	2.7
GENERAL CHEMISTRY															
Alkalinity		mg/L			--	150	170	--	180	770	--	180	170	200	190
Nitrate (as Nitrogen)		mg/L			--	<0.050	<0.050	--	<0.050	<0.050	<0.050	0.32	0.28	<0.050	<0.050
Sulfate		mg/L			--	<5.0	<5.0	--	<5.0	<5.0	<5.0	<5.0	5.1	1,300	<5.0
Chloride		mg/L			--	5.6	9.7	--	8.0	16	--	37	35	11,000	9.4
Dissolved Methane		µg/L			2,500	110	840	520	1,200	3,500	0.98	490	600	4.1	6,200
FIELD PARAMETERS															
Turbidity		Neth. Turbidity			--	--	--	--	--	--	--	--	--	--	--
pH		--			7.20	6.65	6.61	7.15	6.87	7.26	6.91	6.60	--	6.94	6.84
Specific Conductance		Millisiemens/cm			2,667	324.2	401.5	1518	391.3	1,355	38,442	420.1	--	29,540	427.0
Dissolved Oxygen		mg/L			3.00	0.37	0.17	0.41	0.33	0.83	5.98	0.43	--	7.91	0.29
ORP		mV			-154.3	-87.0	-89.2	-127.0	-91.9	-139.5	-60.9	8.4	--	-12.6	-116.1

Notes:

- Not Analyzed
- * Duplicate sample.
- mg/L= Milligrams per liter.
- µg/L = Micrograms per liter.
- J = Reported value is an estimate
- D = Reported value is from a dilution
- Bold** Exceeds MTCA A cleanup level.
- Exceeds protection of surface water aquatic marine life cleanup level**
- Notes: Non-detects quantitated at one-half the detection level for Total TPH Dx + Oil
- Interference flags are not shown
- ^ Ecology Publication No. 18-03-002 and 20-03-008

Attachment A

Field Sampling Forms

Parametrix

BREMBERTON

PROJECT	Former Chevron Property		SHEET	1	OF	1
BY	Nguyen		DATE	7/11/23		CHECKED
SUBJECT			JOB NO.	233-1896-107		PHASE
					DATE	
					TASK	

<u>WELL</u>	<u>TIME</u>	<u>WATER LEVEL (ft)</u>
MW-11	9:30	8.63
MW-10R	9:32	8.89
MW-23	9:34	21.97
MW-25	9:35	8.54
MW-4R	9:36	7.94
MW-13R	9:38	7.63
MW-22R	9:39	7.88
MW-26R	9:40	7.40
MW-21R	9:42	7.49
MW-20R	9:43	6.72
MW-27	9:45	5.73

7/11/23

233-1896-107

WEATHER

TEMP

Sunny

~70°F

9 AM

Sally Nguyen
Mike Brady

Groundwater Sampling Field Data Sheet

Project Number	233-1896-107	Date	7/11-7/12/23
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	Sally Nguyen
Client Name	City of Bremerton	Purged By	Sally Nguyen

Depth to Water (feet)	<u>7.94</u>	Purge Vol. Meas.Method	<u>5 gal bucket</u>
Depth of Well (feet)	<u>17.03</u>	Date Purged	<u>7/11/23</u>
Reference Point (surveyors notch/etc)		Purge Time (from/to)	<u>10:06-10:09</u>
Date/Time Sampled	<u>7/12/23 @ 11:35</u>	Flow Rate (ml/min)	<u>500 ml/min</u>

[illegible]

Purge Equipment	<u>Peristaltic</u>	Sampling Equipment	<u></u>
Laboratory	<u>Onsite/ARI</u>	Date Sent to Lab	<u>7/12/23</u>
Chain-of-Custody (yes/no)	<u>y</u>	Field QC Sample Number	<u></u>
Shipment Method	<u>Hand</u>	Split with (name(s)/organization)	<u></u>

Well Integrity _____
Remarks _____
Signature [Signature] Page 1 of 1

Parametrix, Inc.

Well #: MW-10R

Sample #: _____

Groundwater Sampling Field Data Sheet

Project Number	233-1896-107	Date	7/11/23
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	Sally Nguyen
Client Name	City of Bremerton	Purged By	Sally Nguyen

Casing Diameter: 2" _____ 4" _____ 6" _____ Other 3/4"

Depth to Water (feet)	8.89	Purge Vol. Meas. Method	5 gal bucket
Depth of Well (feet)	16.52	Date Purged	7/11/23
Reference Point (surveyors notch/etc)		Purge Time (from/to)	1135 - 1215
Date/Time Sampled	7/11/23 @ 12:03	Flow Rate (ml/min)	450

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$

Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$

Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/m) $\pm 3\%$	DO (mg/L) $\pm 10\%$	TEMP °C	TURB. $\pm 10\%$ if > 10 NTU	ORP (mV) $\pm 10 \text{ mV}$	CUM. VOL. (gal)	Flow rate
1140	9.65	6.69	325.4	0.30	14.2	CL	-72.3	0.5	450
1150	9.64	6.68	325.1	0.37	14.2		-82.5		450
1155	9.65	6.65	324.7	0.38	14.2		-84.4		450
1200	9.66	6.65	324.2	0.37	14.3		-87.0		450

Purge Equipment	_____	Sampling Equipment	_____
Laboratory	Onsite/ARI	Date Sent to Lab	7/11 - 7/12/23
Chain-of-Custody (yes/no)	Y	Field QC Sample Number	_____
Shipment Method	hand	Split with (name(s)/organization)	_____

Well Integrity	_____
Remarks	_____
Signature	_____ Page <u>1</u> of <u>1</u>

Groundwater Sampling Field Data Sheet

Well #: MW-11
Sample #:

Project Number	233-1896-107	Date	7/11/23
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	Sally Nguyen
Client Name	City of Bremerton	Purged By	Sally Nguyen

Casing Diameter: 2" X 4" _____ 6" _____ Other _____

Depth to Water (feet)	<u>8.63</u>	Purge Vol. Meas.Method	<u>5 gal bucket</u>
Depth of Well (feet)	<u>20.81</u>	Date Purged	
Reference Point (surveyors notch/etc)		Purge Time (from/to)	<u>1043 - 1131</u>
Date/Time Sampled	<u>11/1/23 @ 1117</u>	Flow Rate (ml/min)	<u>450 ml/min</u>

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

[illegible]

flow rate

450
450
450
450
450

Purge Equipment	_____	Sampling Equipment	_____
Laboratory	Onsite/ARI	Date Sent to Lab	7/11 - 7/12/23
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	hand	Split with (name(s)/organization)	_____

Well Integrity _____
 Remarks _____
 Signature _____ Page 1 of 1

Sample #:

Well Integrity _____
Remarks _____
Signature  Page 1 of 1

Parametrix, Inc.

Well #: MW-27 MW-202
Sample #: _____

Groundwater Sampling Field Data Sheet

Project Number	233-1896-107	Date	7/12/23
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	Sally Nguyen
Client Name	City of Bremerton	Purged By	Sally Nguyen

Casing Diameter: 2" X 4" _____ 6" _____ Other _____

Depth to Water (feet)	6.72	Purge Vol. Meas. Method	5 gal bucket
Depth of Well (feet)	14.09	Date Purged	7/12/23
Reference Point (surveyors notch/etc)		Purge Time (from/to)	1027-1103
Date/Time Sampled	7/12/23 @ 1050	Flow Rate (ml/min)	450 ml/min

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/m) $\pm 3\%$	DO (mg/L) $\pm 10\%$	TEMP °C	TURB. $\pm 10\%$ if > 10 NTU	ORP (mV) $\pm 10 \text{ mV}$	CUM. VOL. (gal)
1032	7.13	6.88	386.1	0.30	14.1	CLV	-84.0	.5
1037	7.16	6.88	387.7	0.32	14.1		-89.1	.5
1042	7.21	6.87	389.7	0.39	14.2		-91.1	.5
1047	7.22	6.87	391.3	0.33	14.0		-91.9	.5

Flow rate
450
450
450
450

Purge Equipment	_____	Sampling Equipment	_____
Laboratory	Onsite/ARI	Date Sent to Lab	7/12/23
Chain-of-Custody (yes/no)	Y	Field QC Sample Number	_____
Shipment Method	hand	Split with (name(s)/organization)	_____

Well Integrity	_____
Remarks	_____
Signature	_____
Page	1 of 1

Parametrix, Inc.

Well #: MW-21R

Sample #: _____

Groundwater Sampling Field Data Sheet

Project Number	<u>233-1896-107</u>	Date	<u>7/11/23</u>
Project Name	<u>Former Chevron Property</u>	Location	_____
Project Address	<u>1310 Highland Drive, Bremerton</u>	Sampled By	<u>Sally Nguyen</u>
Client Name	<u>City of Bremerton</u>	Purged By	<u>Sally Nguyen</u>

Casing Diameter: 2" _____ 4" _____ 6" _____ Other 3 1/4" in 2"

Depth to Water (feet)	<u>7.49</u>	Purge Vol. Meas. Method	<u>5 gal bucket</u>
Depth of Well (feet)	<u>12.10</u>	Date Purged	<u>7/11/23</u>
Reference Point (surveyors notch/etc)	_____	Purge Time (from/to)	<u>1450 - 1535</u>
Date/Time Sampled	<u>7/11/23 @ 1520</u>	Flow Rate (ml/min)	_____

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/m) $\pm 3\%$	DO (mg/L) $\pm 10\%$	TEMP °C	TURB. $\pm 10\%$ if > 10 NTU	ORP (mV) $\pm 10 \text{ mV}$	CUM. VOL. (gal)
<u>1459</u>	<u>10.80</u>	<u>7.27</u>	<u>1268</u>	<u>0.54</u>	<u>13.8</u>	<u>clv</u>	<u>-128.4</u>	<u>.25</u>
<u>1503</u>	<u>10.80</u>	<u>7.26</u>	<u>1317</u>	<u>0.74</u>	<u>13.7</u>	<u>↓</u>	<u>-135.0</u>	<u>.25</u>
<u>1508</u>	<u>10.74</u>	<u>7.26</u>	<u>1339</u>	<u>0.96</u>	<u>13.7</u>	<u>↓</u>	<u>-138.3</u>	<u>.4</u>
<u>1513</u>	<u>10.75</u>	<u>7.25</u>	<u>1346</u>	<u>0.90</u>	<u>13.7</u>	<u>↓</u>	<u>-138.8</u>	<u>.25</u>
<u>1518</u>	<u>10.70</u>	<u>7.26</u>	<u>1355</u>	<u>0.83</u>	<u>13.7</u>	<u>↓</u>	<u>-139.5</u>	_____

Flow rate
450
450
400
400

Purge Equipment	_____	Sampling Equipment	_____
Laboratory	<u>Onsite/ARI</u>	Date Sent to Lab	<u>7/11 - 7/12/23</u>
Chain-of-Custody (yes/no)	<u>Y</u>	Field QC Sample Number	_____
Shipment Method	<u>hand</u>	Split with (name(s)/organization)	_____

Well Integrity	_____
Remarks	_____
Signature	_____
Page	<u>1</u> of <u>1</u>

Groundwater Sampling Field Data Sheet

Sample #:

Well Integrity _____
Remarks _____
Signature  Page 1 of 1

Sample #:

Project Number	233-1896-107	Date	7/12/23
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	Sally Nguyen
Client Name	City of Bremerton	Purged By	Sally Nguyen

Casing Diameter: 2" 4" 6" Other

Depth to Water (feet)	<u>8.54</u>	Purge Vol. Meas. Method	<u>5 gal bucket</u>
Depth of Well (feet)	<u>18.78</u>	Date Purged	<u>7/12/23</u>
Reference Point (surveyors notch/etc)		Purge Time (from/to)	<u>1244-1412</u>
Date/Time Sampled	<u>7/12/23 @ 40-80 IPS</u>	Flow Rate (ml/min)	<u>400 ml/min</u>

Calculated Purge Volume (gallons)	Actual Purge Volume (gallons)
100	100
200	200
300	300
400	400
500	500
600	600
700	700
800	800
900	900
1000	1000

[illegible]

Purge Equipment	_____	Sampling Equipment	_____
Laboratory	Onsite/ARI	Date Sent to Lab	7/12/23
Chain-of-Custody (yes/no)	y	Field QC Sample Number	_____
Shipment Method	hand	Split with (name(s)/organization)	_____

Well Integrity _____
Remarks oil slick on water
Signature [Signature] Page 1 of 1

Groundwater Sampling Field Data Sheet

Sample #:

Well Integrity _____

Remarks _____

Signature _____ Page 1 of 1

Well #: MW-20R
Sample #: _____

Project Number	233-1896-107	Date	7/12/23
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	Sally Nguyen
Client Name	City of Bremerton	Purged By	Sally Nguyen

Depth to Water (feet)	<u>5.73</u>	Purge Vol. Meas. Method	<u>5 gal bucket</u>
Depth of Well (feet)	<u>13.39</u>	Date Purged	<u>4/12/23</u>
Reference Point (surveyors notch/etc)	<u></u>	Purge Time (from/to)	<u>9:36 - 10:10</u>
Date/Time Sampled	<u>4/12/23 @ 9:58</u>	Flow Rate (ml/min)	<u></u>

[illegible]

Flow no

450
450
450
475

Well Integrity	
Remarks	Oxidized moment, got over tube & gear
Signature	 _____ Page _____ of _____

Attachment B

Data Validation
Technical Memorandum

TECHNICAL MEMORANDUM

DATE: July 28, 2023
TO: Michael Brady
FROM: Sally Nguyen, GIT
SUBJECT: Quality Assurance / Quality Control for Event 15
CC: Lisa Gilbert
PROJECT NUMBER: 233-1896-107
PROJECT NAME: Former Chevron Property Remediation Performance Monitoring July 2023

INTRODUCTION

This technical memorandum summarizes the results of an internal quality assurance/quality control (QA/QC) review of analytical results for groundwater samples collected on July 11 and 12, 2023. Ten groundwater samples, including one field duplicate (DUP), and one trip blank were submitted to OnSite Environmental, Inc. for analysis (Laboratory Reference No. 2307-074). Ferrous iron analyses were conducted by Analytical Resources, Inc. (ARI); the first batch of samples were hand delivered to ARI on July 11 (23G0193), and the second batch on July 12 (23G0215). The rest of the samples were delivered to OnSite Environmental on July 13.

All samples were analyzed for gasoline using NWTPH-Gx and benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA 8021B, and diesel and oil using NWTPH-Dx Extended with and without silica gel treatment. Eight of the samples were also analyzed for dissolved methane (RSK 175), dissolved manganese (EPA 6010D), nitrate (EPA 353.2), sulfate (ASTM D516-11), alkalinity (SM 2320B), chloride (SM 4500-Cl E) and total ferrous iron (SM 3500-Fe B-97). Three monitoring wells did not produce enough water to perform these additional analyses (MW-4R, MW-13R, and MW-22R).

Wells MW-4R, MW-13R, and MW-22R were purged to dryness and were sampled the same or following day after recovering.

Final laboratory data were submitted to Parametrix via a Tier II-type data report and EIM EDDs. All data and analytical QC elements were reviewed against laboratory and method QC criteria, and qualifiers were applied where judged appropriate.

DATA REVIEW SUMMARY

All samples collected were prepared and analyzed using standard methods. All analyses requested on the COC were conducted. No laboratory method or trip blank contamination was reported.

On-Site Environmental, Inc. noted the following:

- “M” flags (Diesel) – Hydrocarbons in the gasoline range are impacting the diesel range result in samples MW-10R (with and without sulfuric acid/silica gel cleanup) and MW-21R (with sulfuric acid/silica gel cleanup).

- “M1” flags (Diesel)— Hydrocarbons in the gasoline range (toluene-naphthalene) are present in sample MW-21R (without sulfuric acid/silica gel cleanup).
- “U1” flags – The practical quantitation limit is elevated due to interferences present in sample for diesel (without sulfuric acid/silica gel cleanup) in the sample from MW-21R.
- “X1” and “X2” flags (Diesel and Oil) – Sample extract treated with a silica gel cleanup procedure.

ARI noted the following for the ferrous iron results:

- “D” flags – The reported value is from a dilution.

A comparison of results between the original MW-25 samples and DUP duplicate results were not within acceptable ranges of precision. Relative percent difference between MW-25 and its duplicate samples were above the acceptable 25% for Diesel and Gasoline samples. A copy of the relative percent difference calculations is attached. The laboratory included copies of the chromatograms to further assist interpretations of discrepancies.

Multiple parameters may have led to this discrepancy, including an error in the COC forms potentially leading to the two samples being analyzed in two different events, also adding the potential for two different interpretations if analyzed by different lab members. The sampler on site also collected the MW-25 groundwater samples from the well before collecting the DUP samples, essentially sampling in separate batches as opposed to alternating between the two. The chromatograms between the samples look very different. With all these possibilities in consideration, Parametrix believes there is minimal cause for concern for the integrity of the other well samples and a “J” flag will be made for MW-25 and DUP samples to acknowledge the discrepancies between these samples.

CONCLUSIONS

Appropriate standard methods were used. No laboratory method blank contamination was observed. Analytical accuracy and precision were determined to be generally acceptable based on this review.

The following qualifiers were added to the data:

- Results for Diesel and Gasoline in samples MW-25 and DUP should be qualified “J” as estimated due to discrepancies as mentioned earlier.

REFERENCES

EPA. 2020a. National Functional Guidelines for Inorganic Superfund Data Review. EPA 540R- 2017-001. November.

EPA. 2020b. National Functional Guidelines for Organic Superfund Data Review. EPA 542-R-20-006. November.

Field Duplicate RPDs:		Former Chevron Property Performance Groundwater Monitoring							
Matrix:		Groundwater							
Sample date:		Jul-23	Event 15					w/in	w/in
	sample	duplicate	avg	diff	rp	det. lim.	rp<25%	det.	control
	MW25	DUP						lim.	lim.
Benzene	<1.0	<1.0	1	0	0.0	1.0			y
Toluene	<1.0	<1.0	1	0	0.0	1.0			y
Ethyl benzene	<1.0	<1.0	1	0	0.0	1.0			y
m,p xylene	1.2	<1.0	1.1	0.2	18.2	1.0			y
o xylene	<1.0	<1.0	1	0	0.0	1.0			y
Gasoline	420	240	330	180	54.5	100		n	n
Diesel	0.69	0.28	0.485	0.41	84.5	0.13		n	n
Lube Oil	0.40	0.42	0.41	-0.02	4.9	0.21/0.20	y		y
Diesel SG	0.63	0.17	0.4	0.46	115.0	0.13		n	n
Lub oil SG	<0.21	<0.23	0.22	0	0.0	0.21/0.20			y
Nitrate	0.32	0.28	0.3	0.04	13.3	0.050	y		y
Sulfate	<5.0	5.1	5.1	0.1	2.0	5.0			y
Total Alkalinity	180	170	175	10	5.7	2.0	y		y
Chloride	37	35	36	2	5.6	2.0	y		y
Dissolved Methane	490	600	545	-110	20.2	55/42	y		y
Manganese	0.049	0.051	0.05	-0.002	4.0	11	y		y
Ferrous Iron	0.653	0.655	0.654	-0.002	0.3	0.800	y		y

Attachment C

Laboratory Reports



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 26, 2023

David Dinkuhn
Parametrix, Inc.
60 Washington Avenue, #390
Bremerton, WA 98337

Re: Analytical Data for Project 233-1896-107
Laboratory Reference No. 2307-074

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on July 13, 2023.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'DB', with a long horizontal stroke extending to the right.

David Baumeister
Project Manager

Enclosures



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 26, 2023
Samples Submitted: July 13, 2023
Laboratory Reference: 2307-074
Project: 233-1896-107

Case Narrative

Samples were collected on July 11 and 12, 2023 and received by the laboratory on July 13, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-4R					
Laboratory ID:	07-074-01					
Benzene	64	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	2.4	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	1.2	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	1.3	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	1.3	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	470	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	95	65-122				
Client ID:	MW-10R					
Laboratory ID:	07-074-02					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	1.4	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	1400	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	89	65-122				
Client ID:	MW-11					
Laboratory ID:	07-074-03					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	140	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	89	65-122				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-13R					
Laboratory ID:	07-074-04					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	ND	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	88	65-122				
Client ID:	MW-20R					
Laboratory ID:	07-074-05					
Benzene	1.6	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	100	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	87	65-122				
Client ID:	MW-21R					
Laboratory ID:	07-074-06					
Benzene	18	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	6.8	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	6.9	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	12	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	1.2	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	1600	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	104	65-122				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW-22R						
Laboratory ID:	07-074-07					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	ND	100	NWTPH-Gx	7-13-23	7-13-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	89	65-122				
Client ID: MW-25						
Laboratory ID:	07-074-08					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	1.2	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	420	100	NWTPH-Gx	7-13-23	7-13-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	88	65-122				
Client ID: MW-26R						
Laboratory ID:	07-074-09					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	ND	100	NWTPH-Gx	7-13-23	7-13-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	86	65-122				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-27					
Laboratory ID:	07-074-10					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	ND	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	86	65-122				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0713W2					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	ND	100	NWTPH-Gx	7-13-23	7-13-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	88	65-122				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-075-01							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	NA	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethylbenzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	236	189	NA	NA	NA	NA	22	30
Surrogate:								
Fluorobenzene				89	82	65-122		

SPIKE BLANKS

Laboratory ID:	SB0713W1								
	SB	SBD	SB	SBD	SB	SBD			
Benzene	46.3	47.8	50.0	50.0	93	96	81-118	3	12
Toluene	47.1	48.7	50.0	50.0	94	97	82-119	3	12
Ethylbenzene	47.2	48.7	50.0	50.0	94	97	81-118	3	12
m,p-Xylene	47.0	48.4	50.0	50.0	94	97	82-118	3	12
o-Xylene	47.7	48.9	50.0	50.0	95	98	81-119	2	11
Surrogate:									
Fluorobenzene					89	90	65-122		



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-4R					
Laboratory ID:	07-074-01					
Diesel Range Organics	6.0	0.11	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	5.1	0.23	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	126	50-150				

Client ID:	MW-4R					
Laboratory ID:	07-074-01					
Diesel Range Organics	0.24	0.11	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	0.35	0.23	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	83	50-150				

Client ID:	MW-10R					
Laboratory ID:	07-074-02					
Diesel Range Organics	1.4	0.10	NWTPH-Dx	7-14-23	7-14-23	M
Lube Oil Range Organics	0.48	0.21	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	104	50-150				

Client ID:	MW-10R					
Laboratory ID:	07-074-02					
Diesel Range Organics	0.62	0.10	NWTPH-Dx	7-14-23	7-14-23	M,X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	99	50-150				

Client ID:	MW-11					
Laboratory ID:	07-074-03					
Diesel Range Organics	0.60	0.10	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	0.62	0.20	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	118	50-150				

Client ID:	MW-11					
Laboratory ID:	07-074-03					
Diesel Range Organics	0.17	0.10	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	0.22	0.20	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	101	50-150				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-13R					
Laboratory ID:	07-074-04					
Diesel Range Organics	2.4	0.12	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	2.6	0.24	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	104	50-150				

Client ID:	MW-13R					
Laboratory ID:	07-074-04					
Diesel Range Organics	0.21	0.12	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	0.39	0.24	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	120	50-150				

Client ID:	MW-20R					
Laboratory ID:	07-074-05					
Diesel Range Organics	0.28	0.10	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	0.46	0.21	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	100	50-150				

Client ID:	MW-20R					
Laboratory ID:	07-074-05					
Diesel Range Organics	ND	0.10	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	110	50-150				

Client ID:	MW-21R					
Laboratory ID:	07-074-06					
Diesel Range Organics	1.4	0.10	NWTPH-Dx	7-14-23	7-14-23	M
Lube Oil Range Organics	0.86	0.21	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	98	50-150				

Client ID:	MW-21R					
Laboratory ID:	07-074-06					
Diesel Range Organics	ND	0.48	NWTPH-Dx	7-14-23	7-14-23	M1,U1,X1
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	115	50-150				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-22R					
Laboratory ID:	07-074-07					
Diesel Range Organics	0.37	0.13	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	1.2	0.27	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	99	50-150				

Client ID:	MW-22R					
Laboratory ID:	07-074-07					
Diesel Range Organics	0.089	0.067	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	0.44	0.27	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	120	50-150				

Client ID:	MW-25					
Laboratory ID:	07-074-08					
Diesel Fuel #1	0.69	0.21	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	0.40	0.21	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	76	50-150				

Client ID:	MW-25					
Laboratory ID:	07-074-08					
Diesel Fuel #1	0.63	0.21	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	82	50-150				

Client ID:	MW-26R					
Laboratory ID:	07-074-09					
Diesel Range Organics	0.16	0.11	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	0.34	0.21	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	95	50-150				

Client ID:	MW-26R					
Laboratory ID:	07-074-09					
Diesel Range Organics	ND	0.11	NWTPH-Dx	7-14-23	7-15-23	X1
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	7-14-23	7-15-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	108	50-150				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-27					
Laboratory ID:	07-074-10					
Diesel Range Organics	0.20	0.10	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	0.58	0.21	NWTPH-Dx	7-14-23	7-14-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	<i>107</i>	<i>50-150</i>				
Client ID:	MW-27					
Laboratory ID:	07-074-10					
Diesel Range Organics	ND	0.10	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	0.22	0.21	NWTPH-Dx	7-14-23	7-14-23	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	<i>107</i>	<i>50-150</i>				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0714W1					
Diesel Range Organics	ND	0.040	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	ND	0.16	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	94	50-150				
Laboratory ID:	MB0714W1					
Diesel Range Organics	ND	0.040	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	ND	0.16	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	125	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-074-02							
	ORIG	DUP						
Diesel Range Organics	1.44	1.28	NA	NA	NA	NA	12	40
Lube Oil Range Organics	0.483	0.392	NA	NA	NA	NA	21	40
Surrogate:								
<i>o</i> -Terphenyl				104	98	50-150		
Laboratory ID:	07-074-02							
	ORIG	DUP						
Diesel Range Organics	0.624	0.572	NA	NA	NA	NA	9	40
Lube Oil Range	ND	ND	NA	NA	NA	NA	NA	40
Surrogate:								
<i>o</i> -Terphenyl				99	85	50-150		



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
 Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	07-074-02					
Nitrate	ND	0.050	EPA 353.2	7-13-23	7-13-23	

Client ID:	MW-11					
Laboratory ID:	07-074-03					
Nitrate	ND	0.050	EPA 353.2	7-13-23	7-13-23	

Client ID:	MW-20R					
Laboratory ID:	07-074-05					
Nitrate	ND	0.050	EPA 353.2	7-13-23	7-13-23	

Client ID:	MW-21R					
Laboratory ID:	07-074-06					
Nitrate	ND	0.050	EPA 353.2	7-13-23	7-13-23	

Client ID:	MW-25					
Laboratory ID:	07-074-08					
Nitrate	0.32	0.050	EPA 353.2	7-13-23	7-13-23	

Client ID:	MW-26R					
Laboratory ID:	07-074-09					
Nitrate	ND	0.050	EPA 353.2	7-13-23	7-13-23	

Client ID:	MW-27					
Laboratory ID:	07-074-10					
Nitrate	ND	0.050	EPA 353.2	7-13-23	7-13-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

NITRATE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
 Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0713W1					
Nitrate	ND	0.050	EPA 353.2	7-13-23	7-13-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-075-01							
	ORIG	DUP						
Nitrate	0.281	0.263	NA	NA	NA	NA	7	19

MATRIX SPIKE								
Laboratory ID:	07-075-01							
	MS	MS		MS				
Nitrate	2.26	2.00	0.281	99	85-121	NA	NA	

SPIKE BLANK								
Laboratory ID:	SB0713W1							
	SB	SB		SB				
Nitrate	1.89	2.00	NA	95	87-118	NA	NA	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

SULFATE
ASTM D516-11

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	07-074-02					
Sulfate	ND	5.0	ASTM D516-11	7-14-23	7-14-23	

Client ID:	MW-11					
Laboratory ID:	07-074-03					
Sulfate	ND	5.0	ASTM D516-11	7-14-23	7-14-23	

Client ID:	MW-20R					
Laboratory ID:	07-074-05					
Sulfate	ND	5.0	ASTM D516-11	7-14-23	7-14-23	

Client ID:	MW-21R					
Laboratory ID:	07-074-06					
Sulfate	ND	5.0	ASTM D516-11	7-14-23	7-14-23	

Client ID:	MW-25					
Laboratory ID:	07-074-08					
Sulfate	ND	5.0	ASTM D516-11	7-14-23	7-14-23	

Client ID:	MW-26R					
Laboratory ID:	07-074-09					
Sulfate	1300	500	ASTM D516-11	7-14-23	7-14-23	

Client ID:	MW-27					
Laboratory ID:	07-074-10					
Sulfate	ND	5.0	ASTM D516-11	7-14-23	7-14-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**SULFATE
 ASTM D516-11
 QUALITY CONTROL**

Matrix: Water

Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0714W1					
Sulfate	ND	5.0	ASTM D516-11	7-14-23	7-14-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-075-01							
	ORIG	DUP						
Sulfate	5.13	ND	NA	NA	NA	NA	10	

MATRIX SPIKE

Laboratory ID:	07-075-01							
	MS	MS		MS				
Sulfate	15.0	10.0	5.13	99	73-127	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0714W1							
	SB	SB		SB				
Sulfate	9.16	10.0	NA	92	85-114	NA	NA	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**TOTAL ALKALINITY
SM 2320B**

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	07-074-02					
Total Alkalinity	150	2.0	SM 2320B	7-17-23	7-17-23	

Client ID:	MW-11					
Laboratory ID:	07-074-03					
Total Alkalinity	170	2.0	SM 2320B	7-17-23	7-17-23	

Client ID:	MW-20R					
Laboratory ID:	07-074-05					
Total Alkalinity	180	2.0	SM 2320B	7-17-23	7-17-23	

Client ID:	MW-21R					
Laboratory ID:	07-074-06					
Total Alkalinity	770	2.0	SM 2320B	7-17-23	7-17-23	

Client ID:	MW-25					
Laboratory ID:	07-074-08					
Total Alkalinity	180	2.0	SM 2320B	7-17-23	7-17-23	

Client ID:	MW-26R					
Laboratory ID:	07-074-09					
Total Alkalinity	200	2.0	SM 2320B	7-17-23	7-17-23	

Client ID:	MW-27					
Laboratory ID:	07-074-10					
Total Alkalinity	190	2.0	SM 2320B	7-17-23	7-17-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**TOTAL ALKALINITY
 SM 2320B
 QUALITY CONTROL**

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0717W1					
Total Alkalinity	ND	2.0	SM 2320B	7-17-23	7-17-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-074-02							
	ORIG	DUP						
Total Alkalinity	152	150	NA	NA	NA	1	10	

SPIKE BLANK								
Laboratory ID:	SB0717W1							
	SB	SB		SB				
Total Alkalinity	92.0	100	NA	92	82-112	NA	NA	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

CHLORIDE
SM 4500-Cl E

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	07-074-02					
Chloride	5.6	2.0	SM 4500-Cl E	7-14-23	7-14-23	

Client ID:	MW-11					
Laboratory ID:	07-074-03					
Chloride	9.7	2.0	SM 4500-Cl E	7-14-23	7-14-23	

Client ID:	MW-20R					
Laboratory ID:	07-074-05					
Chloride	8.0	2.0	SM 4500-Cl E	7-14-23	7-14-23	

Client ID:	MW-21R					
Laboratory ID:	07-074-06					
Chloride	16	2.0	SM 4500-Cl E	7-14-23	7-14-23	

Client ID:	MW-25					
Laboratory ID:	07-074-08					
Chloride	37	2.0	SM 4500-Cl E	7-14-23	7-14-23	

Client ID:	MW-26R					
Laboratory ID:	07-074-09					
Chloride	11000	400	SM 4500-Cl E	7-14-23	7-14-23	

Client ID:	MW-27					
Laboratory ID:	07-074-10					
Chloride	9.4	2.0	SM 4500-Cl E	7-14-23	7-14-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**CHLORIDE
 SM 4500-Cl E
 QUALITY CONTROL**

Matrix: Water

Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0714W1					
Chloride	ND	2.0	SM 4500-Cl E	7-14-23	7-14-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-075-01							
	ORIG	DUP						
Chloride	35.2	35.6	NA	NA	NA	NA	1	12

MATRIX SPIKE

Laboratory ID:	07-075-01							
	MS	MS		MS				
Chloride	89.2	50.0	35.2	108	83-120	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0714W1							
	SB	SB		SB				
Chloride	48.3	50.0	NA	97	83-119	NA	NA	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DISSOLVED MANGANESE
EPA 6010D**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	07-074-02					
Manganese	1.1	0.011	EPA 6010D		7-18-23	
Client ID:	MW-11					
Laboratory ID:	07-074-03					
Manganese	1.9	0.011	EPA 6010D		7-18-23	
Client ID:	MW-20R					
Laboratory ID:	07-074-05					
Manganese	1.6	0.011	EPA 6010D		7-18-23	
Client ID:	MW-21R					
Laboratory ID:	07-074-06					
Manganese	1.3	0.011	EPA 6010D		7-18-23	
Client ID:	MW-25					
Laboratory ID:	07-074-08					
Manganese	0.049	0.011	EPA 6010D		7-18-23	
Client ID:	MW-26R					
Laboratory ID:	07-074-09					
Manganese	0.099	0.011	EPA 6010D		7-18-23	
Client ID:	MW-27					
Laboratory ID:	07-074-10					
Manganese	2.7	0.011	EPA 6010D		7-18-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DISSOLVED MANGANESE
 EPA 6010D
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0718D1					
Manganese	ND	0.011	EPA 6010D		7-18-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-074-08							
	ORIG	DUP						
Manganese	0.0490	0.0501	NA	NA	NA	NA	2	20

MATRIX SPIKES

Laboratory ID:	07-074-08									
	MS	MSD	MS	MSD		MS	MSD			
Manganese	0.612	0.601	0.556	0.556	0.0490	101	99	75-125	2	20



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DISSOLVED METHANE
RSK 175**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW-4R						
Laboratory ID:	07-074-01					
Methane	2500	17	RSK 175	7-19-23	7-19-23	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	87	50-150				
Client ID: MW-10R						
Laboratory ID:	07-074-02					
Methane	110	0.55	RSK 175	7-19-23	7-19-23	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	121	50-150				
Client ID: MW-11						
Laboratory ID:	07-074-03					
Methane	840	17	RSK 175	7-19-23	7-19-23	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	99	50-150				
Client ID: MW-13R						
Laboratory ID:	07-074-04					
Methane	520	3.3	RSK 175	7-19-23	7-19-23	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	65	50-150				
Client ID: MW-20R						
Laboratory ID:	07-074-05					
Methane	1200	11	RSK 175	7-19-23	7-19-23	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	140	50-150				
Client ID: MW-21R						
Laboratory ID:	07-074-06					
Methane	3500	28	RSK 175	7-19-23	7-19-23	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	92	50-150				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DISSOLVED METHANE
RSK 175**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW-22R						
Laboratory ID: 07-074-07						
Methane	0.98	0.55	RSK 175	7-19-23	7-19-23	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	87	50-150				
Client ID: MW-25						
Laboratory ID: 07-074-08						
Methane	490	3.3	RSK 175	7-19-23	7-19-23	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	79	50-150				
Client ID: MW-26R						
Laboratory ID: 07-074-09						
Methane	4.1	0.55	RSK 175	7-19-23	7-19-23	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	74	50-150				
Client ID: MW-27						
Laboratory ID: 07-074-10						
Methane	6200	55	RSK 175	7-19-23	7-19-23	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	66	50-150				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-074
 Project: 233-1896-107

**DISSOLVED METHANE
 RSK 175
 QUALITY CONTROL**

Matrix: Water

Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0719W1					
Methane	ND	0.55	RSK 175	7-19-23	7-19-23	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	93	50-150				

Analyte	Result		Spike Level		Percent		Recovery	RPD		
					Recovery		Limits	RPD	Limit	Flags
SPIKE BLANK										
Laboratory ID:	SB0719W1									
	SB	SBD	SB	SBD	SB	SBD				
Methane	45.3	46.0	44.2	44.2	102	104	75-125	2	25	
Surrogate:										
1-Butene					96	90	50-150			





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- X2 - Sample extract treated with a silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference





Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

20 July 2023

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th Street
Redmond, WA 98052

RE: Parametrix 233-1896-107

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
23G0193

Associated SDG ID(s)
N/A

Phillip Bates

Digitally signed by
Phillip Bates
Date: 2023.07.20
16:45:37 -07'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Phillip Bates, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)



Date: _____
Page: _____ of _____
No. of Coolers: _____ Cooler Temps: 10.3

ARI Assigned Number: 2360193
Turn-around Requested: Standard
Phone: _____
ARI Client Company: On-Site Environmental Inc. (425)883-3881
Client Contact: David Baumeister
Client Project Name: Parametrix (233-1896-107)
Client Project #: _____
Samplers: Michael Brady Sally Nguyen Waren Thom

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested				Notes/Comments			
~~MW-4R~~												
<u>MW-10R</u>	7/11	1203										
<u>MW-11</u>	7/11	1112										
~~MW-13R~~												
<u>MW-20R</u>												
<u>MW-21R</u>	7/11	1520										
~~MW-22R~~												
~~MW-25~~												
<u>MW-26R</u>	7/11	1415										
~~MW-27~~												
Comments/Special Instructions	Relinquished by: (Signature)	<u>Sally Nguyen</u>		Received by: (Signature)	<u>Nova Cole</u>		Relinquished by: (Signature)		Received by: (Signature)			
	Printed Name:	<u>Sally Nguyen</u>		Printed Name:	<u>Nova Cole</u>		Printed Name:		Printed Name:			
	Company:	<u>Parametrix/On-site</u>		Company:	<u>AR LLC</u>		Company:		Company:			
	Date & Time:	<u>7/11 1708</u>		Date & Time:	<u>7/11/23 17:08</u>		Date & Time:		Date & Time:			

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-10R	23G0193-01	Water	11-Jul-2023 12:03	11-Jul-2023 17:08
MW-11	23G0193-02	Water	11-Jul-2023 11:17	11-Jul-2023 17:08
MW-21R	23G0193-03	Water	11-Jul-2023 15:20	11-Jul-2023 17:08
MW-26R	23G0193-04	Water	11-Jul-2023 14:18	11-Jul-2023 17:08



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

Work Order Case Narrative

Client: OnSite Environmental, Inc.
Project: Parametrix 233-1896-107
Work Order: 23G0193

Sample receipt

Samples as listed on the preceding page were received 11-Jul-2023 17:08 under ARI work order 23G0193. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



WORK ORDER

23G0193

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Parametrix, Inc.

Project Manager: Shelly Fishel

Project: City of Bremerton

Project Number: City of Bremerton

Report To:

Parametrix, Inc.

Mike Brady

719 2nd Avenue, Suite 200

Seattle, WA 98104

Phone: 2(095) 519-5781

Fax: -

Invoice To:

Parametrix, Inc.

Mike Brady

719 2nd Avenue, Suite 200

Seattle, WA 98104

Phone :2(095) 519-5781

Fax: -

Date Due: 26-Jul-2023 18:00 (10 day TAT)

Received By: Nora Cate

Date Received: 11-Jul-2023 17:08

Logged In By: Jacob Walter

Date Logged In: 11-Jul-2023 17:10

Samples Received at: 10.3°C

Intact, properly signed and dated custody seals attached to outside of coolers).....No
Custody papers properly filled out (in, signed, analyses requested, etc).....Yes
Was sufficient ice used (if appropriate).....No
All bottles arrived in good condition (unbroken).....Yes
Number of containers listed on COC match number received.....Yes
Correct bottles used for the requested analyses.....Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC).....Yes
Sample split at ARL.....No

Custody papers included with the cooler..... Yes
Was a temperature blank included in the cooler..... No
All bottles sealed in individual plastic bags..... Yes
All bottle labels complete and legible..... Yes
Bottle labels and tags agree with COC..... Yes
All VOC vials free of air bubbles..... No
Sufficient amount of sample sent in each bottle..... Yes

23G0193-01 MW-10R [Water] Sampled 11-Jul-2023 12:03

Iron, Ferrous SM 3500-Fe B-97 07/26/2023 10 7/12/2023

23G0193-02 MW-11 [Water] Sampled 11-Jul-2023 11:17

Iron, Ferrous SM 3500-Fe B-97 07/26/2023 10 7/12/2023

23G0193-03 MW-21R [Water] Sampled 11-Jul-2023 15:20

Iron, Ferrous SM 3500-Fe B-97 07/26/2023 10 7/12/2023

23G0193-04 MW-26R [Water] Sampled 11-Jul-2023 14:18

Iron, Ferrous SM 3500-Fe B-97 07/26/2023 10 7/12/2023

Preservation Confirmation

Container ID	Container Type	pH
23G0193-01 A	Glass NM, Amber, 500 mL, HCl	①
23G0193-02 A	Glass NM, Amber, 500 mL, HCl	①
23G0193-03 A	Glass NM, Amber, 500 mL, HCl	①
23G0193-04 A	Glass NM, Amber, 500 mL, HCl	①

Preservation Confirmed By

Date

① Lab to verify preservation
prior to analysis
Jm 07/11/23



Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: on site environmental inc Project Name: city of Bremerton
COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
Assigned ARI Job No: 230-5193 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES (NO)
Were custody papers included with the cooler? YES NO
Were custody papers properly filled out (ink, signed, etc.) YES NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 17:08

10.3

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 9708

Cooler Accepted by: NC Date: 07/11/23 Time: 17:08

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
Was sufficient ice used (if appropriate)? NA YES (NO)
How were bottles sealed in plastic bags? Individually Grouped Not
Did all bottles arrive in good condition (unbroken)? YES NO
Were all bottle labels complete and legible? YES NO
Did the number of containers listed on COC match with the number of containers received? YES NO
Did all bottle labels and tags agree with custody papers? YES NO
Were all bottles used correct for the requested analyses? YES NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
Were all VOC vials free of air bubbles? (NA) YES NO
Was sufficient amount of sample sent in each bottle? YES NO
Date VOC Trip Blank was made at ARI: _____ (NA)
Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

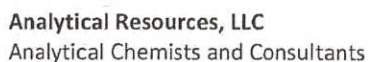
Samples Logged by: JS Date: 07/11/23 Time: 17:10 Labels checked by: JS

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Cooler Temperature Compliance Form

Completed by: NL Date: 07/11/23 Time: 17:08

Version 001
10/27/2021



WORK ORDER

23G0193

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Parametrix, Inc.

Project Manager: Shelly Fishel

Project: City of Bremerton

Project Number: City of Bremerton

Report To:

Parametrix, Inc.
Mike Brady
719 2nd Avenue, Suite 200
Seattle, WA 98104
Phone: 2(095) 519-5781
Fax: -

Invoice To:

Parametrix, Inc.
Mike Brady
719 2nd Avenue, Suite 200
Seattle, WA 98104
Phone :2(095) 519-5781
Fax: -

Date Due: 26-Jul-2023 18:00 (10 day TAT)

Received By: Nora Cate

Date Received: 11-Jul-2023 17:08

Logged In By: Jacob Walter

Date Logged In: 11-Jul-2023 17:10

Samples Received at: 10.3°C

Intact, properly signed and dated custody seals attached to outside of coolers).....No	Custody papers included with the cooler.....	Yes
Custody papers properly filled out (in, signed, analyses requested, etc).....Yes	Was a temperature blank included in the cooler.....	No
Was sufficient ice used (if appropriate).....No	All bottles sealed in individual plastic bags.....	Yes
All bottles arrived in good condition (unbroken).....Yes	All bottle labels complete and legible.....	Yes
Number of containers listed on COC match number received.....Yes	Bottle labels and tags agree with COC.....	Yes
Correct bottles used for the requested analyses.....Yes	All VOC vials free of air bubbles.....	No
Analyses/bottles require preservation (attach preservation sheet excluding VOC).....Yes	Sufficient amount of sample sent in each bottle.....	Yes
Sample split at ARL.....No		

23G0193-01 MW-10R [Water] Sampled 11-Jul-2023 12:03

Iron, Ferrous SM 3500-Fe B-97 07/26/2023 10 7/12/2023

23G0193-02 MW-11 [Water] Sampled 11-Jul-2023 11:17

Iron, Ferrous SM 3500-Fe B-97 07/26/2023 10 7/12/2023

23G0193-03 MW-21R [Water] Sampled 11-Jul-2023 15:20

Iron, Ferrous SM 3500-Fe B-97 07/26/2023 10 7/12/2023

23G0193-04 MW-26R [Water] Sampled 11-Jul-2023 14:18

Iron, Ferrous SM 3500-Fe B-97 07/26/2023 10 7/12/2023

Preservation Confirmation

Container ID	Container Type	pH
23G0193-01 A	Glass NM, Amber, 500 mL, HCl	①
23G0193-02 A	Glass NM, Amber, 500 mL, HCl	①
23G0193-03 A	Glass NM, Amber, 500 mL, HCl	①
23G0193-04 A	Glass NM, Amber, 500 mL, HCl	①

Preservation Confirmed By

Date

① Lab to verify preservation prior to analysis
TSW 07/11/23

② samples w/ headspace
pH < 2
RE 7/11/23 1730

Reviewed By

Date



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

MW-10R
23G0193-01RE1 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/11/2023 12:03

Instrument: UV1800-2 Analyst: BF

Analyzed: 07/11/2023 18:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0200
Prepared: 07/11/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0193-01RE1 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		20	0.800	0.800	11.7	mg/L	D



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

MW-11
23G0193-02RE1 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/11/2023 11:17

Instrument: UV1800-2 Analyst: BF

Analyzed: 07/11/2023 18:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0200
Prepared: 07/11/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0193-02RE1 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		20	0.800	0.800	23.1	mg/L	D



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

MW-21R
23G0193-03RE1 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/11/2023 15:20

Instrument: UV1800-2 Analyst: BF

Analyzed: 07/11/2023 18:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0200
Prepared: 07/11/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0193-03RE1 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		20	0.800	0.800	4.92	mg/L	D



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

MW-26R
23G0193-04 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/11/2023 14:18

Instrument: UV1800-2 Analyst: BF

Analyzed: 07/11/2023 17:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0200
Prepared: 07/11/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0193-04 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		1	0.040	0.040	0.195	mg/L	



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BLG0200 - SM 3500-Fe B-97

Instrument: UV1800-2 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLG0200-BLK1)					Prepared: 11-Jul-2023 Analyzed: 11-Jul-2023 17:49						
Ferrous Iron	ND	0.040	0.040	mg/L							U
LCS (BLG0200-BS1)					Prepared: 11-Jul-2023 Analyzed: 11-Jul-2023 17:49						
Ferrous Iron	0.525	0.040	0.040	mg/L	0.510		103	90-110			
Duplicate (BLG0200-DUP2)					Source: 23G0193-01RE1 Prepared: 11-Jul-2023 Analyzed: 11-Jul-2023 18:24						
Ferrous Iron	11.7	0.800	0.800	mg/L		11.7			0.51	20	D
Matrix Spike (BLG0200-MS2)					Source: 23G0193-01RE1 Prepared: 11-Jul-2023 Analyzed: 11-Jul-2023 18:24						
Ferrous Iron	30.4	0.800	0.800	mg/L	20.4	11.7	91.6	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

Certified Analyses included in this Report

Analyte	Certifications
SM 3500-Fe B-97 in Water	
Ferrous Iron	WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
20-Jul-2023 16:28

Notes and Definitions

D	The reported value is from a dilution
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.



14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

14046 1st E 30th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Parametrix

233-1896-107

City of Bremerton - Former Chevron Bulk

David Dinkuh

Sally Nguyen

(Check One)

☐ 1 Day

3 Days

(TPH analysis 5 Days)

(other)

Lab ID	Sample Identification
--------	-----------------------

Sampled	Sampled
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Number of Containers

NWTPH-Gx / BTEX 8021

NWTPH-Dx Extended 1

Nitrate, Sulfate, Alkalinity, Chloride

Dissolved Manganese (Field Filtered)

Dissolved Methane

Total Ferrous Iron (sub to ARI) *

% Moisture	
100	100
90	90
80	80
70	70
60	60
50	50
40	40
30	30
20	20
10	10
0	0

Laboratory Number: 07-074

Chain of Custody

Page 1 of 1

Environmental Inc. 14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 853-3881 • www.consite-env.com										Turnaround Request (in working days)		Laboratory Number: 07-074																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Company: Parametrix										(Check One)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Project Number: 233-1896-107										☐ Same Day ☐ 1 Day ☐ 2 Days ☐ 3 Days ☒ Standard (7 Days) (TPH analysis 5 Days)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Project Name: City of Bremerton - Former Chevron Bulk										☐ (other)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Project Manager: David Dinkuhn																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Sampled by: Sally Nguyen																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Lab ID	Sample Identification		Date Sampled	Time Sampled	Number of Containers		NWTPH-Gx / BTEX 1208																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1	MW-4R	7/12	1135	water	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

25 July 2023

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th Street
Redmond, WA 98052

RE: Parametrix 233-1896-107

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
23G0215

Associated SDG ID(s)
N/A

**Phillip
Bates**

Digitally signed by
Phillip Bates
Date: 2023.07.25
10:13:30 -07'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Phillip Bates, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Received by: _____
(Signature)
Printed Name: _____
Company: _____
Date & Time: _____

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DUP	23G0215-01	Water	12-Jul-2023 13:55	12-Jul-2023 16:28
MW-27	23G0215-02	Water	12-Jul-2023 09:58	12-Jul-2023 16:28
MW-20R	23G0215-03	Water	12-Jul-2023 10:50	12-Jul-2023 16:28
MW-25	23G0215-04	Water	12-Jul-2023 13:50	12-Jul-2023 16:28



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

Work Order Case Narrative

Client: OnSite Environmental, Inc.
Project: Parametrix 233-1896-107
Work Order: 23G0215

Sample receipt

Samples as listed on the preceding page were received 12-Jul-2023 16:28 under ARI work order 23G0215. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: On-Site Environmental

Project Name: Parametrix

COC No(s): NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23G0215

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? _____

YES NO

Were custody papers included with the cooler? _____

YES NO

Were custody papers properly filled out (ink, signed, etc.) _____

YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 16:28

24.1

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 9708

Cooler Accepted by: NC

Date: 7/12/23

Time: 16:28

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? _____

YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? _____

NA YES NO

How were bottles sealed in plastic bags? _____

Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? _____

YES NO

Were all bottle labels complete and legible? _____

YES NO

Did the number of containers listed on COC match with the number of containers received? _____

YES NO

Did all bottle labels and tags agree with custody papers? _____

YES NO

Were all bottles used correct for the requested analyses? _____

YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...

NA YES NO

Were all VOC vials free of air bubbles? _____

NA YES NO

Was sufficient amount of sample sent in each bottle? _____

YES NO

Date VOC Trip Blank was made at ARI: _____

NA

Were the sample(s) split by ARI? NA YES

Date/Time: _____

Equipment: _____

Split by: _____

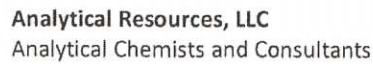
Samples Logged by: NC Date: 07/12/23 Time: 16:30 Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Cooler Temperature Compliance Form

Completed by: NZ Date: 07/12/23 Time: 16:28

Version 001
10/27/2021



WORK ORDER

23G0215

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: OnSite Environmental, Inc.

Project Manager: Shelly Fishel

Project: Parametrix 233-1896-107

Project Number: [none]

Report To:

OnSite Environmental, Inc.
David Baumeister
14648 NE 95th Street
Redmond, WA 98052
Phone: 425-883-3881
Fax: -

Invoice To:

OnSite Environmental, Inc.
David Baumeister
14648 NE 95th Street
Redmond, WA 98052
Phone: 425-883-3881
Fax: -

Date Due: 27-Jul-2023 18:00 (10 day TAT)

Received By: Nora Cate

Date Received: 12-Jul-2023 16:28

Logged In By: Nora Cate

Date Logged In: 12-Jul-2023 16:33

Samples Received at: 24.1°C

Intact, properly signed and dated custody seals attached to outside of cooler(s).....No
Custody papers properly filled out (in, signed, analyses requested, etc).....Yes
Was sufficient ice used (if appropriate).....No
All bottles arrived in good condition (unbroken).....Yes
Number of containers listed on COC match number received.....Yes
Correct bottles used for the requested analyses.....Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC).No
Sample split at ARI.....No

Custody papers included with the cooler..... Yes
Was a temperature blank included in the cooler..... No
All bottles sealed in individual plastic bags..... Yes
All bottle labels complete and legible..... Yes
Bottle labels and tags agree with COC..... Yes
All VOC vials free of air bubbles..... No
Sufficient amount of sample sent in each bottle..... Yes

23G0215-01 DUP [Water] Sampled 12-Jul-2023 13:55

Iron, Ferrous SM 3500-Fe B-97 07/27/2023 10 7/13/2023

23G0215-02 MW-27 [Water] Sampled 12-Jul-2023 09:58

Iron, Ferrous SM 3500-Fe B-97 07/27/2023 10 7/13/2023

23G0215-03 MW-20R [Water] Sampled 12-Jul-2023 10:50

Iron, Ferrous SM 3500-Fe B-97 07/27/2023 10 7/13/2023

23G0215-04 MW-25 [Water] Sampled 12-Jul-2023 13:50

Iron, Ferrous SM 3500-Fe B-97 07/27/2023 10 7/13/2023

Preservation Confirmation

Container ID	Container Type	pH
23G0215-01 A	Glass NM, Amber, 500 mL, HCl	
23G0215-02 A	Glass NM, Amber, 500 mL, HCl	
23G0215-03 A	Glass NM, Amber, 500 mL, HCl	
23G0215-04 A	Glass NM, Amber, 500 mL, HCl	

BF
Preservation Confirmed By

7/12/23 1700
Date

① pH < 2, samples w/
headspace



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

DUP
23G0215-01RE1 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/12/2023 13:55

Instrument: UV1800-1 Analyst: BF

Analyzed: 07/12/2023 17:42

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0231
Prepared: 07/12/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0215-01RE1 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		1	0.040	0.040	0.655	mg/L	



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

MW-27
23G0215-02 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/12/2023 09:58

Instrument: UV1800-1 Analyst: BF

Analyzed: 07/12/2023 17:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0231
Prepared: 07/12/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0215-02 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		20	0.800	0.800	23.9	mg/L	D



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

MW-20R
23G0215-03 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/12/2023 10:50

Instrument: UV1800-1 Analyst: BF

Analyzed: 07/12/2023 17:26

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 23G0215-03 A

Preparation Batch: BLG0231

Sample Size: 5 mL

Prepared: 07/12/2023

Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		20	0.800	0.800	18.6	mg/L	D



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

MW-25
23G0215-04RE1 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/12/2023 13:50

Instrument: UV1800-1 Analyst: BF

Analyzed: 07/12/2023 17:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0231
Prepared: 07/12/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0215-04RE1 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		1	0.040	0.040	0.653	mg/L	



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BLG0231 - SM 3500-Fe B-97

Instrument: UV1800-1 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLG0231-BLK1)					Prepared: 12-Jul-2023 Analyzed: 12-Jul-2023 17:23						
Ferrous Iron	ND	0.040	0.040	mg/L							U
LCS (BLG0231-BS1)					Prepared: 12-Jul-2023 Analyzed: 12-Jul-2023 17:23						
Ferrous Iron	0.533	0.040	0.040	mg/L	0.510		105	90-110			
Duplicate (BLG0231-DUP2)					Source: 23G0215-01RE1 Prepared: 12-Jul-2023 Analyzed: 12-Jul-2023 17:42						
Ferrous Iron	0.641	0.040	0.040	mg/L		0.655			2.16	20	
Matrix Spike (BLG0231-MS2)					Source: 23G0215-01RE1 Prepared: 12-Jul-2023 Analyzed: 12-Jul-2023 17:43						
Ferrous Iron	1.02	0.040	0.040	mg/L	0.408	0.655	90.5	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

Certified Analyses included in this Report

Analyte	Certifications
SM 3500-Fe B-97 in Water	
Ferrous Iron	WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

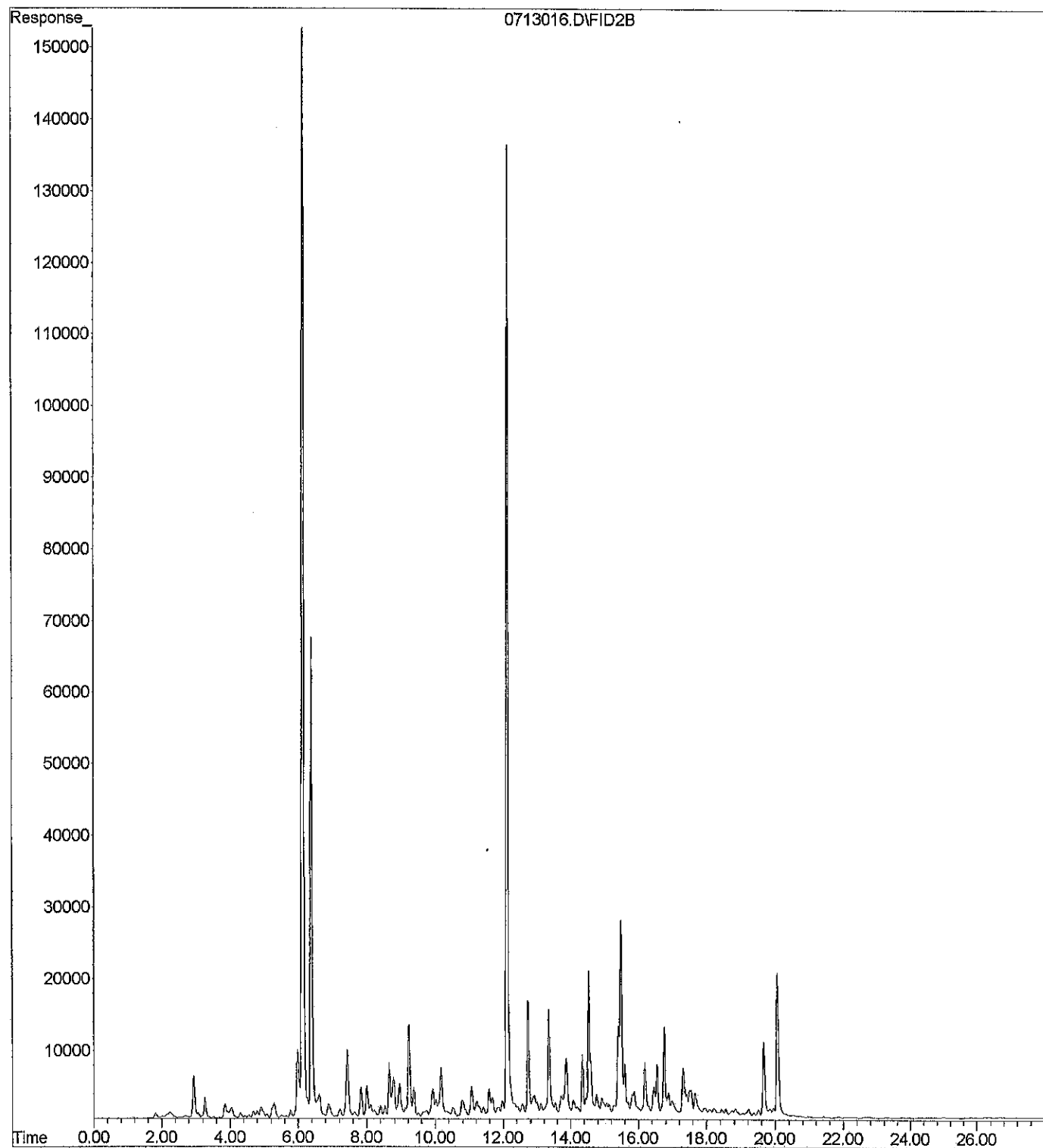
Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

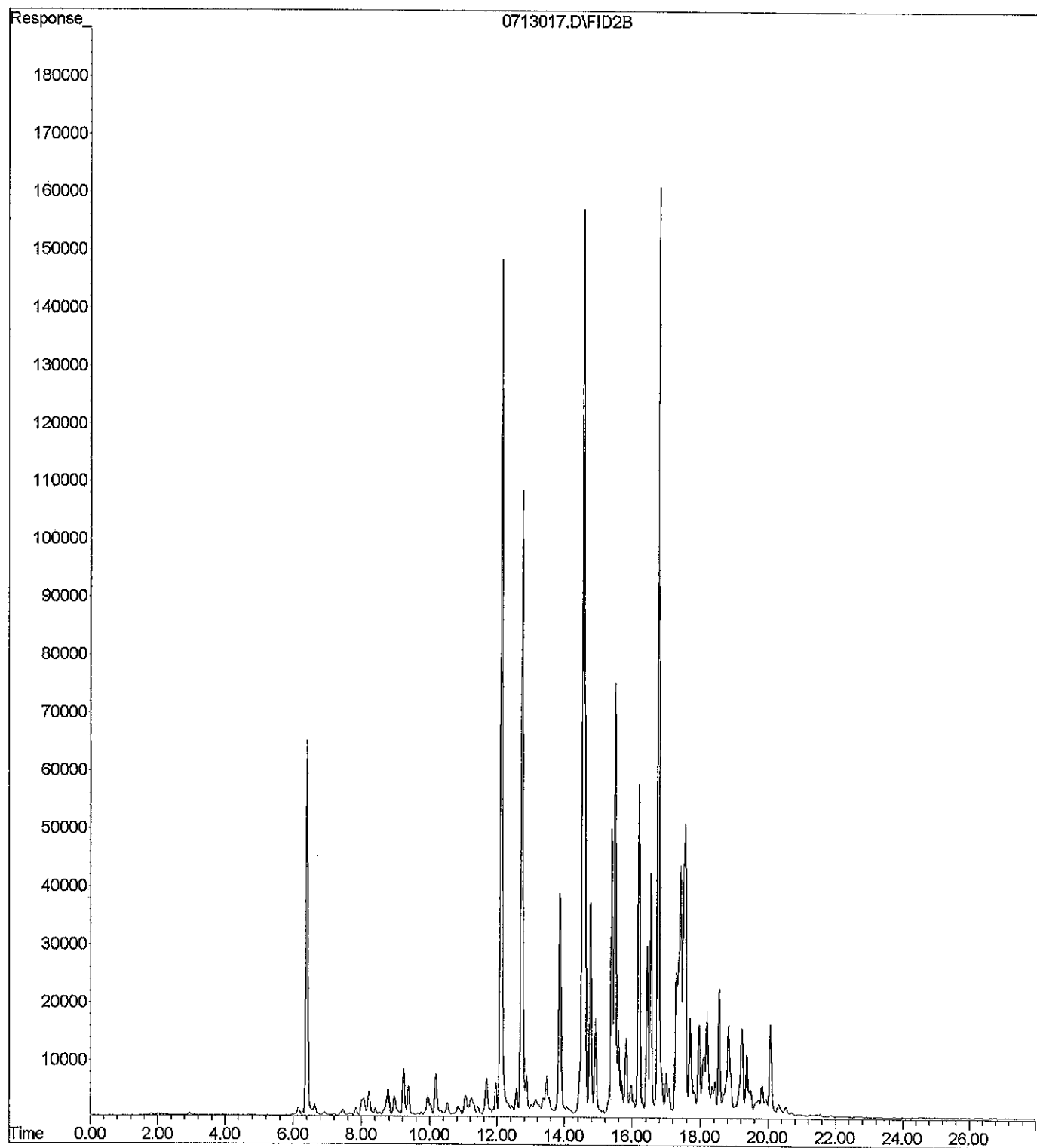
Notes and Definitions

D	The reported value is from a dilution
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

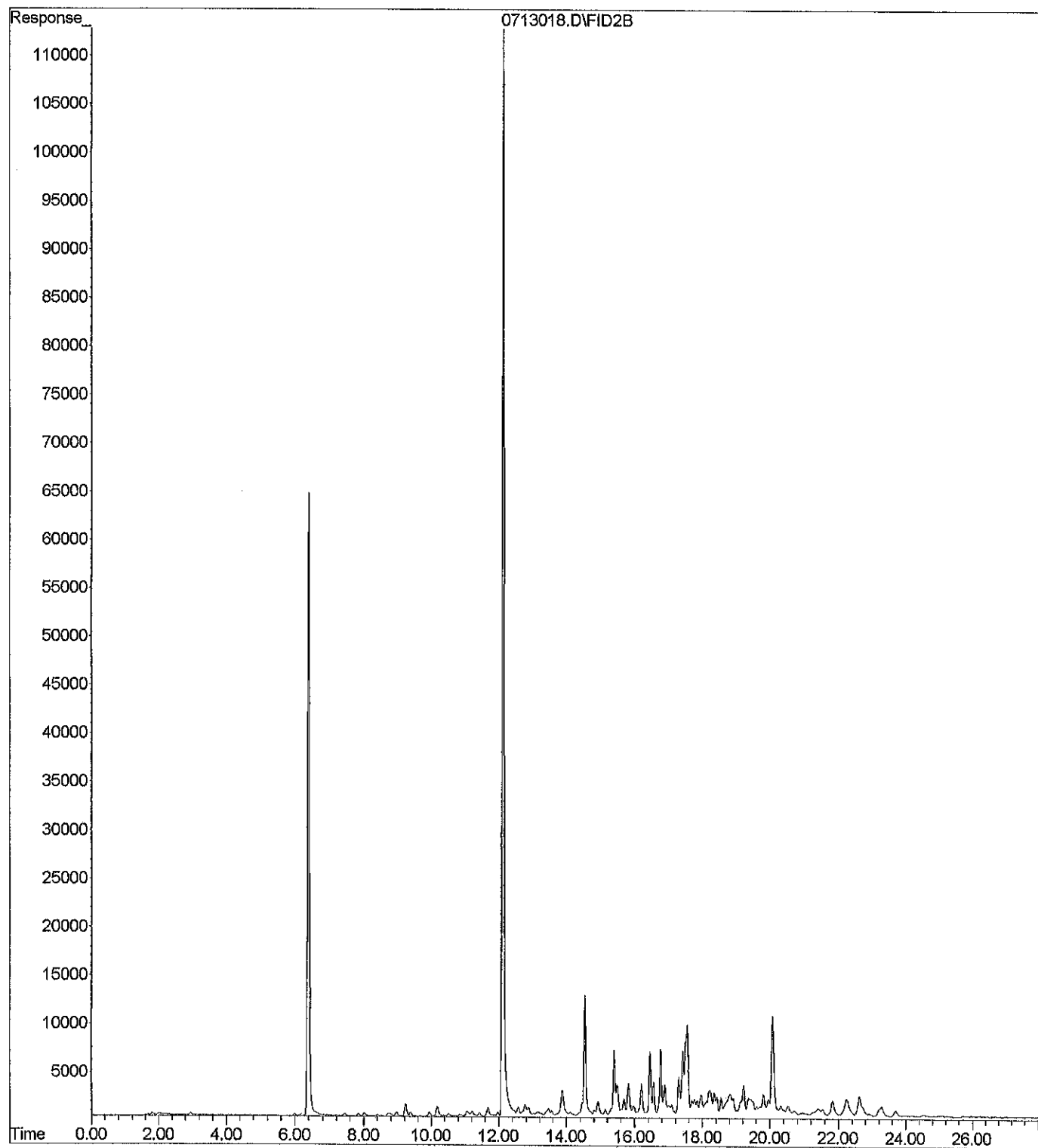
File : X:\BTEX\HOPE\DATA\H230713\0713016.D
Operator :
Acquired : 13 Jul 2023 21:06 using AcqMethod 230606G.M
Instrument : Hope
Sample Name: 07-074-01b
Misc Info :
Vial Number: 16



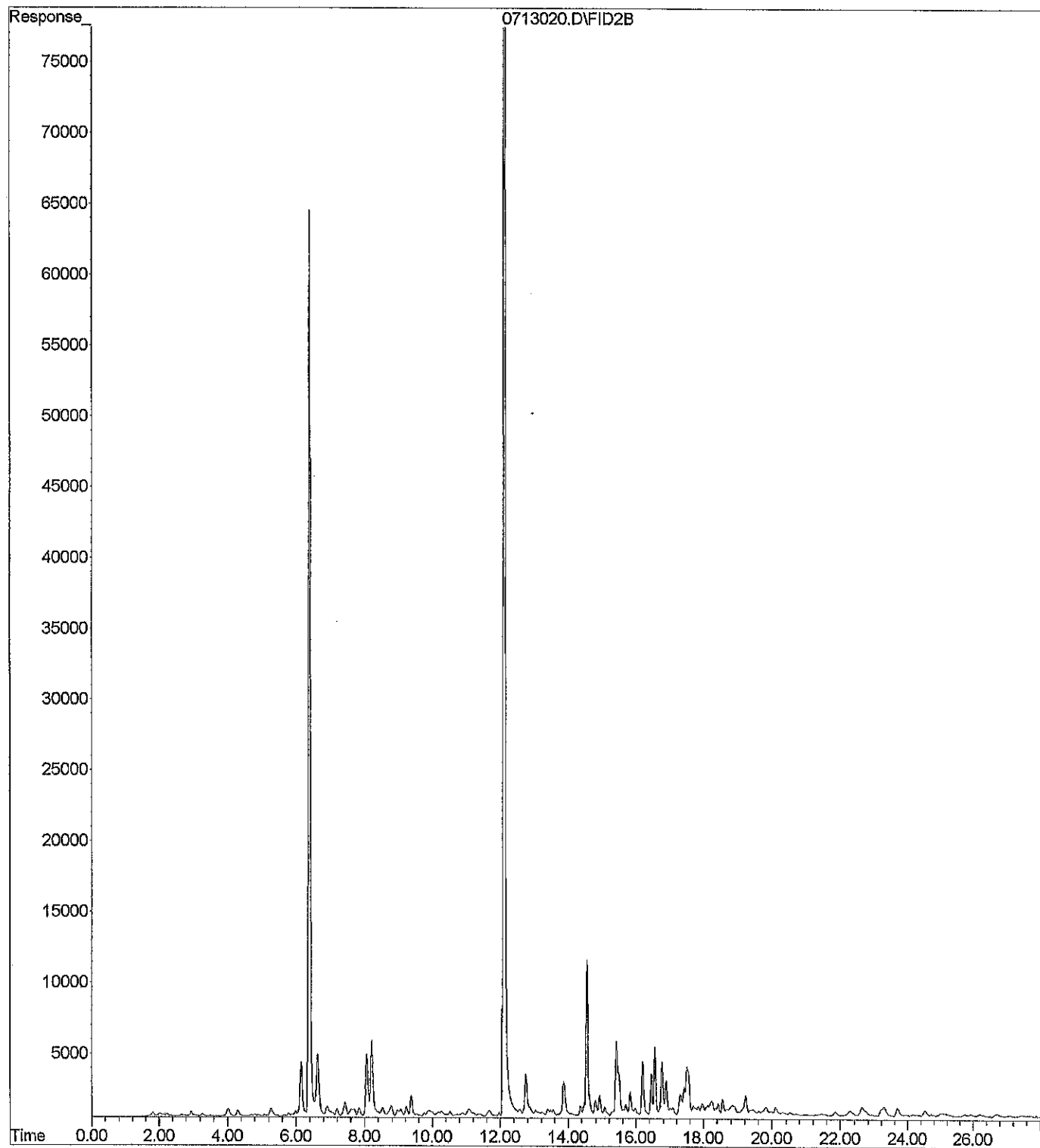
File : X:\BTEX\HOPE\DATA\H230713\0713017.D
Operator :
Acquired : 13 Jul 2023 21:36 using AcqMethod 230606G.M
Instrument : Hope
Sample Name: 07-074-02e
Misc Info :
Vial Number: 17



File : X:\BTEX\HOPE\DATA\H230713\0713018.D
Operator :
Acquired : 13 Jul 2023 22:22 using AcqMethod 230606G.M
Instrument : Hope
Sample Name: 07-074-03e
Misc Info :
Vial Number: 18



File : X:\BTEX\HOPE\DATA\H230713\0713020.D
Operator :
Acquired : 13 Jul 2023 23:22 using AcqMethod 230606G.M
Instrument : Hope
Sample Name: 07-074-05e
Misc Info :
Vial Number: 20



Data File : X:\BTEX\HOPE\DATA\H230713\0713021.D
Acq On : 13 Jul 2023 23:52
Sample : 07-074-06e
Misc :

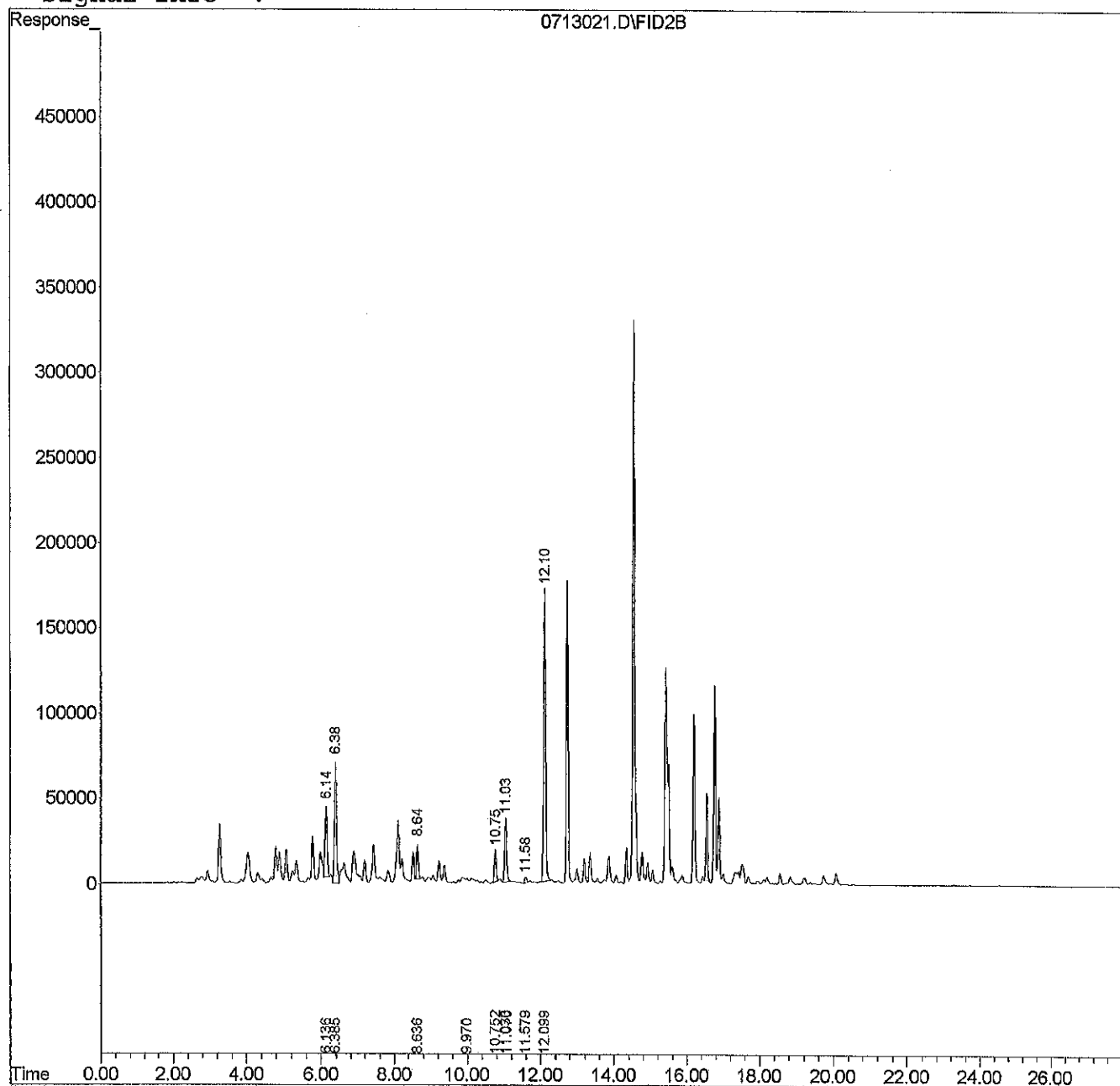
Vial: 21
Operator:
Inst : Hope
Multiplr: 1.00
Sample Amount: 0.00

IntFile : EVENTS1.E

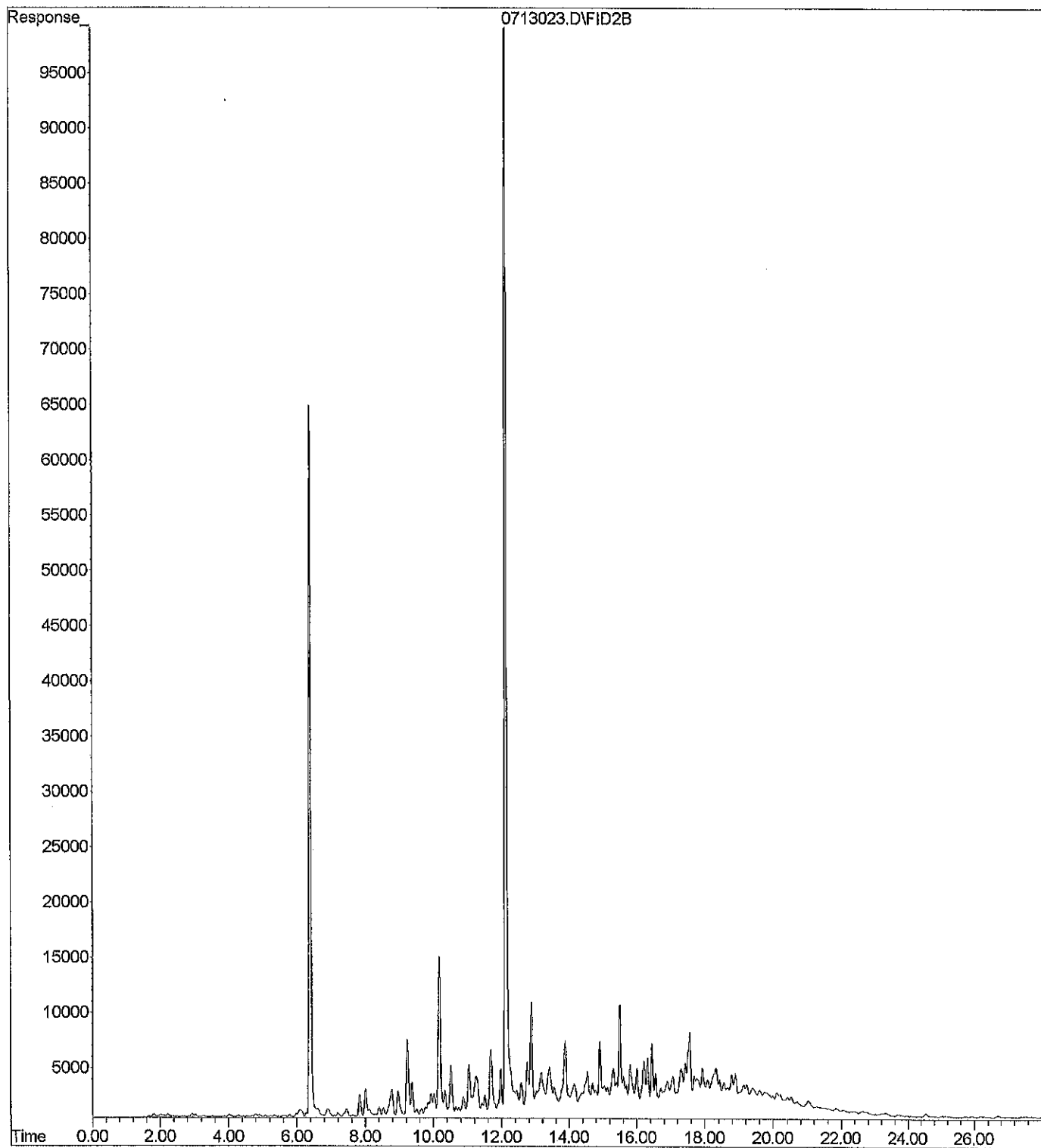
Quant Time: Jul 14 11:22 2023 Quant Results File: 230606G.RES

Quant Method : E:\ARCHON\METHODS\230606G.M (Chemstation Integrator)
Title : Fid calibration
Last Update : Thu Jun 22 11:36:05 2023
Response via : Multiple Level Calibration
DataAcq Meth : 230606G.M

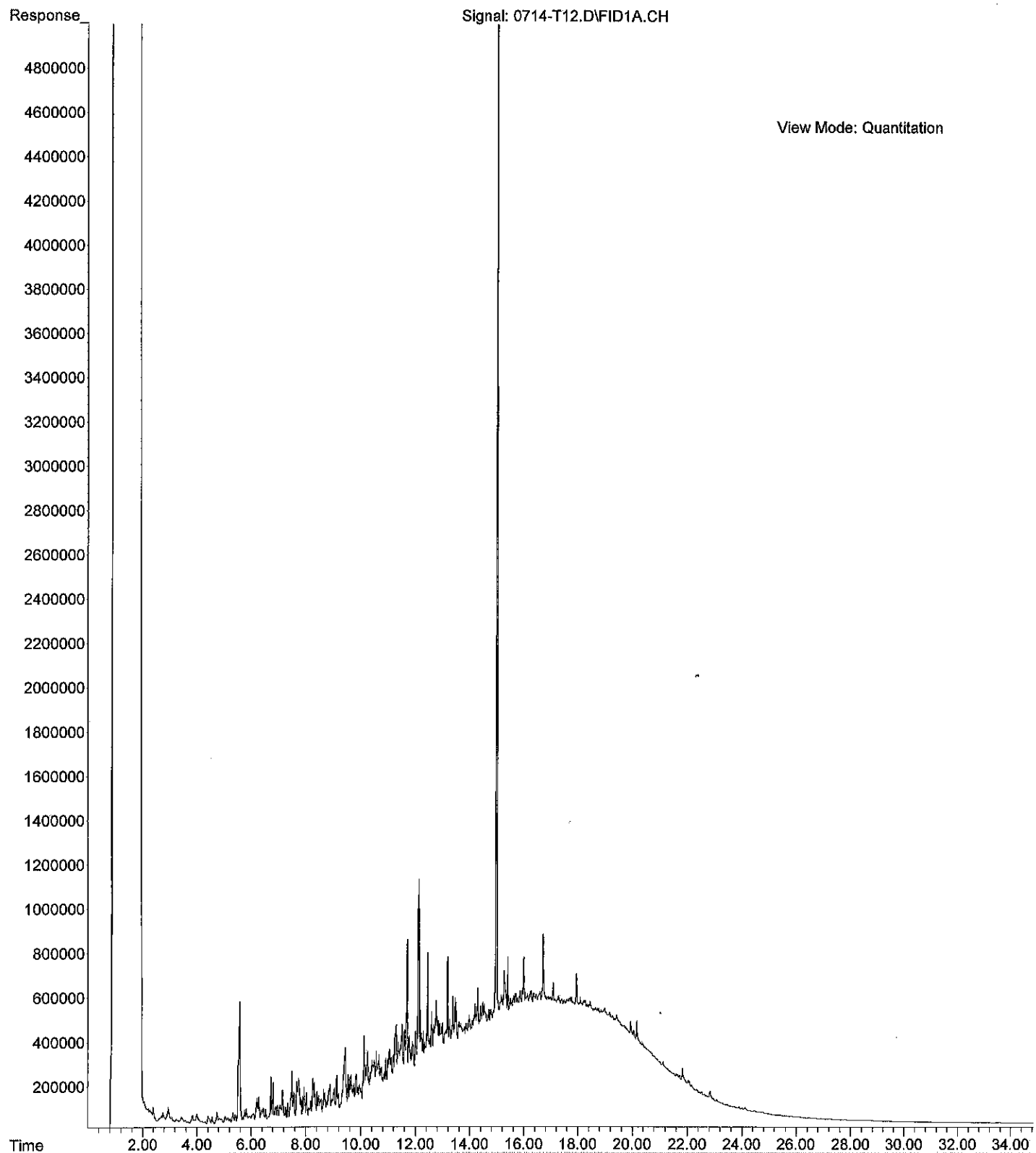
Volume Inj. :
Signal Phase :
Signal Info :



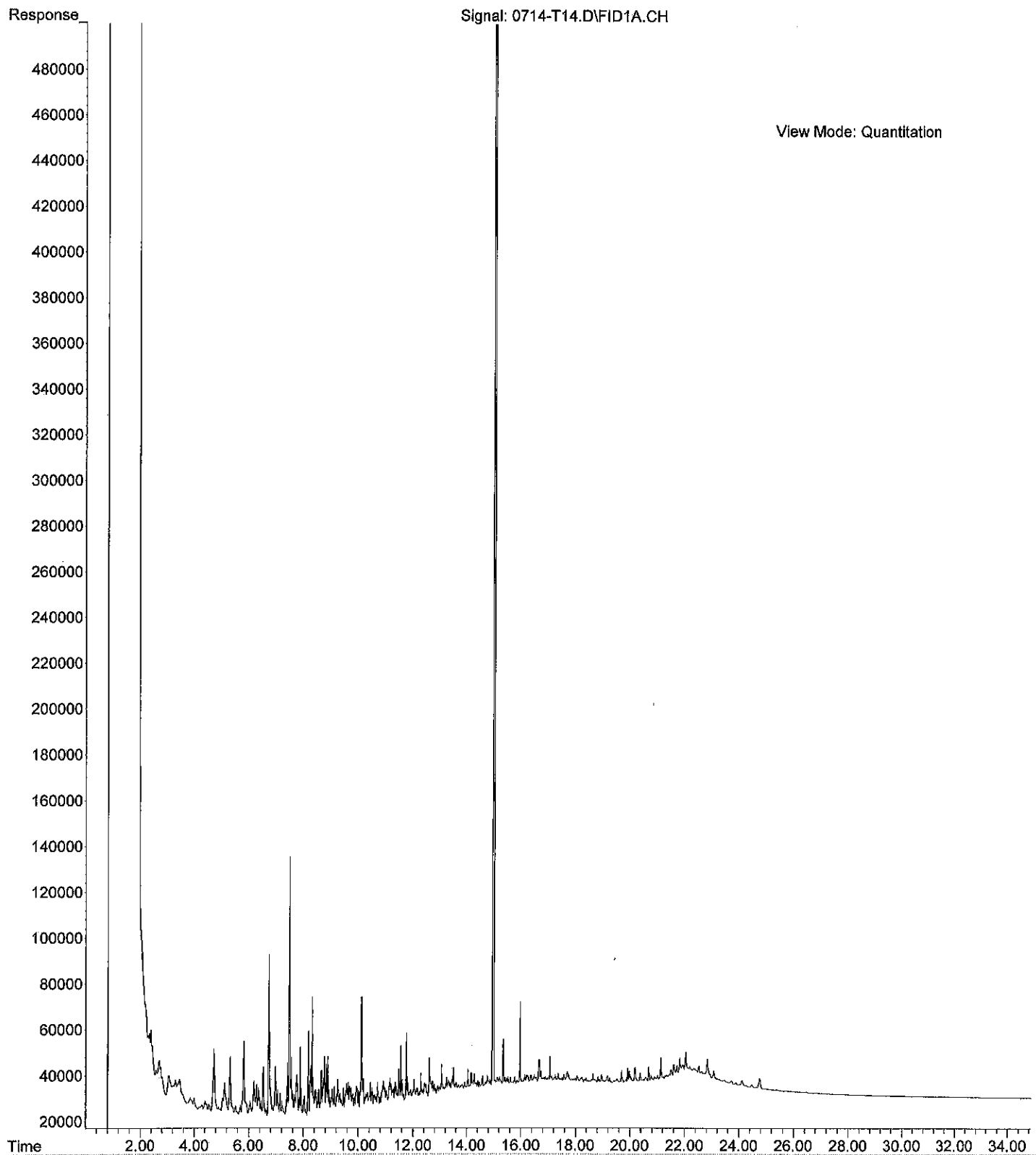
File : X:\BTEX\HOPE\DATA\H230713\0713023.D
Operator :
Acquired : 14 Jul 2023 1:08 using AcqMethod 230606G.M
Instrument : Hope
Sample Name: 07-074-08e
Misc Info :
Vial Number: 23



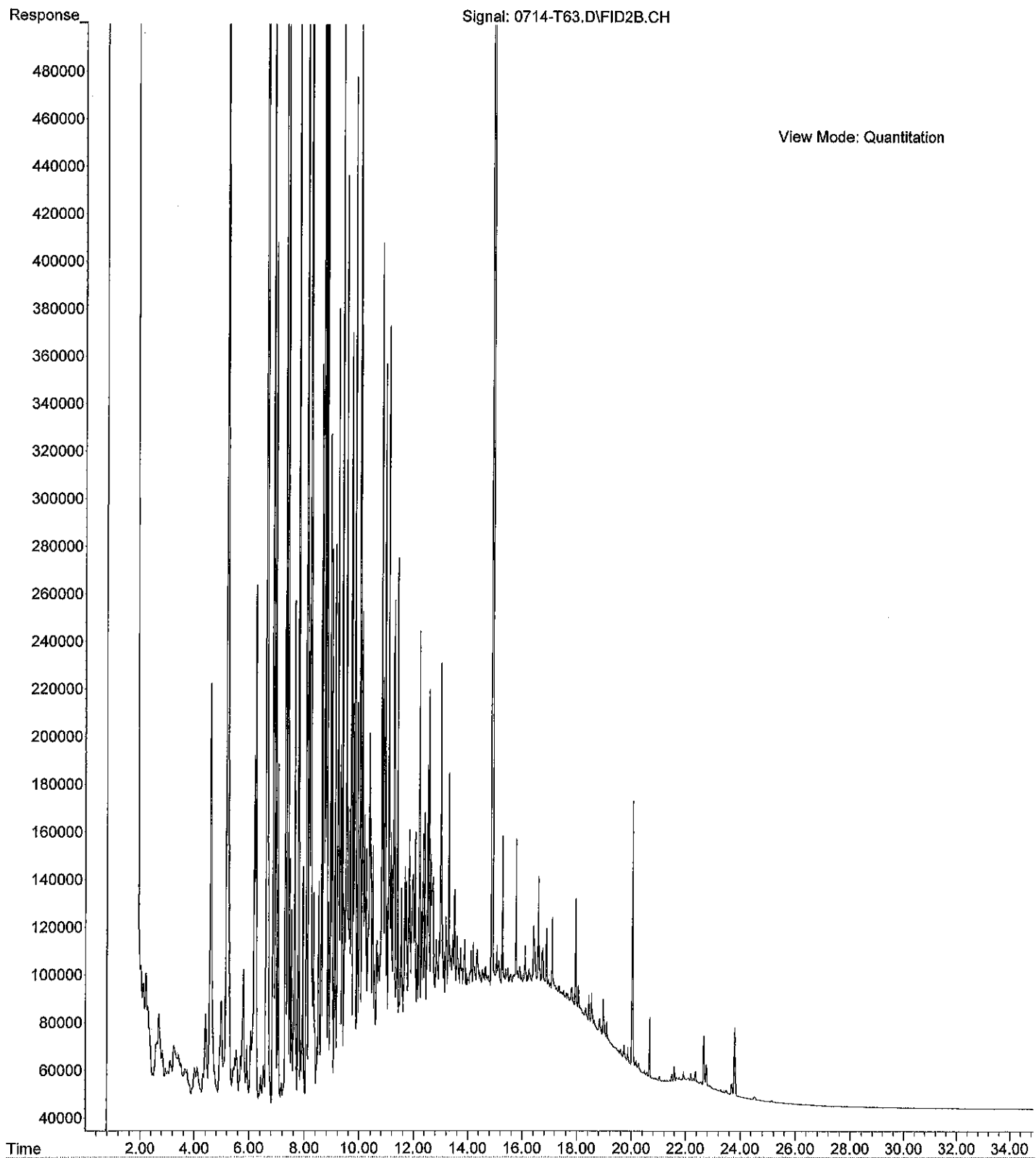
File :C:\msdchem\1\data\T230714\0714-T12.D
Operator : LW
Acquired : 14 Jul 2023 16:56 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-01
Misc Info : Sample
Vial Number: 12



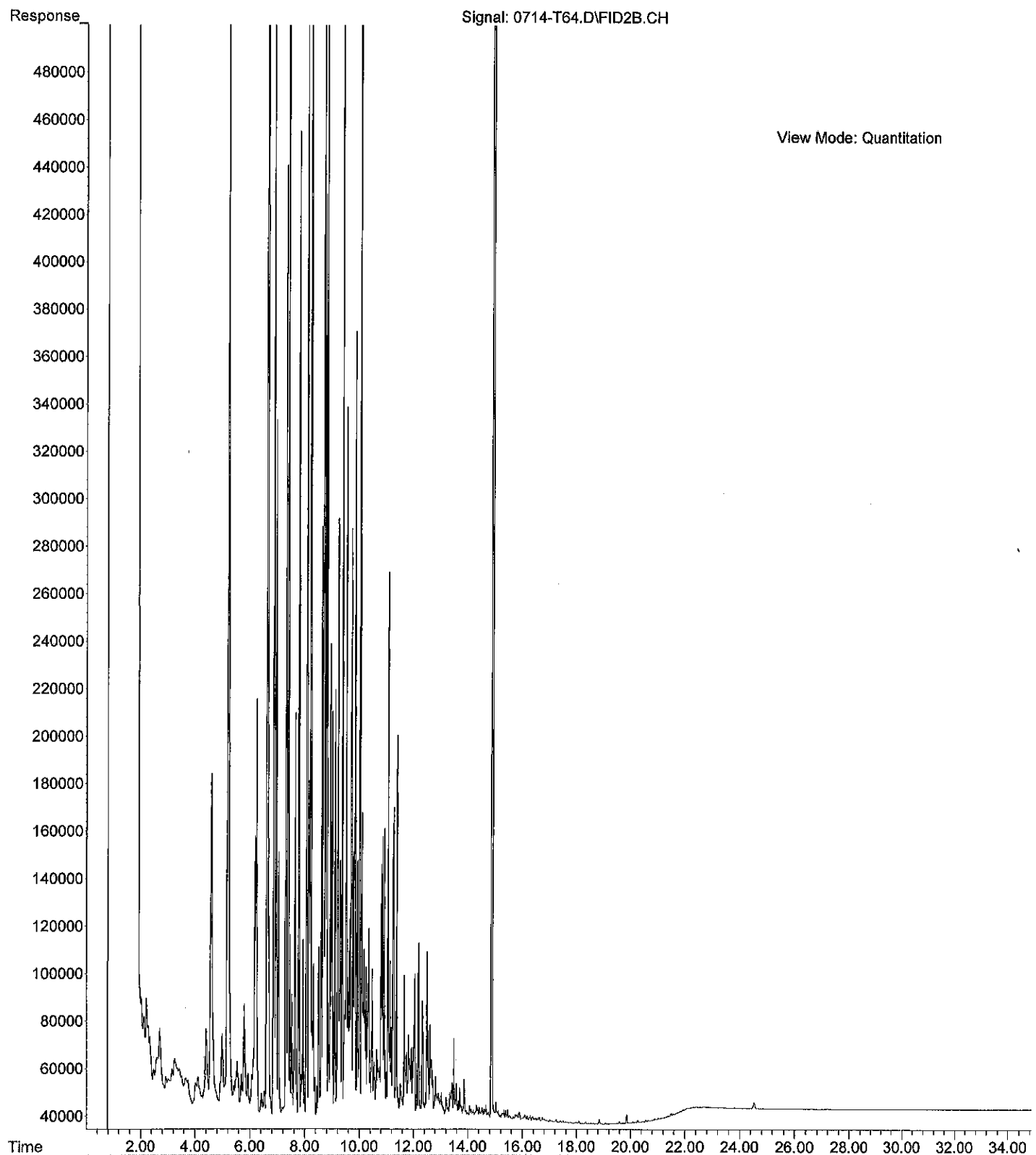
File :C:\msdchem\1\data\T230714\0714-T14.D
Operator : LW
Acquired : 14 Jul 2023 18:21 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-01 ~~SG~~ ACV
Misc Info : Sample
Vial Number: 14



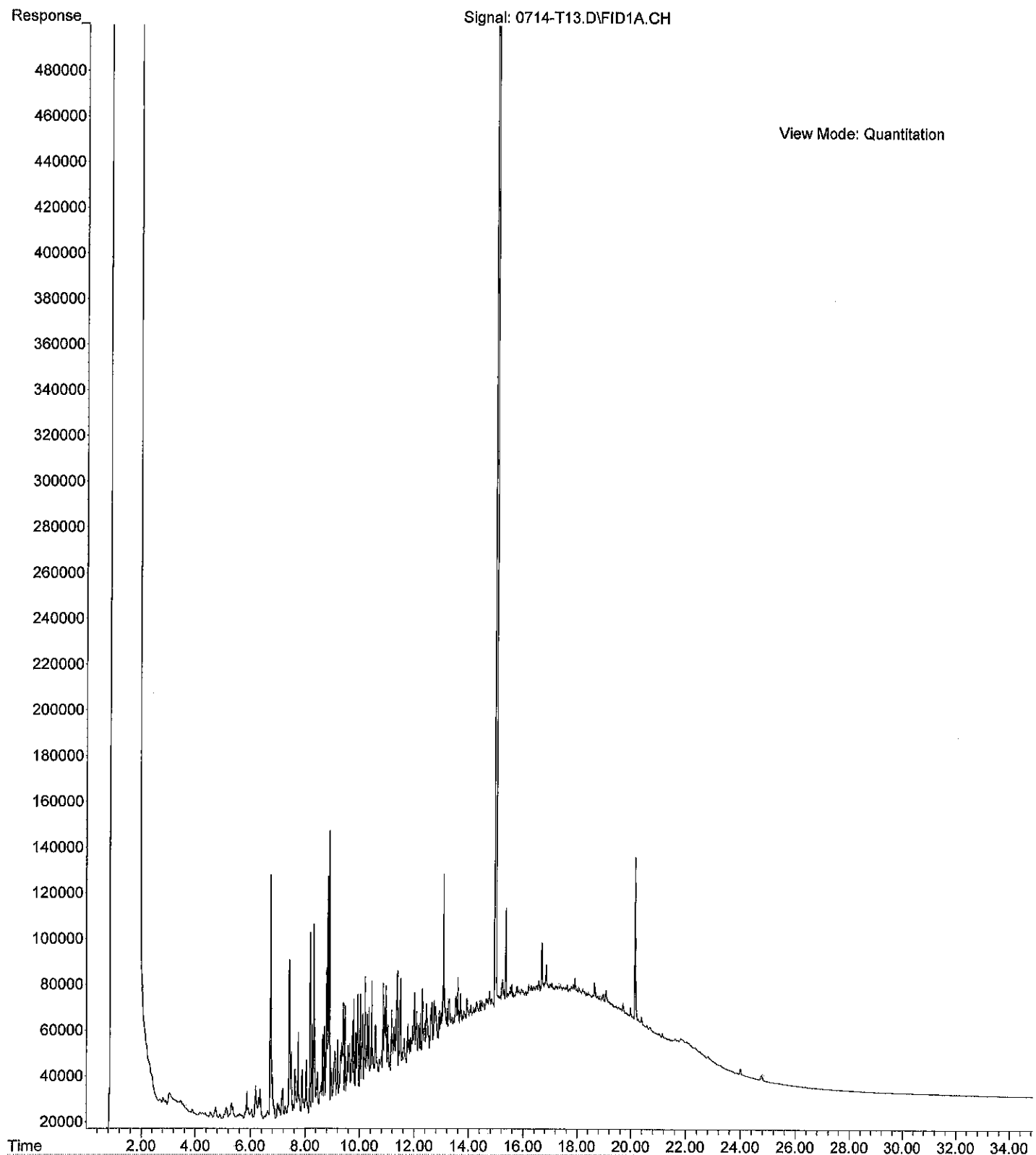
File :C:\msdchem\1\data\T230714.SEC\0714-T63.D
Operator : LW
Acquired : 14 Jul 2023 17:38 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-02
Misc Info : RearSamp
Vial Number: 63



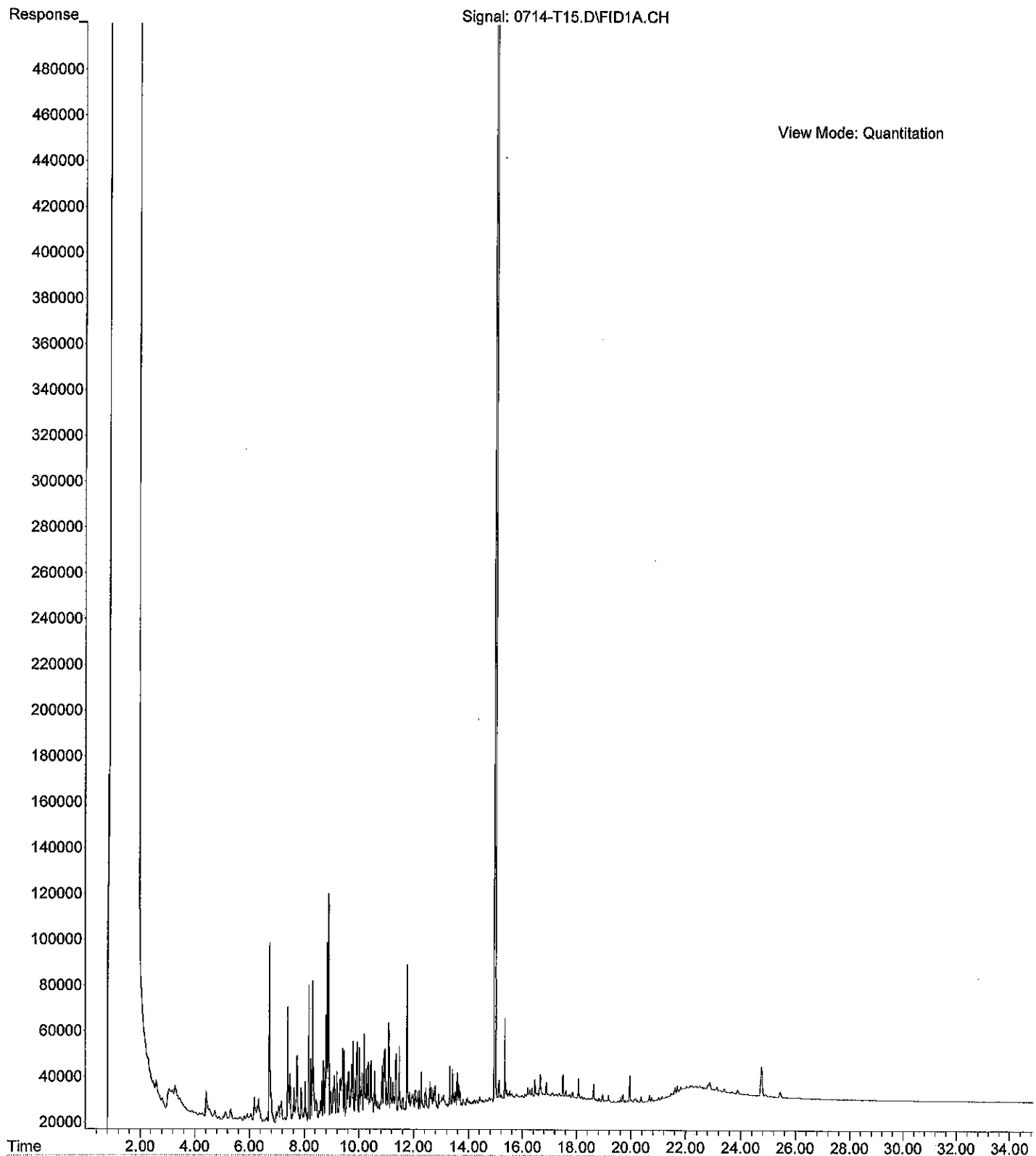
File :C:\msdchem\1\data\T230714.SEC\0714-T64.D
Operator : LW
Acquired : 14 Jul 2023 18:21 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-02 ~~07-02-04~~ ACU
Misc Info : RearSamp
Vial Number: 64



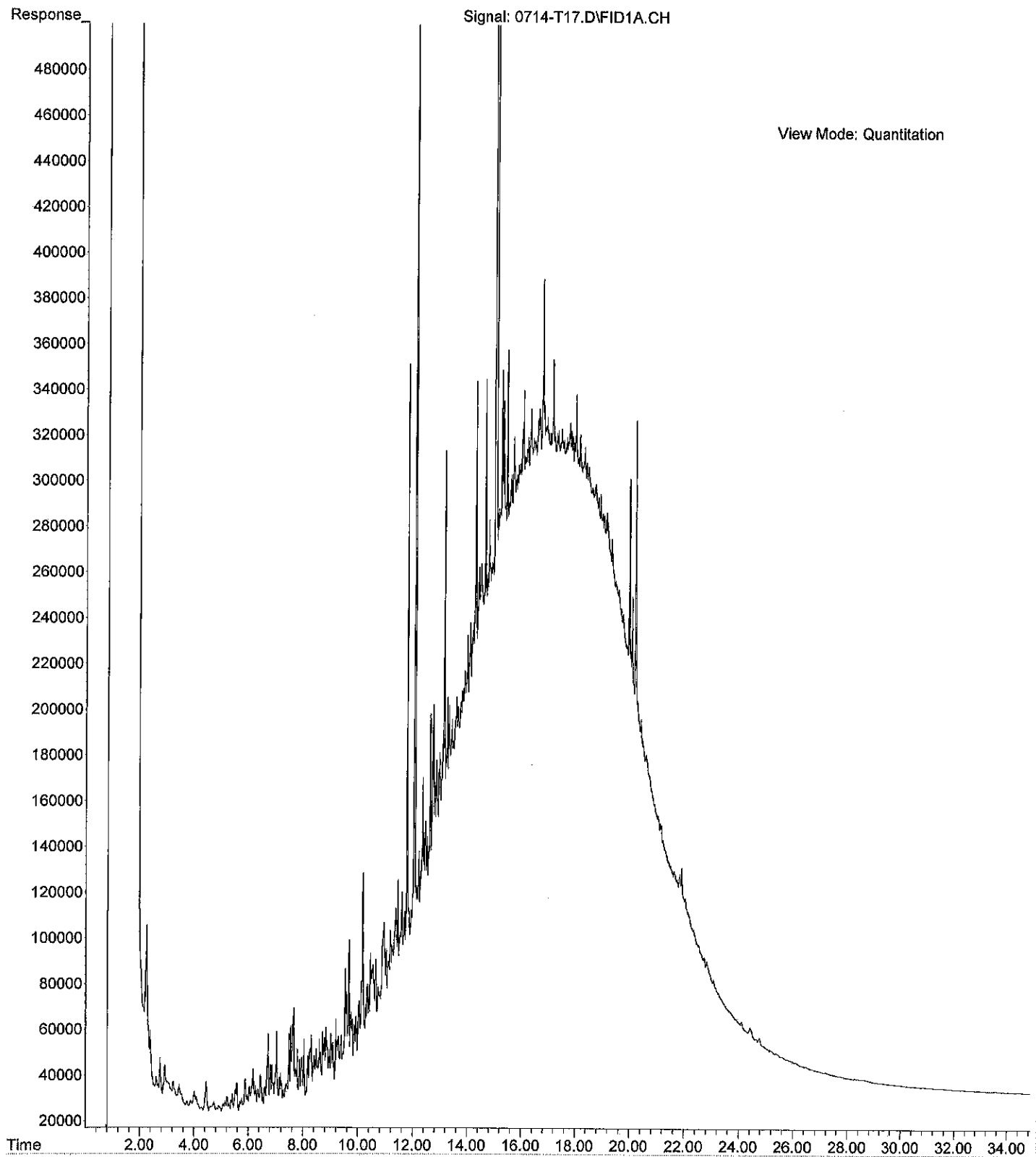
File :C:\msdchem\1\data\T230714\0714-T13.D
Operator : LW
Acquired : 14 Jul 2023 17:38 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-03
Misc Info : Sample
Vial Number: 13



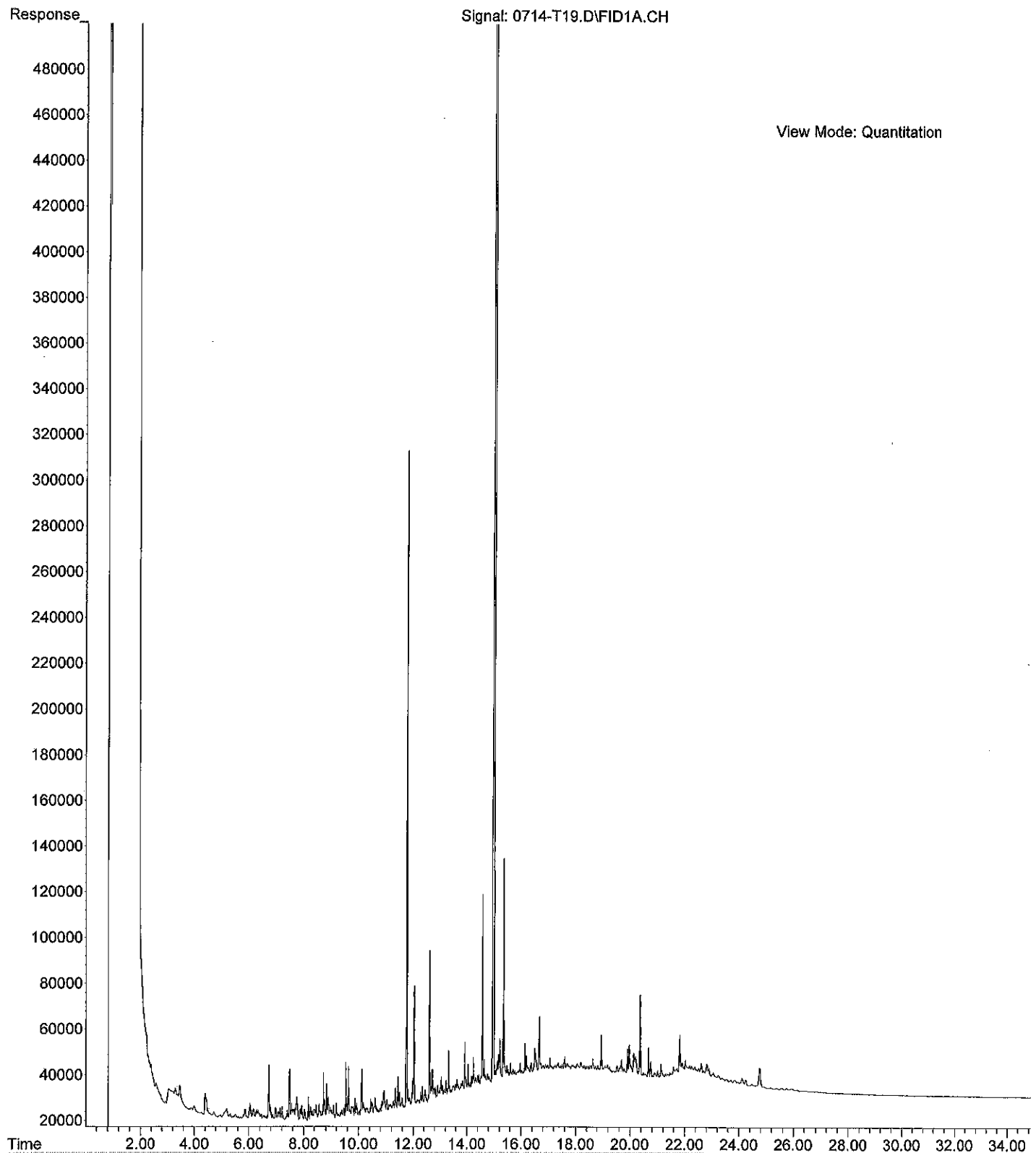
File : C:\msdchem\1\data\T230714\0714-T15.D
Operator : LW
Acquired : 14 Jul 2023 19:03 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-03 ~~sg~~ ACV
Misc Info : Sample
Vial Number: 15



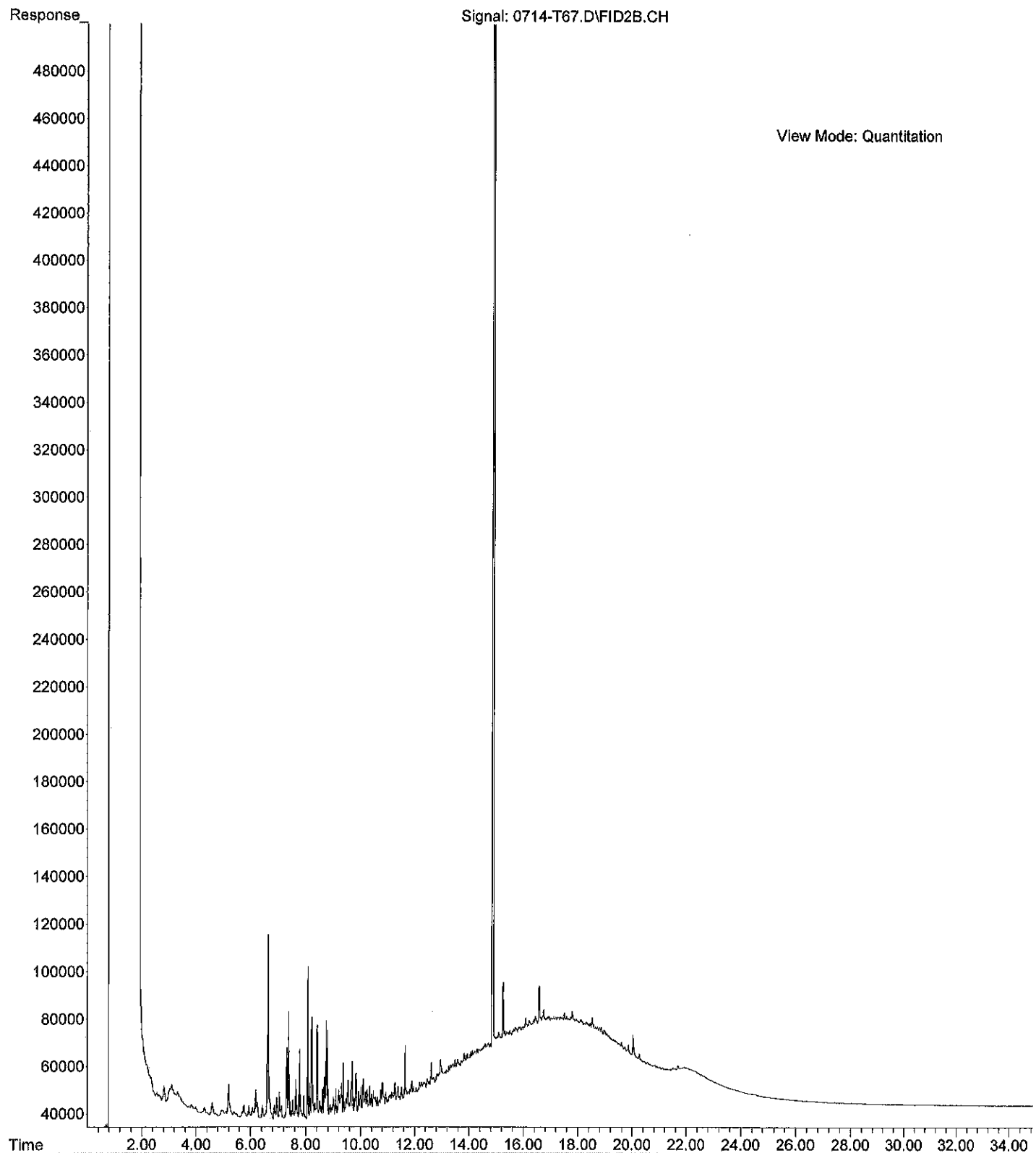
File :C:\msdchem\1\data\T230714\0714-T17.D
Operator : LW
Acquired : 14 Jul 2023 20:29 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-04
Misc Info : Sample
Vial Number: 17



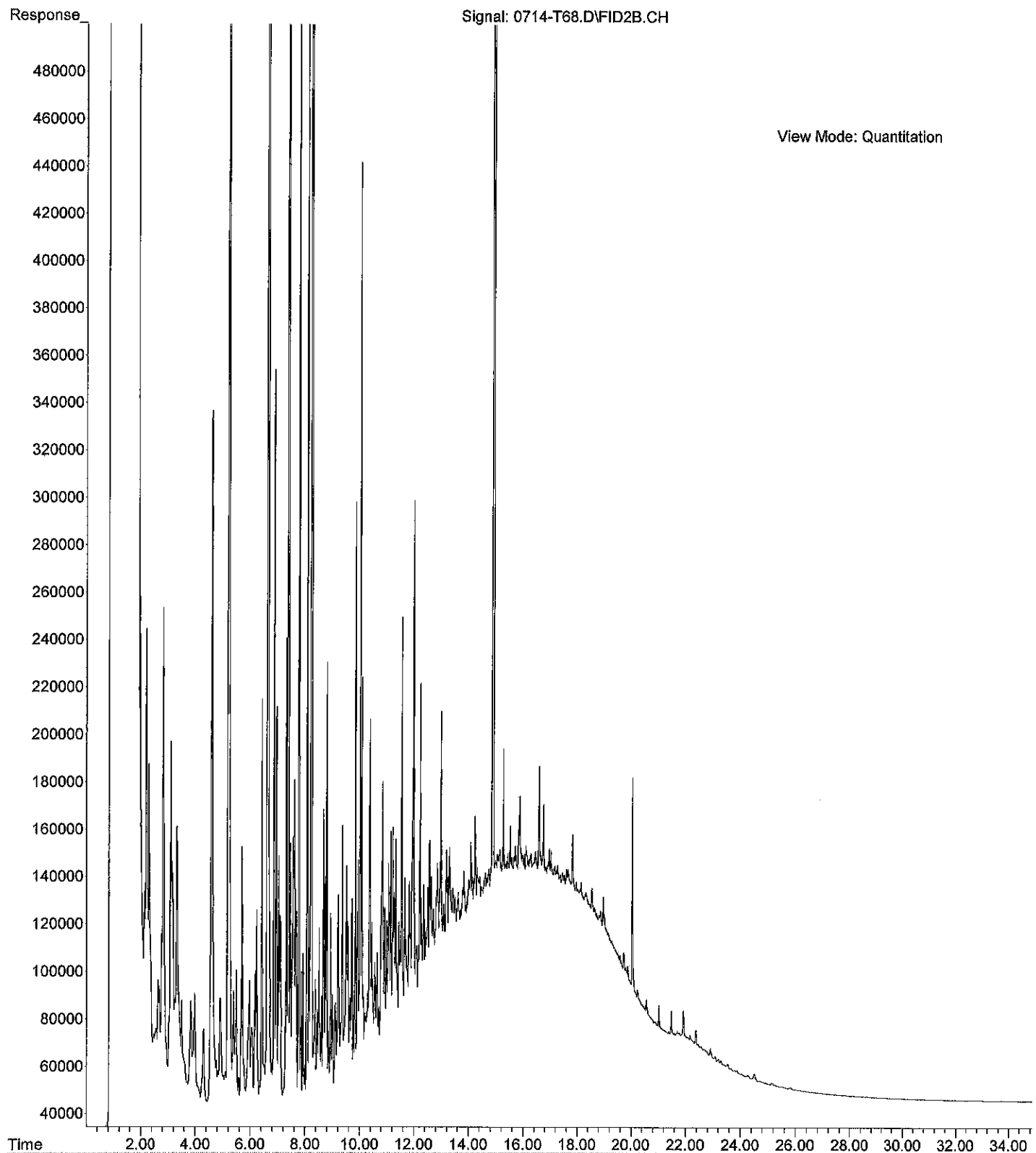
File : C:\msdchem\1\data\T230714\0714-T19.D
Operator : LW
Acquired : 14 Jul 2023 21:53 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-04 ~~SC~~ ACV
Misc Info : Sample
Vial Number: 19



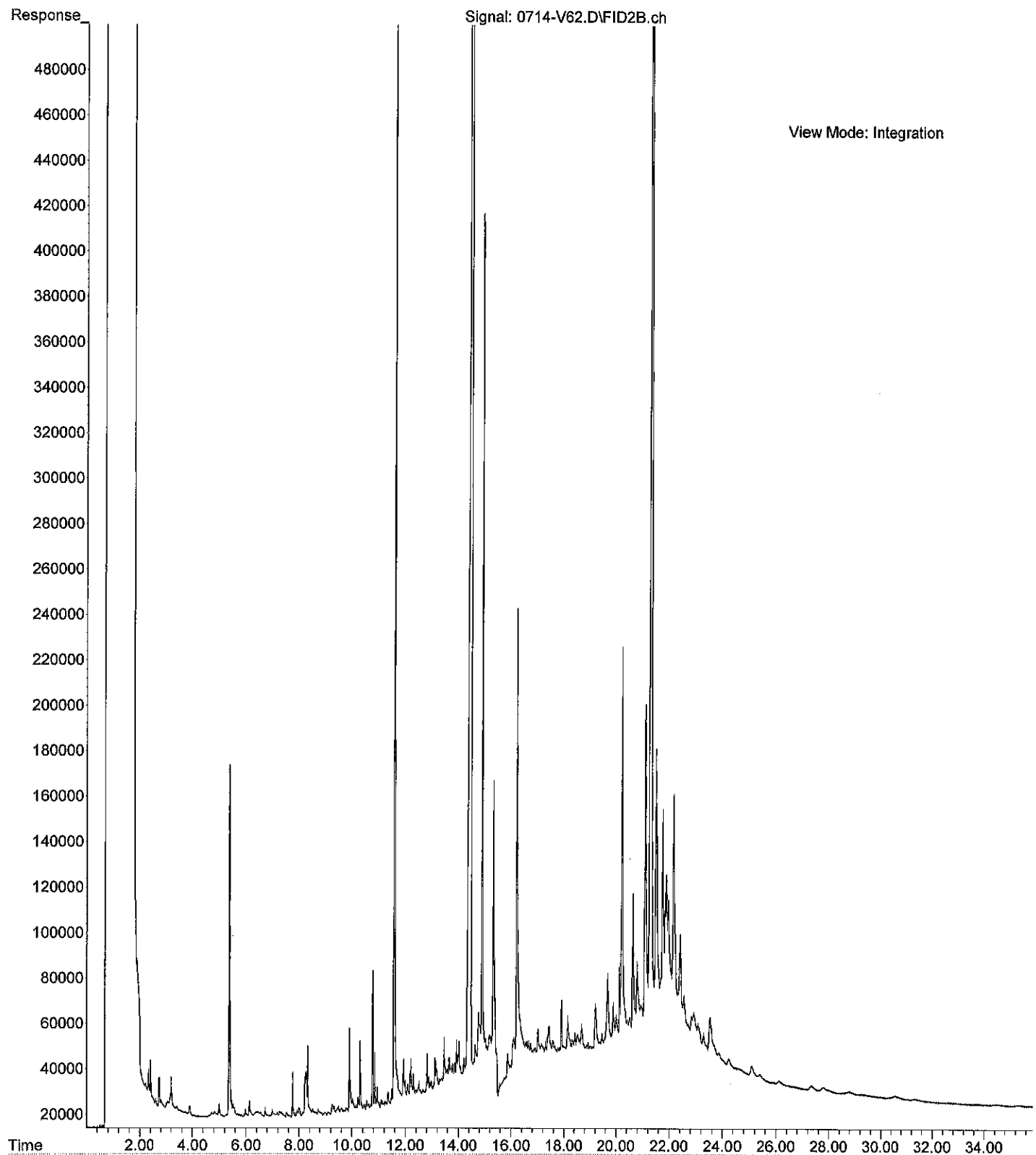
File :C:\msdchem\1\data\T230714.SEC\0714-T67.D
Operator : LW
Acquired : 14 Jul 2023 20:29 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-05
Misc Info : RearSamp
Vial Number: 67



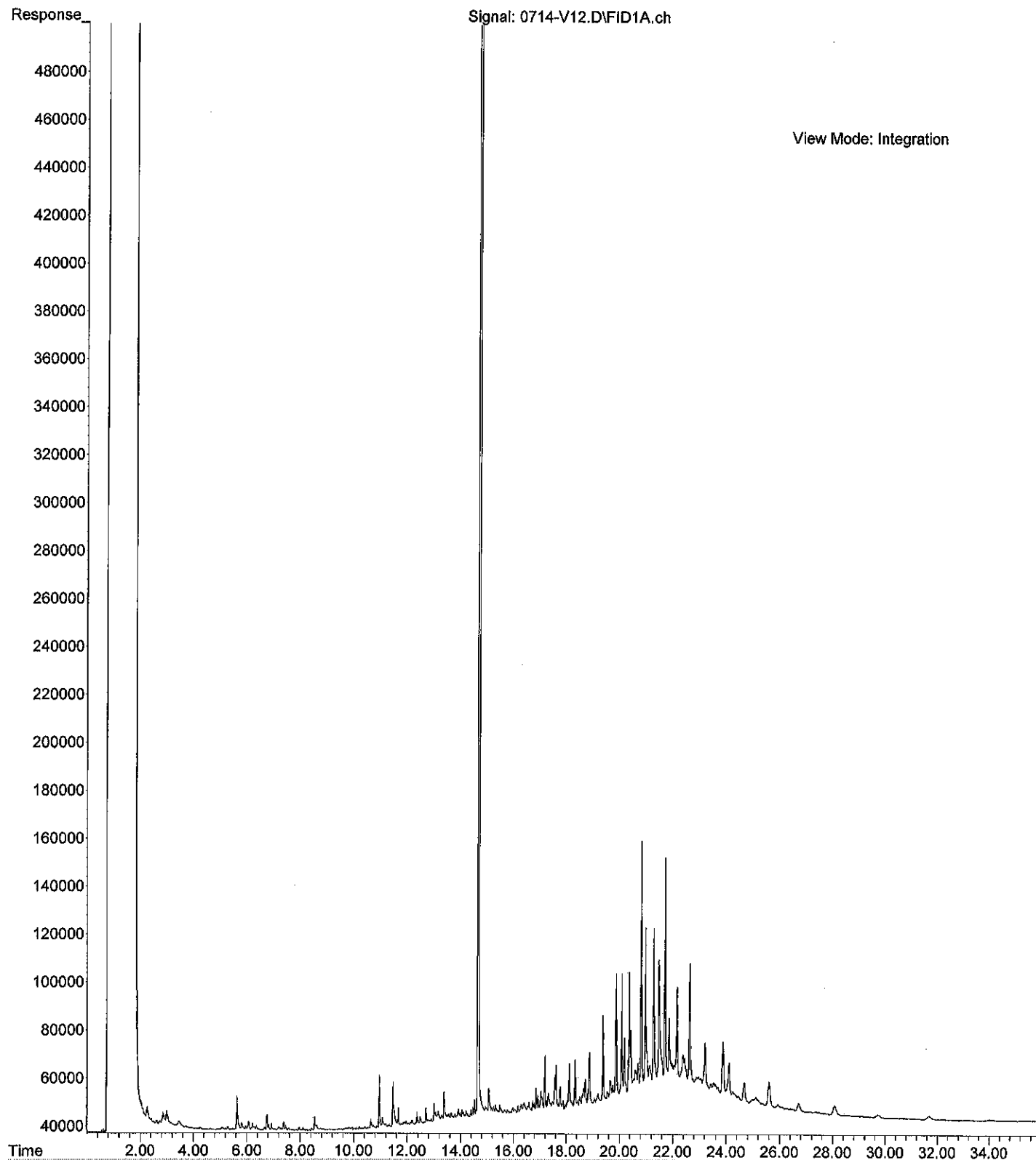
File :C:\msdchem\1\data\T230714.SEC\0714-T68.D
Operator : LW
Acquired : 14 Jul 2023 21:11 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-06
Misc Info : RearSamp
Vial Number: 68



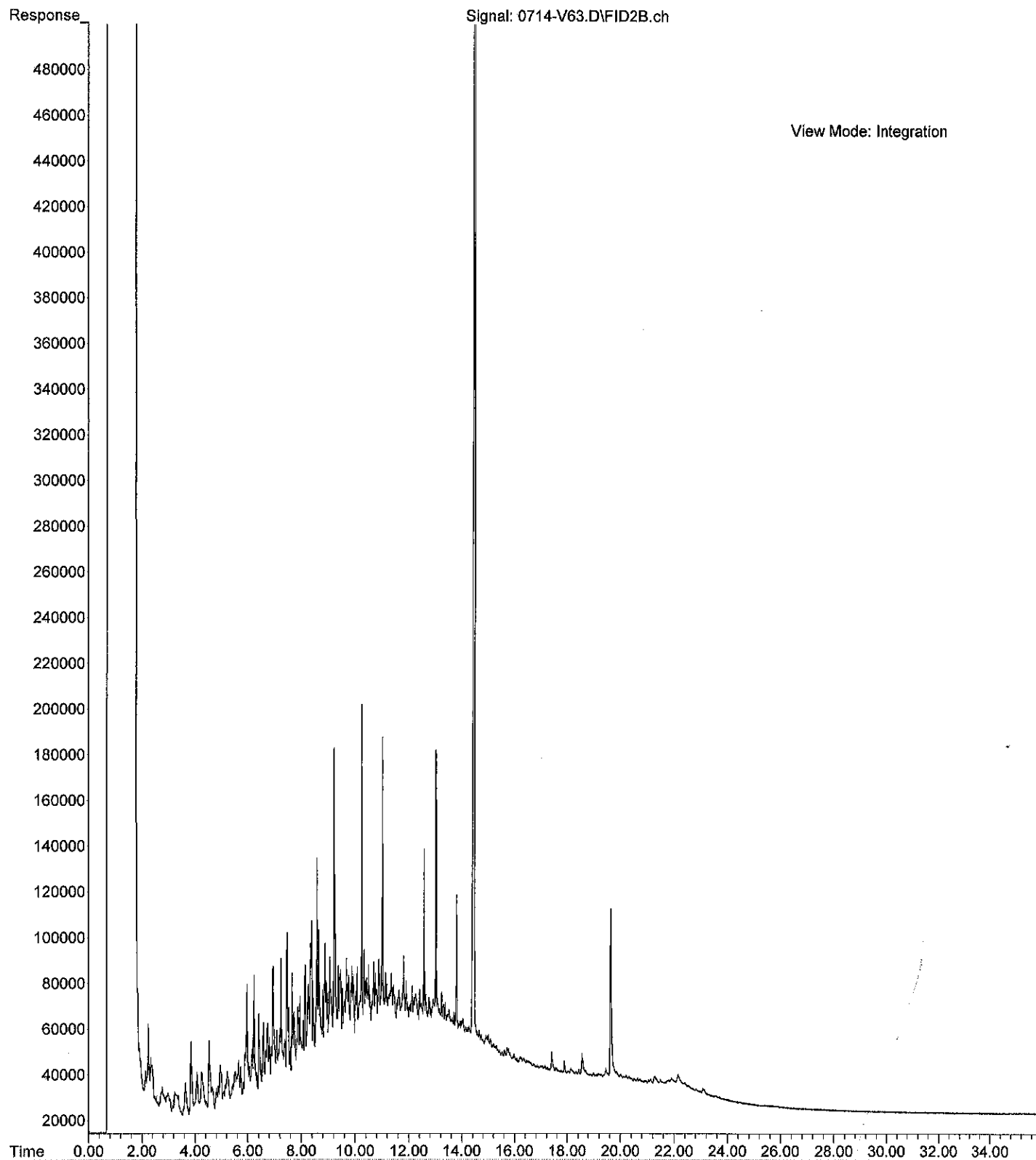
File :C:\msdchem\2\data\V230714.SEC\0714-V62.D
Operator : LW
Acquired : 14 Jul 2023 17:58 using AcqMethod V230113F.M
Instrument : Vigo
Sample Name: 07-074-07
Misc Info : RearSamp
Vial Number: 62



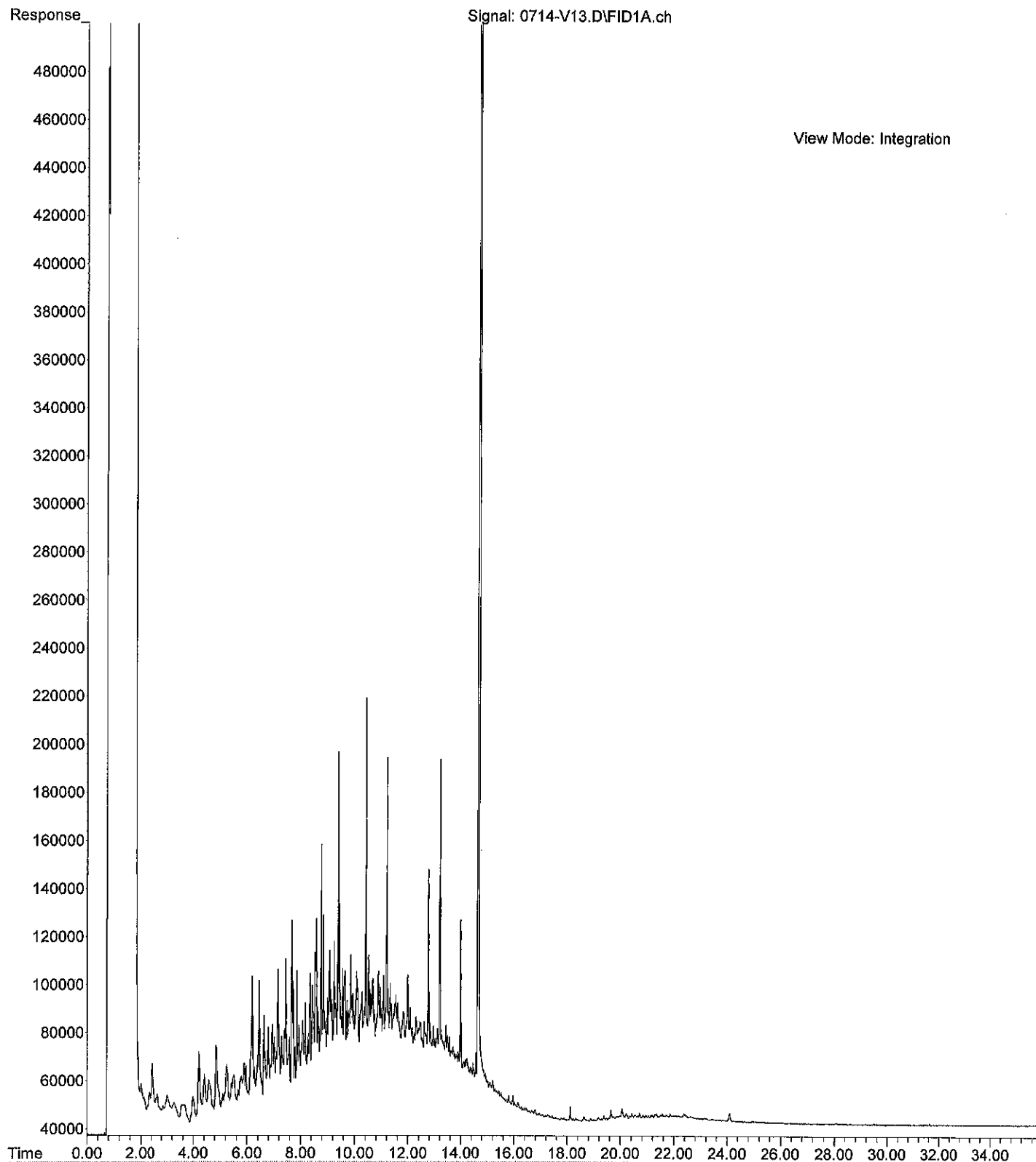
File : C:\msdchem\2\data\V230714\0714-V12.D
Operator : LW
Acquired : 14 Jul 2023 17:58 using AcqMethod V230113F.M
Instrument : Vigo
Sample Name: 07-074-07 ~~88~~ ACW
Misc Info : Sample
Vial Number: 12



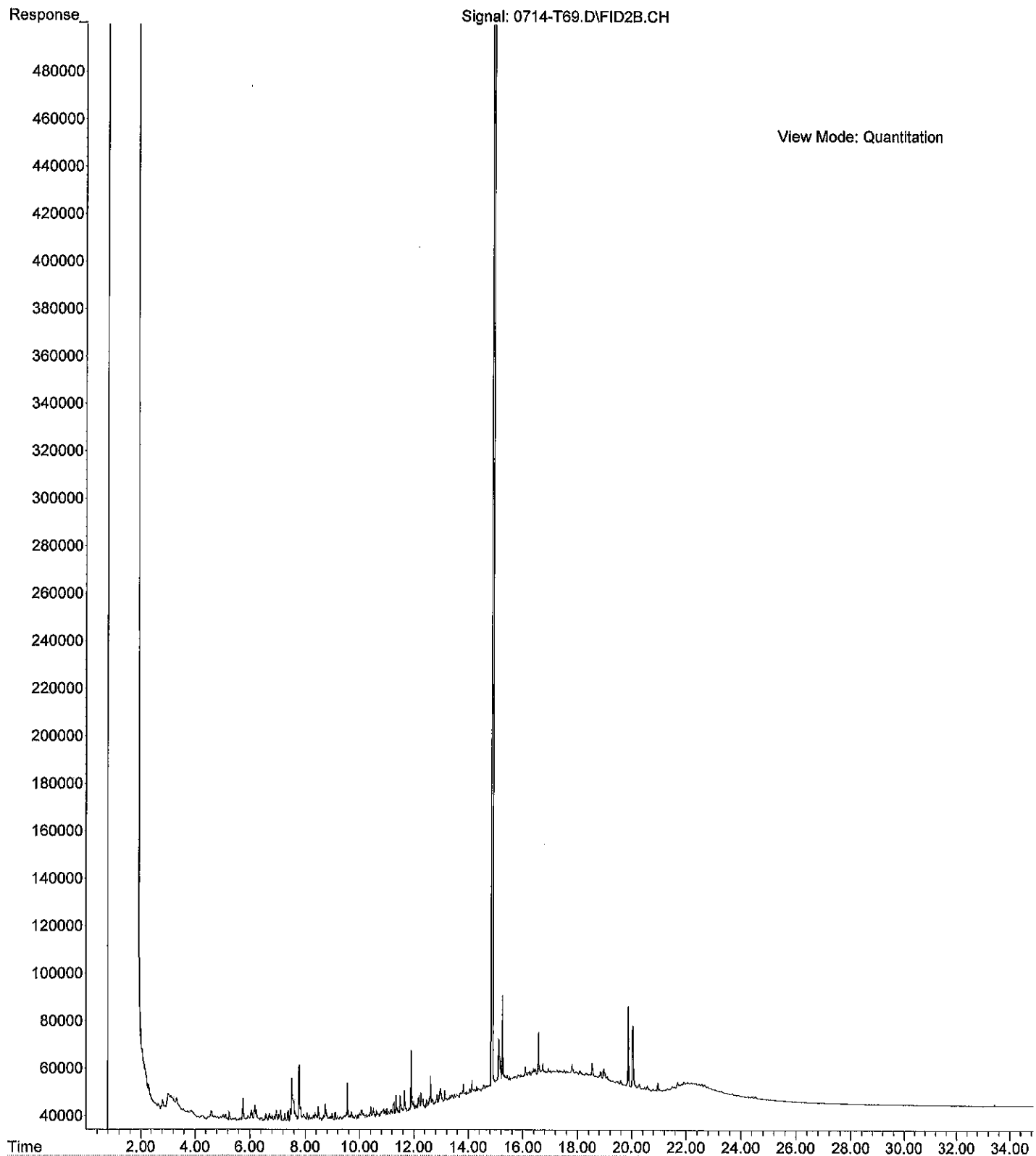
File :C:\msdchem\2\data\V230714.SEC\0714-V63.D
Operator : LW
Acquired : 14 Jul 2023 18:39 using AcqMethod V230113F.M
Instrument : Vigo
Sample Name: 07-074-08
Misc Info : RearSamp
Vial Number: 63



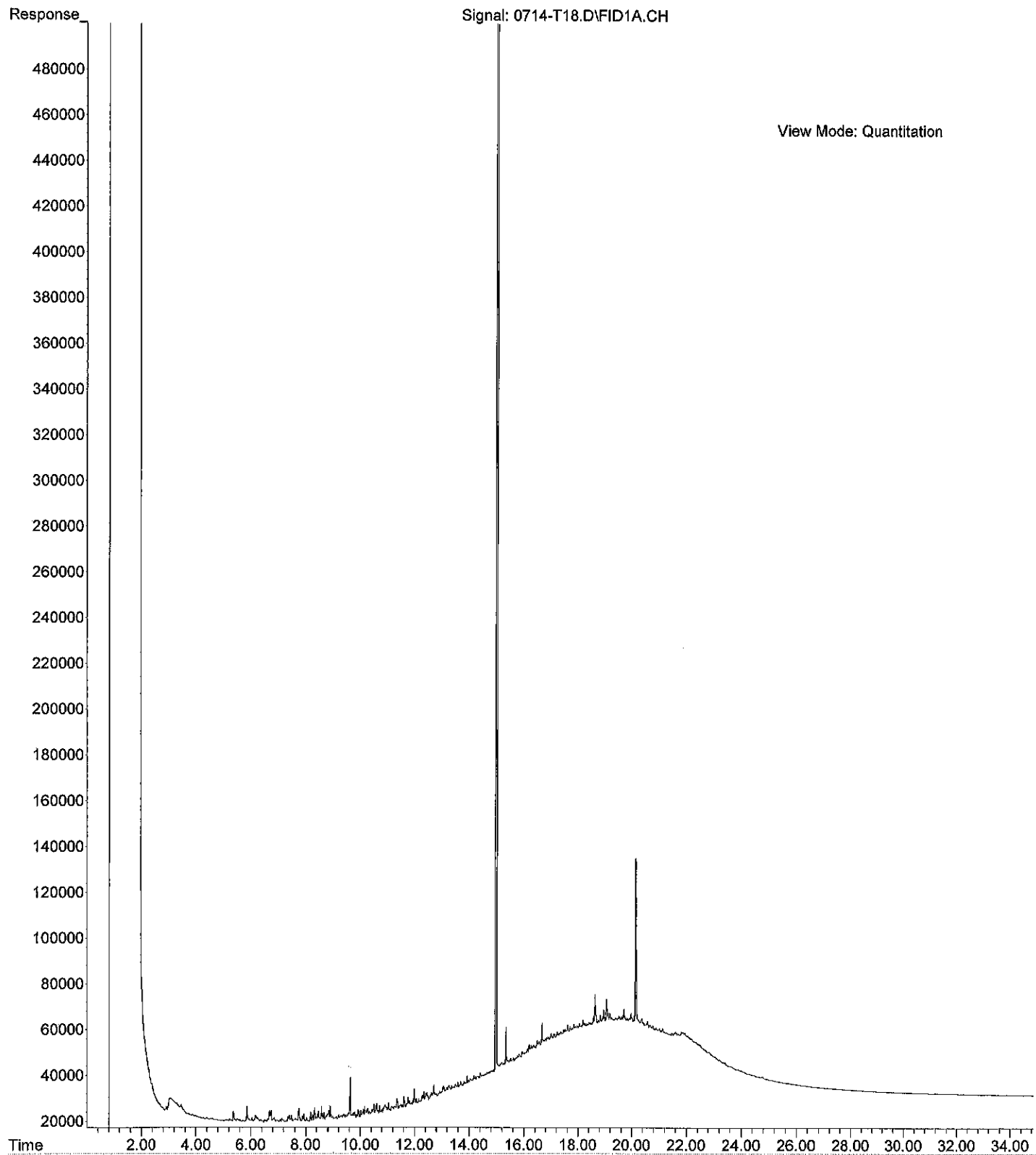
File :C:\msdchem\2\data\V230714\0714-V13.D
Operator : LW
Acquired : 14 Jul 2023 18:39 using AcqMethod V230113F.M
Instrument : Vigo
Sample Name: 07-074-08 ~~ss~~ ACU
Misc Info : Sample
Vial Number: 13



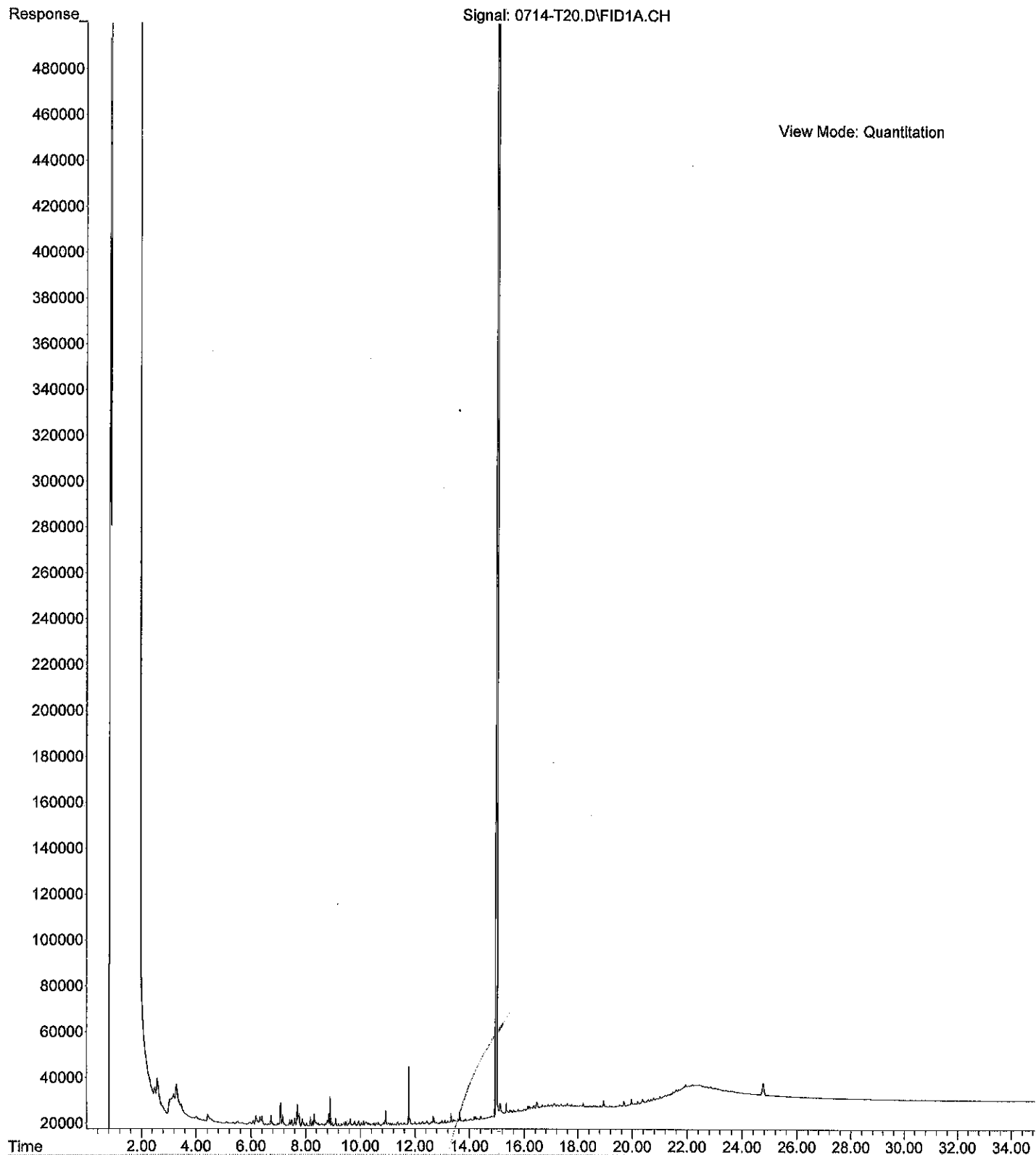
File : C:\msdchem\1\data\T230714.SEC\0714-T69.D
Operator : LW
Acquired : 14 Jul 2023 21:53 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-09
Misc Info : RearSamp
Vial Number: 69



File :C:\msdchem\1\data\T230714\0714-T18.D
Operator : LW
Acquired : 14 Jul 2023 21:11 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-10
Misc Info : Sample
Vial Number: 18



File : C:\msdchem\1\data\T230714\0714-T20.D
Operator : LW
Acquired : 14 Jul 2023 22:36 using AcqMethod T230601F.M
Instrument : Teri
Sample Name: 07-074-10 SGAU
Misc Info : Sample
Vial Number: 20





14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 26, 2023

David Dinkuhn
Parametrix, Inc.
60 Washington Avenue, #390
Bremerton, WA 98337

Re: Analytical Data for Project 233-1896-107
Laboratory Reference No. 2307-075

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on July 13, 2023.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 26, 2023
Samples Submitted: July 13, 2023
Laboratory Reference: 2307-075
Project: 233-1896-107

Case Narrative

Samples were collected on July 11 and 12, 2023 and received by the laboratory on July 13, 2023. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Dup					
Laboratory ID:	07-075-01					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	240	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	89	65-122				
Client ID:	Trip Blank					
Laboratory ID:	07-075-02					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	ND	100	NWTPH-Gx	7-13-23	7-13-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	94	65-122				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0713W1					
Benzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Toluene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Ethylbenzene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
m,p-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
o-Xylene	ND	1.0	EPA 8021B	7-13-23	7-13-23	
Gasoline	ND	100	NWTPH-Gx	7-13-23	7-13-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	90	65-122				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-070-01							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	NA	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethylbenzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
Surrogate:								
Fluorobenzene				88	84	65-122		

SPIKE BLANKS

Laboratory ID:	SB0713W1								
	SB	SBD	SB	SBD	SB	SBD			
Benzene	46.3	47.8	50.0	50.0	93	96	81-118	3	12
Toluene	47.1	48.7	50.0	50.0	94	97	82-119	3	12
Ethylbenzene	47.2	48.7	50.0	50.0	94	97	81-118	3	12
m,p-Xylene	47.0	48.4	50.0	50.0	94	97	82-118	3	12
o-Xylene	47.7	48.9	50.0	50.0	95	98	81-119	2	11
Surrogate:									
Fluorobenzene					89	90	65-122		



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Dup					
Laboratory ID:	07-075-01					
Diesel Range Organics	0.28	0.11	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	0.42	0.23	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	72	50-150				
Client ID:	Dup					
Laboratory ID:	07-075-01					
Diesel Range Organics	0.17	0.11	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	ND	0.23	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	73	50-150				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0714W1					
Diesel Range Organics	ND	0.040	NWTPH-Dx	7-14-23	7-14-23	
Lube Oil Range Organics	ND	0.16	NWTPH-Dx	7-14-23	7-14-23	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	94	50-150				
Laboratory ID:	MB0714W1					
Diesel Range Organics	ND	0.040	NWTPH-Dx	7-14-23	7-14-23	X1
Lube Oil Range Organics	ND	0.16	NWTPH-Dx	7-14-23	7-14-23	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	125	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-074-02							
	ORIG	DUP						
Diesel Range Organics	1.44	1.28	NA	NA	NA	NA	12	40
Lube Oil Range Organics	0.483	0.392	NA	NA	NA	NA	21	40
Surrogate:								
<i>o</i> -Terphenyl				104	98	50-150		
Laboratory ID: 07-074-02								
	ORIG	DUP						
Diesel Range Organics	0.624	0.572	NA	NA	NA	NA	9	40
Lube Oil Range	ND	ND	NA	NA	NA	NA	NA	40
Surrogate:								
<i>o</i> -Terphenyl				99	85	50-150		



Date of Report: July 26, 2023
Samples Submitted: July 13, 2023
Laboratory Reference: 2307-075
Project: 233-1896-107

NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Dup					
Laboratory ID:	07-075-01					
Nitrate	0.28	0.050	EPA 353.2	7-13-23	7-13-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

NITRATE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
 Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0713W1					
Nitrate	ND	0.050	EPA 353.2	7-13-23	7-13-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-075-01							
	ORIG	DUP						
Nitrate	0.281	0.263	NA	NA	NA	NA	7	19

MATRIX SPIKE

Laboratory ID:	07-075-01							
	MS	MS		MS				
Nitrate	2.26	2.00	0.281	99	85-121	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0713W1							
	SB	SB		SB				
Nitrate	1.89	2.00	NA	95	87-118	NA	NA	



Date of Report: July 26, 2023
Samples Submitted: July 13, 2023
Laboratory Reference: 2307-075
Project: 233-1896-107

SULFATE
ASTM D516-11

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Dup					
Laboratory ID:	07-075-01					
Sulfate	5.1	5.0	ASTM D516-11	7-14-23	7-14-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

**SULFATE
 ASTM D516-11
 QUALITY CONTROL**

Matrix: Water

Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0714W1					
Sulfate	ND	5.0	ASTM D516-11	7-14-23	7-14-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-075-01							
	ORIG	DUP						
Sulfate	5.13	ND	NA	NA	NA	NA	10	

MATRIX SPIKE

Laboratory ID:	07-075-01							
	MS	MS		MS				
Sulfate	15.0	10.0	5.13	99	73-127	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0714W1							
	SB	SB		SB				
Sulfate	9.16	10.0	NA	92	85-114	NA	NA	



Date of Report: July 26, 2023
Samples Submitted: July 13, 2023
Laboratory Reference: 2307-075
Project: 233-1896-107

TOTAL ALKALINITY
SM 2320B

Matrix: Water
Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Dup					
Laboratory ID:	07-075-01					
Total Alkalinity	170	2.0	SM 2320B	7-17-23	7-17-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

**TOTAL ALKALINITY
 SM 2320B
 QUALITY CONTROL**

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0717W1					
Total Alkalinity	ND	2.0	SM 2320B	7-17-23	7-17-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-074-02							
	ORIG	DUP						
Total Alkalinity	152	150	NA	NA	NA	1	10	

SPIKE BLANK								
Laboratory ID:	SB0717W1							
	SB	SB		SB				
Total Alkalinity	92.0	100	NA	92	82-112	NA	NA	



Date of Report: July 26, 2023
Samples Submitted: July 13, 2023
Laboratory Reference: 2307-075
Project: 233-1896-107

CHLORIDE
SM 4500-Cl E

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Dup					
Laboratory ID:	07-075-01					
Chloride	35	2.0	SM 4500-Cl E	7-14-23	7-14-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

**CHLORIDE
 SM 4500-Cl E
 QUALITY CONTROL**

Matrix: Water

Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0714W1					
Chloride	ND	2.0	SM 4500-Cl E	7-14-23	7-14-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-075-01							
	ORIG	DUP						
Chloride	35.2	35.6	NA	NA	NA	1	12	

MATRIX SPIKE

Laboratory ID:	07-075-01							
	MS	MS		MS				
Chloride	89.2	50.0	35.2	108	83-120	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0714W1							
	SB	SB		SB				
Chloride	48.3	50.0	NA	97	83-119	NA	NA	



Date of Report: July 26, 2023
Samples Submitted: July 13, 2023
Laboratory Reference: 2307-075
Project: 233-1896-107

**DISSOLVED MANGANESE
EPA 6010D**

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Dup					
Laboratory ID:	07-075-01					
Manganese	0.051	0.011	EPA 6010D		7-18-23	



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

**DISSOLVED MANGANESE
 EPA 6010D
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0718D1					
Manganese	ND	0.011	EPA 6010D		7-18-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-074-08							
	ORIG	DUP						
Manganese	0.0490	0.0501	NA	NA	NA	NA	2	20

MATRIX SPIKES

Laboratory ID:	07-074-08									
	MS	MSD	MS	MSD		MS	MSD			
Manganese	0.612	0.601	0.556	0.556	0.0490	101	99	75-125	2	20



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

DISSOLVED GASES
RSK 175

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Dup					
Laboratory ID:	07-075-01					
Methane	600	3.3	RSK 175	7-19-23	7-19-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>1-Butene</i>	83	50-150				



Date of Report: July 26, 2023
 Samples Submitted: July 13, 2023
 Laboratory Reference: 2307-075
 Project: 233-1896-107

**DISSOLVED GASES
 RSK 175
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0719W1					
Methane	ND	0.55	RSK 175	7-19-23	7-19-23	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	93	50-150				

Analyte	Result		Spike Level		Percent		Recovery		RPD	
					Recovery		Limits		RPD	Limit
SPIKE BLANK										
Laboratory ID:	SB0719W1									
	SB	SBD	SB	SBD	SB	SBD				
Methane	45.3	46.0	44.2	44.2	102	104	75-125	2	25	
Surrogate:										
1-Butene					96	90	50-150			





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- X2 - Sample extract treated with a silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference





Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

25 July 2023

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th Street
Redmond, WA 98052

RE: Parametrix 233-1896-107

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
23G0215

Associated SDG ID(s)
N/A

**Phillip
Bates**

Digitally signed by
Phillip Bates
Date: 2023.07.25
10:13:30 -07'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Phillip Bates, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

ARI Assigned Number: <i>23GDU5</i>	Turn-around Requested: Standard
ARI Client Company: On-Site Environmental Inc. (425)883-3881	Phone:
Client Contact: David Baumeister	
Client Project Name: Parametrix (233-1896-107)	
Client Project #:	Samplers: <i>Sally Nguyen</i> <i>Aaron Thom</i> Michael Brady

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DUP	23G0215-01	Water	12-Jul-2023 13:55	12-Jul-2023 16:28
MW-27	23G0215-02	Water	12-Jul-2023 09:58	12-Jul-2023 16:28
MW-20R	23G0215-03	Water	12-Jul-2023 10:50	12-Jul-2023 16:28
MW-25	23G0215-04	Water	12-Jul-2023 13:50	12-Jul-2023 16:28



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

Work Order Case Narrative

Client: OnSite Environmental, Inc.
Project: Parametrix 233-1896-107
Work Order: 23G0215

Sample receipt

Samples as listed on the preceding page were received 12-Jul-2023 16:28 under ARI work order 23G0215. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: On-Site Environmental

Project Name: Parametrix

COC No(s): NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23G0215

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? _____

YES NO

Were custody papers included with the cooler? _____

YES NO

Were custody papers properly filled out (ink, signed, etc.) _____

YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 16:28

24.1

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 9708

Cooler Accepted by: NC

Date: 7/12/23

Time: 16:28

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? _____

YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? _____

NA YES NO

How were bottles sealed in plastic bags? _____

Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? _____

YES NO

Were all bottle labels complete and legible? _____

YES NO

Did the number of containers listed on COC match with the number of containers received? _____

YES NO

Did all bottle labels and tags agree with custody papers? _____

YES NO

Were all bottles used correct for the requested analyses? _____

YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...

NA YES NO

Were all VOC vials free of air bubbles? _____

NA YES NO

Was sufficient amount of sample sent in each bottle? _____

YES NO

Date VOC Trip Blank was made at ARI: _____

NA

Were the sample(s) split by ARI? NA YES

Date/Time: _____

Equipment: _____

Split by: _____

Samples Logged by: NC Date: 07/12/23 Time: 16:30 Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____

Cooler Temperature Compliance Form

[illegible]

Completed by: NZ Date: 07/12/23 Time: 16:28

00070F

Cooler Temperature Compliance Form

Version 001
10/27/2021



WORK ORDER

23G0215

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: OnSite Environmental, Inc.

Project Manager: Shelly Fishel

Project: Parametrix 233-1896-107

Project Number: [none]

Report To:

OnSite Environmental, Inc.
David Baumeister
14648 NE 95th Street
Redmond, WA 98052
Phone: 425-883-3881
Fax: -

Invoice To:

OnSite Environmental, Inc.
David Baumeister
14648 NE 95th Street
Redmond, WA 98052
Phone: 425-883-3881
Fax: -

Date Due: 27-Jul-2023 18:00 (10 day TAT)

Received By: Nora Cate

Date Received: 12-Jul-2023 16:28

Logged In By: Nora Cate

Date Logged In: 12-Jul-2023 16:33

Samples Received at: 24.1°C

Intact, properly signed and dated custody seals attached to outside of cooler(s).....No
Custody papers properly filled out (in, signed, analyses requested, etc).....Yes
Was sufficient ice used (if appropriate).....No
All bottles arrived in good condition (unbroken).....Yes
Number of containers listed on COC match number received.....Yes
Correct bottles used for the requested analyses.....Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC).No
Sample split at ARI.....No

Custody papers included with the cooler..... Yes
Was a temperature blank included in the cooler..... No
All bottles sealed in individual plastic bags..... Yes
All bottle labels complete and legible..... Yes
Bottle labels and tags agree with COC..... Yes
All VOC vials free of air bubbles..... No
Sufficient amount of sample sent in each bottle..... Yes

23G0215-01 DUP [Water] Sampled 12-Jul-2023 13:55

Iron, Ferrous SM 3500-Fe B-97 07/27/2023 10 7/13/2023

23G0215-02 MW-27 [Water] Sampled 12-Jul-2023 09:58

Iron, Ferrous SM 3500-Fe B-97 07/27/2023 10 7/13/2023

23G0215-03 MW-20R [Water] Sampled 12-Jul-2023 10:50

Iron, Ferrous SM 3500-Fe B-97 07/27/2023 10 7/13/2023

23G0215-04 MW-25 [Water] Sampled 12-Jul-2023 13:50

Iron, Ferrous SM 3500-Fe B-97 07/27/2023 10 7/13/2023

Preservation Confirmation

Container ID	Container Type	pH
23G0215-01 A	Glass NM, Amber, 500 mL, HCl	
23G0215-02 A	Glass NM, Amber, 500 mL, HCl	
23G0215-03 A	Glass NM, Amber, 500 mL, HCl	
23G0215-04 A	Glass NM, Amber, 500 mL, HCl	

Preservation Confirmed By

Date



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

DUP
23G0215-01RE1 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/12/2023 13:55

Instrument: UV1800-1 Analyst: BF

Analyzed: 07/12/2023 17:42

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0231
Prepared: 07/12/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0215-01RE1 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		1	0.040	0.040	0.655	mg/L	



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

MW-27
23G0215-02 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/12/2023 09:58

Instrument: UV1800-1 Analyst: BF

Analyzed: 07/12/2023 17:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0231
Prepared: 07/12/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0215-02 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		20	0.800	0.800	23.9	mg/L	D



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

MW-20R
23G0215-03 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/12/2023 10:50

Instrument: UV1800-1 Analyst: BF

Analyzed: 07/12/2023 17:26

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 23G0215-03 A

Preparation Batch: BLG0231

Sample Size: 5 mL

Prepared: 07/12/2023

Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		20	0.800	0.800	18.6	mg/L	D



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

MW-25
23G0215-04RE1 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 07/12/2023 13:50

Instrument: UV1800-1 Analyst: BF

Analyzed: 07/12/2023 17:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BLG0231
Prepared: 07/12/2023

Sample Size: 5 mL
Final Volume: 5 mL

Extract ID: 23G0215-04RE1 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		1	0.040	0.040	0.653	mg/L	



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BLG0231 - SM 3500-Fe B-97

Instrument: UV1800-1 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLG0231-BLK1)					Prepared: 12-Jul-2023 Analyzed: 12-Jul-2023 17:23						
Ferrous Iron	ND	0.040	0.040	mg/L							U
LCS (BLG0231-BS1)					Prepared: 12-Jul-2023 Analyzed: 12-Jul-2023 17:23						
Ferrous Iron	0.533	0.040	0.040	mg/L	0.510		105	90-110			
Duplicate (BLG0231-DUP2)					Source: 23G0215-01RE1 Prepared: 12-Jul-2023 Analyzed: 12-Jul-2023 17:42						
Ferrous Iron	0.641	0.040	0.040	mg/L		0.655			2.16	20	
Matrix Spike (BLG0231-MS2)					Source: 23G0215-01RE1 Prepared: 12-Jul-2023 Analyzed: 12-Jul-2023 17:43						
Ferrous Iron	1.02	0.040	0.040	mg/L	0.408	0.655	90.5	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

Certified Analyses included in this Report

Analyte	Certifications
SM 3500-Fe B-97 in Water	
Ferrous Iron	WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: [none]
Project Manager: David Baumeister

Reported:
21-Jul-2023 08:53

Notes and Definitions

D	The reported value is from a dilution
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.



Page 1 of 1

% Moisture
100
90
80
70
60
50
40
30
20
10
0

07-075

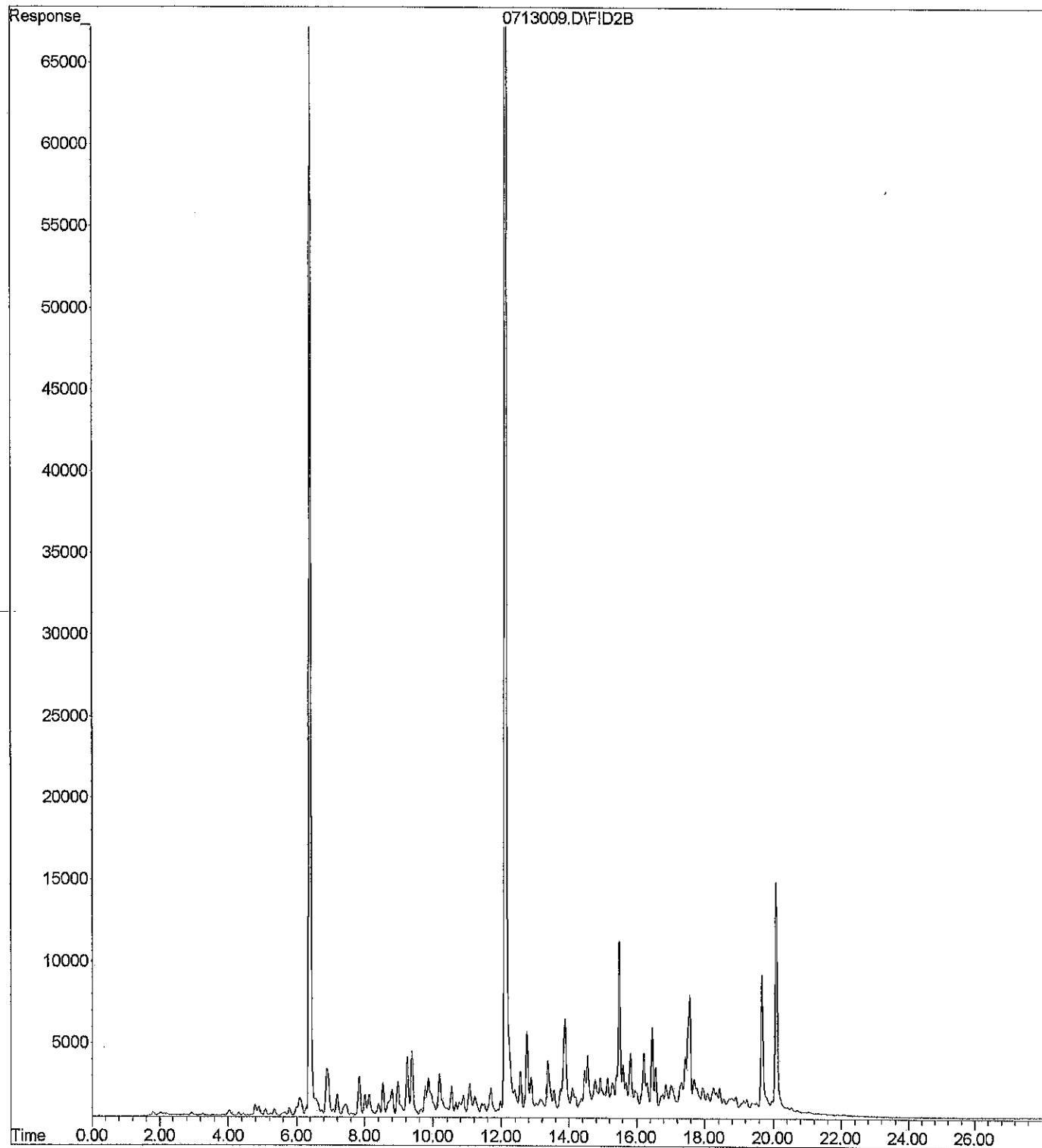
[illegible]

Comments/Special Instructions

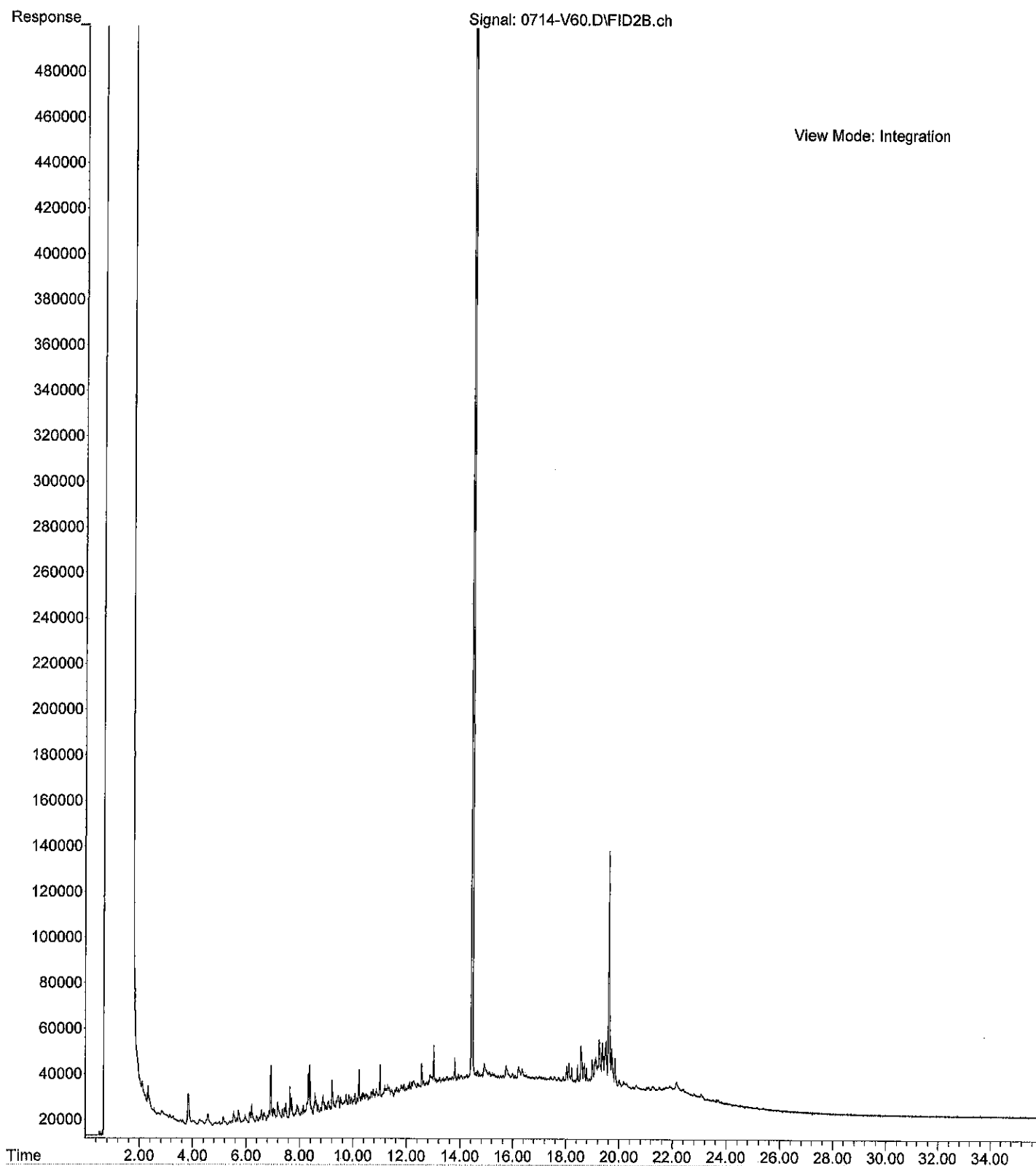
- * Sent directly to ARI for
- ① with and without cleanup
- ↳ Sierra Gel only

Chromatograms with final report

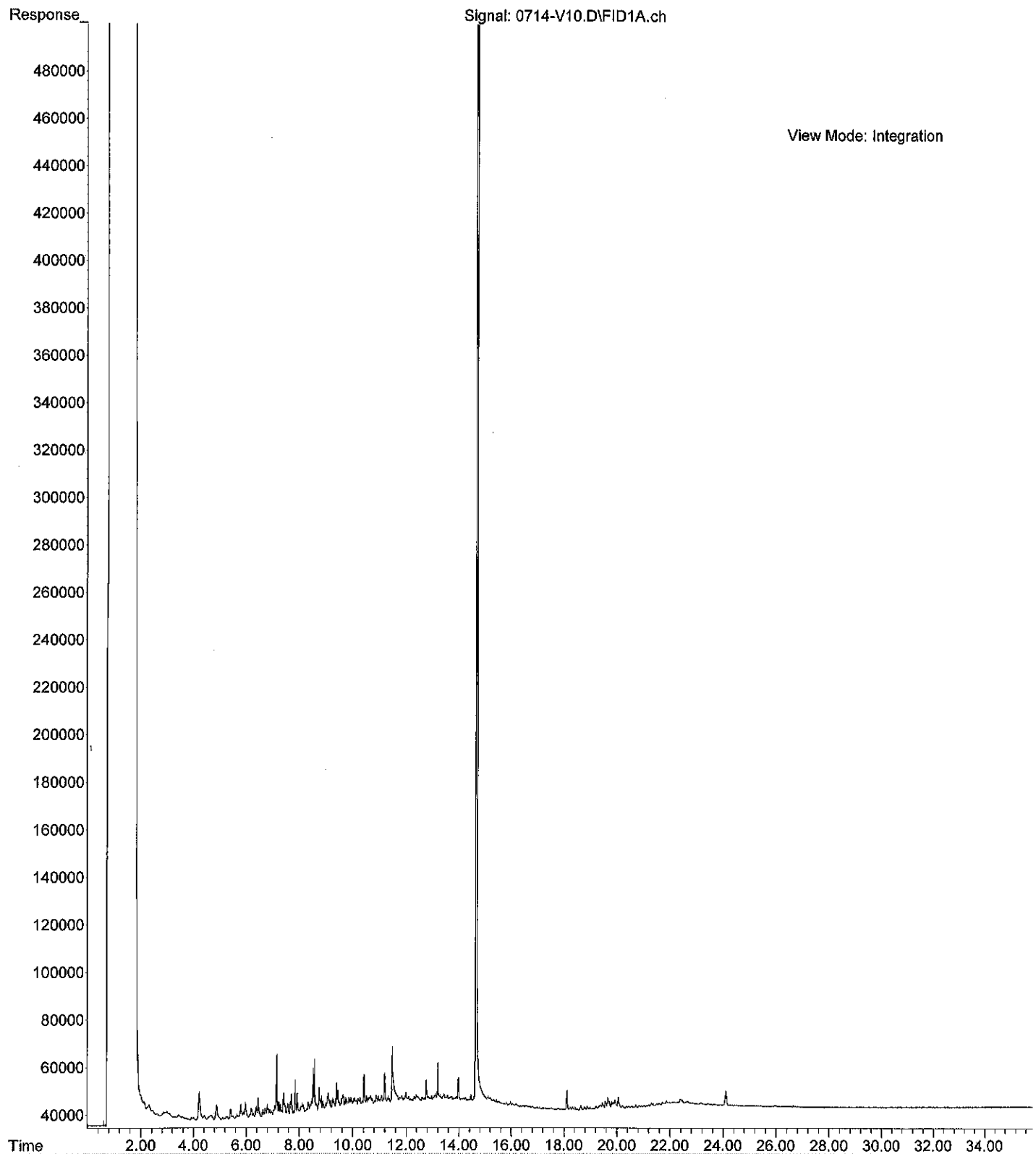
File : X:\BTEX\HOPE\DATA\H230713\0713009.D
Operator :
Acquired : 13 Jul 2023 17:20 using AcqMethod 230606G.M
Instrument : Hope
Sample Name: 07-075-01e
Misc Info :
Vial Number: 9



File : C:\msdchem\2\data\V230714.SEC\0714-V60.D
Operator : LW
Acquired : 14 Jul 2023 16:37 using AcqMethod V230113F.M
Instrument : Vigo
Sample Name: 07-075-01
Misc Info : RearSamp
Vial Number: 60



File : C:\msdchem\2\data\V230714\0714-V10.D
Operator : LW
Acquired : 14 Jul 2023 16:37 using AcqMethod V230113F.M
Instrument : Vigo
Sample Name: 07-075-01 SG
Misc Info : Sample
Vial Number: 10



Attachment D

Time Series Plots

