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Memorandum

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Subject **Passive Soil Gas Investigation Results and Proposed Well Locations**
Northwest Pipe Company, Portland Plant

Attention Stephanie Heldt-Sheller, Northwest Pipe Company

Date August 19, 2021

1. Objective

This technical memorandum presents the results of a soil gas investigation implemented in the Southeast Area of the Northwest Pipe Company site in Portland, Oregon. Soil gas investigation results have long been recognized as a useful tool to investigate the presence of volatile organic constituents in groundwater and to assist in siting monitoring wells (Devitt, et al. 1987). Using passive soil gas (PSG) technology, this investigation focused on the area downgradient of previously detected volatile organic compound (VOC) concentrations in shallow groundwater.

The objective of this data collection effort was to provide a basis for siting additional groundwater monitoring wells in areas of high VOC concentration along the groundwater flow path between Northwest Pipe monitoring well MW-03, near the southern boundary of the Northwest Pipe Site, and Port of Portland (Port) monitoring wells T4S1MW-03s and T4S1MW-09, near Terminal 4 Slip 1 on the Port's Terminal 4 property (Figure 1). This investigation was implemented in response to the Oregon Department of Environmental Quality (DEQ) and the Environmental Protection Agency Region 10 (EPA) request to support a monitored natural attenuation (MNA) remedy for groundwater containing VOCs in the Southeast Area of the site. An MNA remedy uses ongoing natural attenuation processes for chlorinated solvents to protect potential receptors, such as surface water in the Willamette River downgradient of the Southeast Area, consistent with reasonably likely beneficial use of the aquifer (EPA 1999, DEQ 2017).

2. Background

Past sampling work in the Southeast Area began in 1988 during Northwest Pipe's due diligence effort prior to purchasing the property. Groundwater sampling in the area began in 2001 under a DEQ-approved work plan, continued in subsequent years with sampling events occurring at different times for specific investigation purposes, and has been ongoing since 2016 in response to DEQ request (Jacobs 2020a). Investigations have shown concentrations of VOCs are present in Southeast Area shallow groundwater, principally the chlorinated solvents tetrachloroethene (PCE) and its breakdown products trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC). TCE is both a breakdown product of PCE and a commercially available solvent.

Groundwater monitoring data dating back to 2001 (Jacobs 2020a) show that VOCs in groundwater are mostly below detection limits. Figures 2a and 2b show the results of the April 2021 groundwater

monitoring event along with the historical results. VOCs were analyzed in groundwater from 2001 through 2007, with only PCE, TCE, cis-1,2-DCE, and VC having concentrations above the Portland Harbor Record of Decision Cleanup Levels (CULs) since 2002 when those CULs were developed. The constituents of interest (COIs) for the Southeast Area of Northwest Pipe are PCE, TCE, cis-1,2-DCE, and VC.

Groundwater containing VOC concentrations above Portland Harbor Record of Decision CULs are limited to the shallow unconfined aquifer (Jacobs 2020a). The shallow aquifer is located within hydraulic fill (dredged river sediment) placed prior to 1940 to facilitate the construction of the shipyard, which was in full operation by 1941. The fill was placed over the periodically inundated silt overbank deposits that formerly formed the ground surface in the site vicinity. The hydraulic fill is characterized by fine to medium sand and silty sand extending from the current ground surface to approximately 28 feet below ground surface (bgs). The fill is saturated in its lower portion under unconfined conditions, and is underlain by a thick, low-permeability alluvial confining layer, the top of which was the former (pre-fill) ground surface. The confining layer consists of low-permeability silt with interbedded sand from approximately 28 feet to 161 feet bgs.

The current groundwater monitoring network consists of six monitoring wells installed in the shallow aquifer located on the southeast portion of the Northwest Pipe property, along with four wells owned by the Port of Portland on its property to the south/southwest (Figure 2a and 2b). The direction of groundwater flow is to the southwest toward Terminal 4 Slip 1 on the Port property. Groundwater elevation contours are shown from the most recent sampling event in April 2021 in Figure 1. Given the direction of groundwater flow, recent (2016 and later) supplemental groundwater sampling has included selected shallow aquifer wells downgradient of the Southeast Area on the Port property.

3. Soil Gas Investigation

To enhance the current MNA monitoring network in the Southeast Area, passive soil gas samplers were installed to provide information for the selection of additional well locations. (Figure 1). A targeted array of 37 PSG samples was installed pursuant to the work plan submitted in December 2020 (Jacobs 2020b) and approved by DEQ (DEQ, 2021). The following sections describe the investigation and results.

3.1 Installation and Retrieval of PSG Samplers

The samplers were installed over a three-day period (March 24, 25, and 26, 2021). PSG samplers were placed in rows transverse to the southwest groundwater flow direction, as shown in Figure 3. Due to the presence of underground utilities and other obstructions, several locations (PSG29, PSG20, PSG02, PSG33, and PSG01) were shifted slightly from the proposed locations in the work plan (Jacobs 2020b). Both the proposed locations and actual installation points are shown in Figure 3. The PSG samplers were installed in pilot holes advanced using a hammer drill. Installation began by advancing approximately 1 ½ inch diameter holes to a depth of 1foot bgs. The holes were then extended to a depth of approximately 3 feet bgs using a smaller ½ inch diameter drill bit. For locations that involved drilling through asphalt pavement, the upper 1-foot of the hole was outfitted with a pre-cleaned metal pipe sleeve provided in the PSG sample kit. These sleeves prevent horizontal migration of vapors in the potentially more porous subgrade often present beneath pavement from influencing the soil gas samplers. The PSG samplers were then installed in the upper portion of the hole, sealed with an aluminum foil plug, and covered with soil or a thin concrete patch for locations through asphalt surfacing.

The samplers were removed on April 7, 2021, at either 12, 13, or 14 days from installation. To retrieve the PSG samplers, the samplers were extracted from each location by a length of wire wrapped around the vial. Once samplers were removed, the holes were filled in with surrounding dirt or gravel and the surface

was restored. Cold patch asphalt was used in locations where samplers had been installed through asphalt. Following extraction, the samplers were placed in individual glass vials and shipped to Beacon Environmental Services (Beacon) of Forest Hill, Maryland consistent with Beacon's recommended sample handling protocol, including chain of custody procedures. Two duplicates were analyzed for samples PSG01 and PSG016, and two trip blanks were collected. Duplicates were selected from one on-site location where VOCs were anticipated to be detected, and one off-site location downgradient of the known groundwater VOC plume. A summary of the sample locations, depths, and surface conditions at each location are included in Table 1.

3.2 Analysis and Data Validation

The PSG samplers contain two sets of hydrophobic adsorbent cartridges to absorb organic compounds that may be present in soil gas. The cartridges were analyzed using gas chromatography/mass spectrometry (GC/MS) instrumentation pursuant to EPA Method 8260C (EPA 2015) for PCE, TCE, cis-1,2-DCE, and vinyl chloride – the COIs present at Northwest Pipe for VOCs, as supported by groundwater monitoring data from 2001 to present (Jacobs 2020b). Data analysis was performed by Beacon. Constituent detections were reviewed and validated by the Jacobs project chemist. The analytical data from the PSG samplers is included in Appendix B and data are summarized in Table 1 and Figure 4.

3.3 Results and Comparison to Groundwater Data

PSG results were below the detection limits across all but the northernmost portion of the Port of Portland property (Figure 4) indicating minimal downgradient migration has occurred. These results support the conclusion that natural attenuation processes are providing an effective control of VOC migration.

More generally, the results of the PSG sampling showed few detections of VOCs in soil gas, with just six of the 37 locations having detected constituents. PCE was detected in five of the samples (with a sixth sample showing a value below the reporting limit in the original analysis and a value slightly above the reporting limit in a duplicate analysis), TCE was detected in three samples and cis-1,2-DCE in one sample location. The detections were nearest the Southeast Area (PSG01 and PSG02, collocated with MW-03 and MW-04) and near the northeast corner of the PSG array (near T4S1MW-22). Two lower level PCE detections were found: one downgradient of MW-03 in the center of the flow path (duplicate for PSG16) and one at the western extent of the array at PSG03, near T4S1MW-23.

Except for the result for PSG10, which is adjacent to monitoring well T4S1MW-22 and has results consistent with known conditions in groundwater samples from this well, PSG results were below detection limits along the eastern side of the sampling array in the area presumed to have been the location of the former Gatton Creek channel, including the location of hypothetical meander channels. The non-detect readings downgradient of PSG10 and T4S1MW-22 confirm that any remnant of the buried Gatton Creek is not acting as a preferential pathway for contaminant migration.

The groundwater and soil gas results are not directly comparable because one is reported as a concentration (groundwater) while the other is reported as adsorbed mass (soil gas). However, the results of the two measurement methods tell a very similar story when data for the three paired sampling points and the total mass or concentrations of chlorinated ethenes for each medium sampled are summed[1], as follows:

[1] The sums presented were calculating by including constituents below their reporting limit with a value equivalent to one-half of the reporting limit.

- The groundwater sample with the highest total aqueous concentration (755 micrograms per liter [μg/L] in MW-03) is located next to the soil gas sampler with the highest total mass adsorbed (10,743 nanograms [ng] in PSG01)

- The groundwater sample with an intermediate total aqueous concentration (136.7 μg/L in MW-04) is located next to the soil gas sampler with an intermediate total mass adsorbed (8,580 ng in PSG02)

- The groundwater sample with the lowest total aqueous concentration (9.54 μg/L in T4S1MW-22) is located next to the soil gas sampler with the lowest total mass adsorbed (708 ng in PSG10)

Similarly, the soil gas samplers positioned closest to the downgradient monitoring wells near the Terminal 4 Slip (wells T4SWMW-03s and T4S1MW-09), which had no chlorinated ethenes above reporting limits in groundwater, also had no chlorinated ethene mass in soil gas above reporting limits. Based on the comparison of the groundwater to soil gas results, the PSG results provide a useful indication of the presence of chlorinated ethenes in groundwater in the study area.

When individual VOCs are compared, the two methods provided consistent results for PCE and TCE, somewhat less consistent results for cis-1,2-DCE, and weak consistency with VC, because no VC was detected in samplers near monitoring wells where groundwater contained detectable VC. This outcome could be attributable to the high volatility of vinyl chloride, which – unlike TCE and PCE – exists as a gas at standard temperature and pressure. The lower volatility of heavier chlorinated ethenes would understandably make them more prone to partitioning and adsorption onto the PSG samplers, whereas the higher volatility of VC would make it less prone to adsorb onto PSG samplers, leading the samplers to be less sensitive to the presence of VC compared to more highly chlorinated ethenes.

In summary, the PSG samplers were determined to be useful at detecting the presence of chlorinated ethenes in groundwater; they provided an indication of the magnitude of the concentration in groundwater relative to other sample points; and they showed an absence of chlorinated ethenes in the general area where groundwater data confirmed none were present.

PSG results, therefore, provide useful information for siting supplemental monitoring wells in the area downgradient of the Northwest Pipe site.

4. Recommendations and Rationale for Additional Wells

The objective of this data collection effort was to provide a basis for siting additional groundwater monitoring wells in areas of high VOC concentration along the groundwater flow path between Northwest Pipe monitoring well MW-03 and Port of Portland (Port) monitoring wells T4S1MW-03S and T4S1MW-09. However, the results of the soil gas sampling indicate that the downgradient migration of contaminants in groundwater is very limited because nearly all the PSG sampler results on Port property showed no detectable chlorinated ethenes. *See* the 31 non-detect locations on Figure 5.

Because no high-concentration plume of VOCs in groundwater was identified by PSG samplers, the original intent of positioning supplemental monitoring wells along the flow path of a high-concentration plume core is moot. As an alternative, Northwest Pipe proposes installing two monitoring wells downgradient of the zone of elevated VOC concentrations represented by samples from MW-03, with the objective of providing early warning of downgradient migration, should it occur in the future, prior to the plume reaching wells further downgradient near the Willamette River. These proposed well locations are depicted on Figure 5.

Wells will be drilled and constructed consistent with *Groundwater Monitoring Well Drilling, Construction, and Decommissioning,* DEQ 1992. New wells will be flush mounted with a locking cap and constructed of 2-inch diameter PVC piping, and screened across the entire thickness of the aquifer. Screen size and sand pack will be determined based on sieve analysis collected during drilling. Based on existing wells in the area, construction is anticipated to consist of a 10 foot long section of 10-slot screen with 10x20 Colorado silica sand pack and a bentonite seal. Existing and new monitoring wells will be surveyed upon completion by a licensed surveyor.

5. References

Devitt, D.A., R.B. Evans, W.A. Jury, T.H. Starks, B. Eklund, and A. Gholson. 1987. *Soil Gas Sensing for Detection and Mapping of Volatile Organics.* Prepared for the Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency. EPA/600/8-87-036. August 1987.

Jacobs. 2020a. *Remedial Investigation and Source Control Evaluation*. Revised. Prepared for Northwest Pipe Company, ECSI #138, Portland, Oregon. February.

Jacobs. 2020b. *Revised Passive Soil Gas Investigation Work Plan*, Attention Stephanie Heldt-Sheller, Northwest Pipe Company. December 29.

Oregon Department of Environmental Quality (DEQ). 1992. *Groundwater Monitoring Well Drilling, Construction, and Decommissioning*. DEQ Guidance Document. August 24.

Oregon Department of Environmental Quality (DEQ). 2021. *RE: DEQ Approval of December 29, 2020, Passive Soil Gas Investigation Work Plan NW Pipe Company Site, ECSI #138*. Letter sent via email. To Stephanie Heldt-Sheller, Corporate Environmental Manager, NW Pipe Company. From Jim Orr, R.G., Project Manager, Northwest Region Cleanup Program. January 6.

Oregon Department of Environmental Quality (DEQ). 2017. *Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites*. Oregon DEQ Environmental Cleanup Program. July 1, 1998, updated November 2017.

U.S. Environmental Protection Agency (EPA). 1998. *Environmental Technology Verification Report, Passive Soil Gas Sampling Technology, W.L. Gore & Associates, Inc. GORE-SORBER Screening Survey*. Prepared for the National Exposure Research Laboratory, Office of Research and Development. EPA/600/R-98/095. August 1998.

U.S. Environmental Protection Agency (EPA). 1999. *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*. U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response Directive 9200.4-17P. April 1999.

U.S. Environmental Protection Agency (EPA). 2015. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. EPA publication SW-846, Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), and V (2015).

Tables

Table 1. Passive Soil Gas Sample Summary

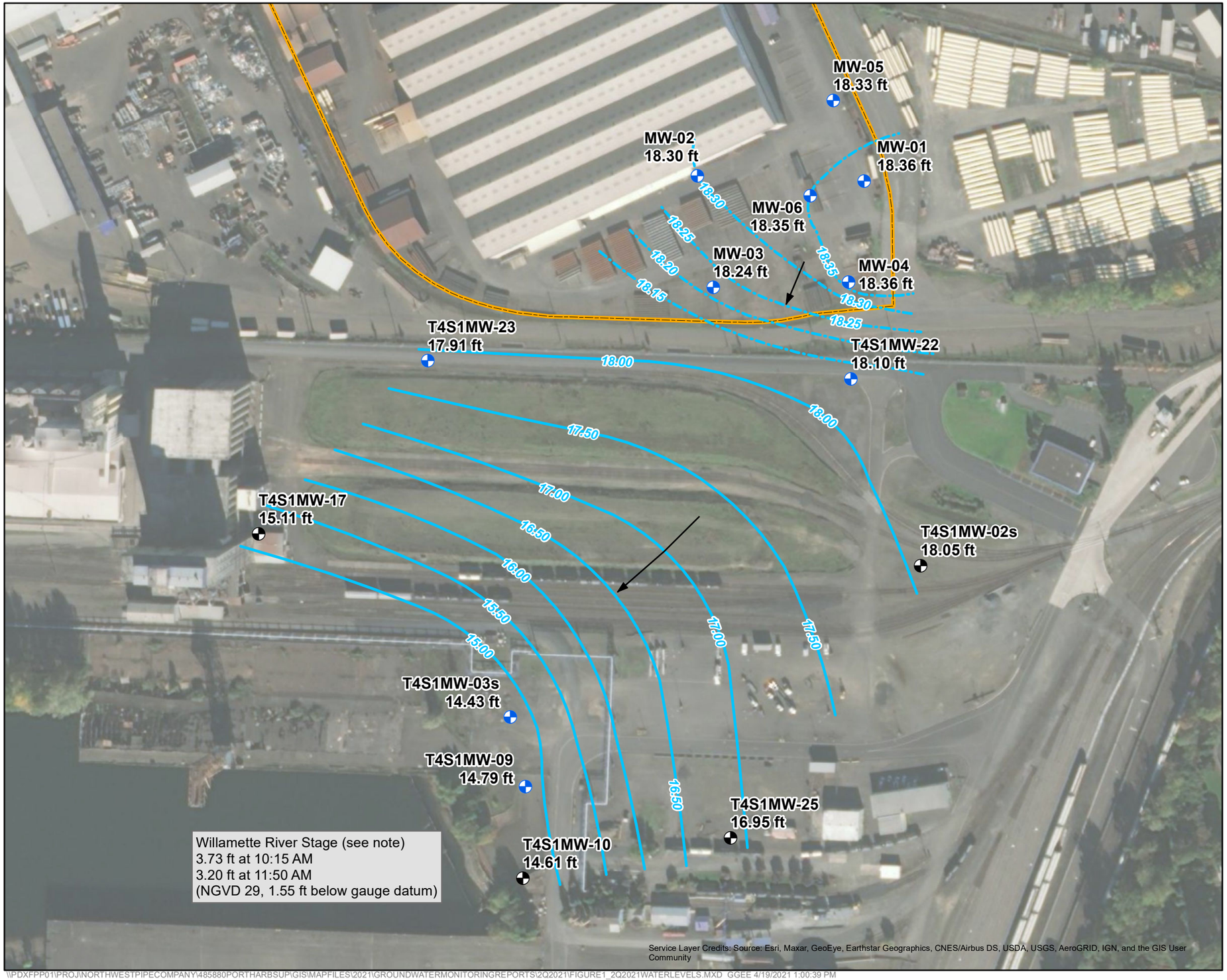
Sample Location	Date Installed	Date Removed	Sample depth (cm)	Surface	Soil Gas Results (ng)			
					Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	Vinyl Chloride
PSG01	3/26/2021	4/7/2021	91	Asphalt	**10,900 / 9,950**	**446 / 170**	<10 / <10	<10 / <10
PSG02	3/26/2021	4/7/2021	91	Asphalt	**7,370**	**1,180**	**25**	<10
PSG03	3/24/2021	4/7/2021	91	Soil	**17**	<10	<10	<10
PSG04	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG05	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG06	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG07	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG08	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG09	3/25/2021	4/7/2021	91	Soil/Gravel	**136**	<10	<10	<10
PSG10	3/25/2021	4/7/2021	91	Gravel	**674**	**24**	<10	<10
PSG11	3/24/2021	4/7/2021	91	Gravel	<10	<10	<10	<10
PSG12	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG13	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG14	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG15	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG16	3/24/2021	4/7/2021	91	Soil	**<10 / 17**	<10 / <10	<10 / <10	<10 / <10
PSG17	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG18	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG19	3/24/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG20	3/25/2021	4/7/2021	91	Gravel	<10	<10	<10	<10
PSG21	3/24/2021	4/7/2021	91	Gravel	<10	<10	<10	<10
PSG22	3/25/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG23	3/25/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG24	3/25/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG25	3/25/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG26	3/25/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG27	3/25/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG28	3/25/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG29	3/25/2021	4/7/2021	91	Soil	<10	<10	<10	<10
PSG30	3/24/2021	4/7/2021	91	Soil/Gravel	<10	<10	<10	<10
PSG31	3/25/2021	4/7/2021	91	Soil/Gravel	<10	<10	<10	<10
PSG32	3/25/2021	4/7/2021	91	Soil/Gravel	<10	<10	<10	<10
PSG33	3/26/2021	4/7/2021	91	Soil/Gravel	<10	<10	<10	<10
PSG34	3/25/2021	4/7/2021	76	Asphalt	<10	<10	<10	<10
PSG35	3/25/2021	4/7/2021	76	Asphalt	<10	<10	<10	<10
PSG36	3/26/2021	4/7/2021	91	Asphalt	<10	<10	<10	<10
PSG37	3/26/2021	4/7/2021	91	Soil/Gravel	<10	<10	<10	<10

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Figures



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LEGEND

Investigation Wells

- Groundwater Quality Monitoring
- Water Level Only
- Groundwater Elevation Contour (0.5 ft contour interval, ft NGVD29)
- Groundwater Elevation Contour (0.05 ft contour interval, to show detail in the NW Pipe Southeast Area, ft NGVD29)
- Groundwater Flow Direction
- Northwest Pipe Site Boundary

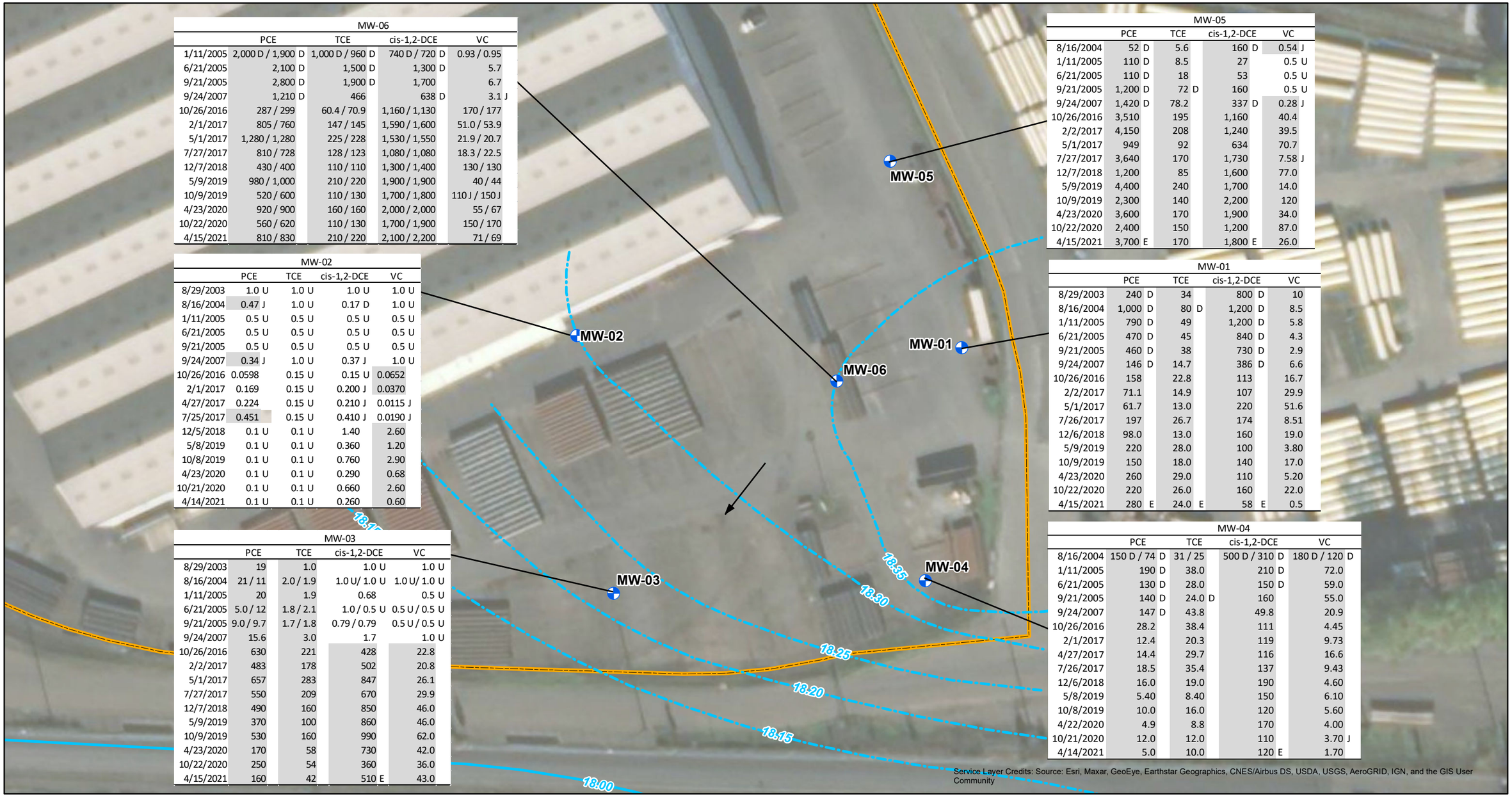
Note: Groundwater levels measured between 10:16 AM and 11:52 AM on April 13, 2021. During this period, the Willamette River stage decreased by 0.53 feet, as measured at the Morrison Bridge river gauge (USGS 14211720).

N

0 100 200 400
Feet

Figure 1. Groundwater Elevation Contour Map
Southeast Area, April 13, 2021
Northwest Pipe Company
Portland, Oregon

Jacobs



MW-06

	PCE	TCE	cis-1,2-DCE	VC
1/11/2005	2,000 D / 1,900 D	1,000 D / 960 D	740 D / 720 D	0.93 / 0.95
6/21/2005	2,100 D	1,500 D	1,300 D	5.7
9/21/2005	2,800 D	1,900 D	1,700	6.7
9/24/2007	1,210 D	466	638 D	3.1 J
10/26/2016	287 / 299	60.4 / 70.9	1,160 / 1,130	170 / 177
2/1/2017	805 / 760	147 / 145	1,590 / 1,600	51.0 / 53.9
5/1/2017	1,280 / 1,280	225 / 228	1,530 / 1,550	21.9 / 20.7
7/27/2017	810 / 728	128 / 123	1,080 / 1,080	18.3 / 22.5
12/7/2018	430 / 400	110 / 110	1,300 / 1,400	130 / 130
5/9/2019	980 / 1,000	210 / 220	1,900 / 1,900	40 / 44
10/9/2019	520 / 600	110 / 130	1,700 / 1,800	110 J / 150 J
4/23/2020	920 / 900	160 / 160	2,000 / 2,000	55 / 67
10/22/2020	560 / 620	110 / 130	1,700 / 1,900	150 / 170
4/15/2021	810 / 830	210 / 220	2,100 / 2,200	71 / 69

MW-05

	PCE	TCE	cis-1,2-DCE	VC
8/16/2004	52 D	5.6	160 D	0.54 J
1/11/2005	110 D	8.5	27	0.5 U
6/21/2005	110 D	18	53	0.5 U
9/21/2005	1,200 D	72 D	160	0.5 U
9/24/2007	1,420 D	78.2	337 D	0.28 J
10/26/2016	3,510	195	1,160	40.4
2/2/2017	4,150	208	1,240	39.5
5/1/2017	949	92	634	70.7
7/27/2017	3,640	170	1,730	7.58 J
12/7/2018	1,200	85	1,600	77.0
5/9/2019	4,400	240	1,700	14.0
10/9/2019	2,300	140	2,200	120
4/23/2020	3,600	170	1,900	34.0
10/22/2020	2,400	150	1,200	87.0
4/15/2021	3,700 E	170	1,800 E	26.0

MW-02

	PCE	TCE	cis-1,2-DCE	VC
8/29/2003	1.0 U	1.0 U	1.0 U	1.0 U
8/16/2004	0.47 J	1.0 U	0.17 D	1.0 U
1/11/2005	0.5 U	0.5 U	0.5 U	0.5 U
6/21/2005	0.5 U	0.5 U	0.5 U	0.5 U
9/21/2005	0.5 U	0.5 U	0.5 U	0.5 U
9/24/2007	0.34 J	1.0 U	0.37 J	1.0 U
10/26/2016	0.0598	0.15 U	0.15 U	0.0652
2/1/2017	0.169	0.15 U	0.200 J	0.0370
4/27/2017	0.224	0.15 U	0.210 J	0.0115 J
7/25/2017	0.451	0.15 U	0.410 J	0.0190 J
12/5/2018	0.1 U	0.1 U	1.40	2.60
5/8/2019	0.1 U	0.1 U	0.360	1.20
10/8/2019	0.1 U	0.1 U	0.760	2.90
4/23/2020	0.1 U	0.1 U	0.290	0.68
10/21/2020	0.1 U	0.1 U	0.660	2.60
4/14/2021	0.1 U	0.1 U	0.260	0.60

MW-01

	PCE	TCE	cis-1,2-DCE	VC
8/29/2003	240 D	34	800 D	10
8/16/2004	1,000 D	80 D	1,200 D	8.5
1/11/2005	790 D	49	1,200 D	5.8
6/21/2005	470 D	45	840 D	4.3
9/21/2005	460 D	38	730 D	2.9
9/24/2007	146 D	14.7	386 D	6.6
10/26/2016	158	22.8	113	16.7
2/2/2017	71.1	14.9	107	29.9
5/1/2017	61.7	13.0	220	51.6
7/26/2017	197	26.7	174	8.51
12/6/2018	98.0	13.0	160	19.0
5/9/2019	220	28.0	100	3.80
10/9/2019	150	18.0	140	17.0
4/23/2020	260	29.0	110	5.20
10/22/2020	220	26.0	160	22.0
4/15/2021	280 E	24.0 E	58 E	0.5

MW-03

	PCE	TCE	cis-1,2-DCE	VC
8/29/2003	19	1.0	1.0 U	1.0 U
8/16/2004	21 / 11	2.0 / 1.9	1.0 U/ 1.0 U	1.0 U/ 1.0 U
1/11/2005	20	1.9	0.68	0.5 U
6/21/2005	5.0 / 12	1.8 / 2.1	1.0 / 0.5 U	0.5 U / 0.5 U
9/21/2005	9.0 / 9.7	1.7 / 1.8	0.79 / 0.79	0.5 U / 0.5 U
9/24/2007	15.6	3.0	1.7	1.0 U
10/26/2016	630	221	428	22.8
2/2/2017	483	178	502	20.8
5/1/2017	657	283	847	26.1
7/27/2017	550	209	670	29.9
12/7/2018	490	160	850	46.0
5/9/2019	370	100	860	46.0
10/9/2019	530	160	990	62.0
4/23/2020	170	58	730	42.0
10/22/2020	250	54	360	36.0
4/15/2021	160	42	510 E	43.0

MW-04

	PCE	TCE	cis-1,2-DCE	VC
8/16/2004	150 D / 74 D	31 / 25	500 D / 310 D	180 D / 120 D
1/11/2005	190 D	38.0	210 D	72.0
6/21/2005	130 D	28.0	150 D	59.0
9/21/2005	140 D	24.0 D	160	55.0
9/24/2007	147 D	43.8	49.8	20.9
10/26/2016	28.2	38.4	111	4.45
2/1/2017	12.4	20.3	119	9.73
4/27/2017	14.4	29.7	116	16.6
7/26/2017	18.5	35.4	137	9.43
12/6/2018	16.0	19.0	190	4.60
5/8/2019	5.40	8.40	150	6.10
10/8/2019	10.0	16.0	120	5.60
4/22/2020	4.9	8.8	170	4.00
10/21/2020	12.0	12.0	110	3.70 J
4/14/2021	5.0	10.0	120 E	1.70

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGEND

- Groundwater Quality Monitoring Well (CVOC concentrations in µg/L)
- Well Used for Water Level Measurements Only
- Groundwater Elevation Contour (0.5 ft contour interval, ft NGVD29)
- Groundwater Elevation Contour (0.05 ft contour interval, to show detail in the NW Pipe Southeast Area, ft NGVD29)
- Groundwater Flow Direction
- Northwest Pipe Facility Boundary

Notes:
All chlorinated volatile organic compound (CVOC) concentrations are reported in micrograms per liter (µg/L).
PCE = Tetrachloroethene; TCE = Trichloroethene; cis-1,2-DCE = cis-1,2-Dichloroethene; VC = Vinyl Chloride
D - the sample was diluted for analysis.
U - the analyte was analyzed for but was not detected above the detection limit.
J - the analyte was detected, but the analytical laboratory has flagged the associated numerical value as estimated.
UJ - the analyte was not detected above the detection limit. However, the detection limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
Shaded values exceed ROD concentrations selected from Table 17 of the Portland Harbor Record of Decision (U.S. Environmental Protection Agency Region 10, 2017). Values were selected from remedial action objectives (RAOs) 4 and 8 associated with migration of contaminated groundwater. The following values are used:
PCE = 0.24, TCE = 0.6, cis-1,2-DCE = 70, and VC = 0.022. All values in µg/L.

N

0 25 50 100
Feet

Figure 2a. Southeast Area CVOC Concentrations
August 2003 through April 2021
Northwest Pipe Company
Portland, Oregon

Jacobs



T4S1MW-23

	PCE	TCE	cis-1,2-DCE	VC
9/2/2004	8.0	6.2	16	0.48 J
2/4/2005	5.3	1.2	0.86	0.5 U
5/6/2005	7.8	2.2	4.1	0.5 U
10/25/2016	1.59 J	0.15 UJ	0.70 J	0.008 UJ
2/1/2017	0.937	0.41 J	0.65	0.0188 J
4/27/2017	1.07	0.39 J	0.42 J	0.008 U
7/26/2017	1.21	0.29 J	0.15 U	0.008 U
12/6/2018	1.80	0.61	1.40	0.0230 J
5/9/2019	1.90	0.50	0.34	0.02 U
10/8/2019	1.60	0.40	0.58	0.02 U
4/22/2020	1.60	0.37	0.18 J	0.02 U
10/21/2020	1.80	0.33	1.50	0.02 U
4/14/2021	1.30	0.37	0.23	0.02 U

T4S1MW-22

	PCE	TCE	cis-1,2-DCE	VC
9/2/2004	12	36	23	0.23 J
2/4/2005	27	64	36	0.97
5/6/2005	34	83 D	49	0.88
10/25/2016	1.46 J	4.60 J	2.77 J	0.0499 J
2/1/2017	1.28	4.29	5.36	0.106
4/27/2017	1.43	3.56	2.11	0.022
7/26/2017	1.71	3.00	3.78	0.0638
12/6/2018	1.40	4.60	5.80	0.0760 J
5/8/2019	1.80	4.40	7.50	0.330
10/8/2019	1.30	3.40	7.40	0.180
4/22/2020	1.10	3.30	7.00	0.320
10/21/2020	0.94	2.80	7.90 J	0.170
4/14/2021	1.70	2.70	5.00	0.140

T4S1MW-03S

	PCE	TCE	cis-1,2-DCE	VC
4/21/2004	0.77	0.29 J	2.3	0.5 U
8/30/2004	1.8	1.3	89	5.4
1/31/2005	14	3.5	15	1.3
5/5/2005	1.9	0.42 J	7.6	0.5 U
10/25/2016	0.112 J	0.15 UJ	0.15 UJ	0.008 UJ
2/1/2017	0.230	0.15 U	0.15 U	0.008 U
4/26/2017	0.117	0.15 U	0.15 U	0.008 U
7/25/2017	0.0508	0.15 U	0.15 U	0.008 U
12/5/2018	0.1 U	0.1 U	0.1 U	0.02 U
5/8/2019	0.1 U	0.1 U	0.1 U	0.02 U
10/7/2019	0.1 U	0.1 U	0.1 U	0.02 U
4/21/2020	0.1 U	0.1 U	0.1 U	0.02 U
10/20/2020	0.1 U	0.1 U	0.1 U	0.02 U
4/13/2021	0.1 U	0.1 U	0.1 U	0.02 U

T4S1MW-09

	PCE	TCE	cis-1,2-DCE	VC
4/20/2004	0.15	0.5 U	0.5 U	0.5 U
9/1/2004	0.5 U	0.5 U	0.5 U	0.5 U
2/9/2005	0.5 U	0.5 U	0.5 U	0.5 UJ
5/9/2005	0.13 U	0.14 U	0.12 U	0.22 U
10/25/2016	0.0191 J	0.15 UJ	0.15 UJ	0.0197 J
2/1/2017	0.0177 J	0.15 U	0.15 U	0.0113 J
4/26/2017	0.005 U	0.15 U	0.15 U	0.008 U
7/25/2017	0.0139 J	0.15 U	0.15 U	0.008 U
12/5/2018	0.1 U	0.1 U	0.1 U	0.02 U
5/8/2019	0.1 U	0.1 U	0.1 U	0.02 U
10/7/2019	0.1 U	0.1 U	0.1 U	0.02 U
4/21/2020	0.1 U	0.1 U	0.1 U	0.02 U
10/20/2020	0.1 U	0.1 U	0.1 U	0.02 U
4/13/2021	0.1 U	0.1 U	0.1 U	0.02 U

LEGEND

- Groundwater Quality Monitoring Well (CVOC concentrations in µg/L)
- Well Used for Water Level Measurements Only
- Groundwater Elevation Contour (0.5 ft contour interval, ft NGVD29)
- Groundwater Elevation Contour (0.05 ft contour interval, to show detail in the NW Pipe Southeast Area, ft NGVD29)
- Groundwater Flow Direction
- Northwest Pipe Facility Boundary

Notes:
All chlorinated volatile organic compound (CVOC) concentrations are reported in micrograms per liter (µg/L).
PCE = Tetrachloroethene; TCE = Trichloroethene; cis-1,2-DCE = cis-1,2-Dichloroethene; VC = Vinyl Chloride
D - the sample was diluted for analysis.
U - the analyte was analyzed for but was not detected above the detection limit.
J - the analyte was detected, but the analytical laboratory has flagged the associated numerical value as estimated.
UJ - the analyte was not detected above the detection limit. However, the detection limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
Shaded values exceed ROD concentrations selected from Table 17 of the Portland Harbor Record of Decision (U.S. Environmental Protection Agency Region 10, 2017). Values were selected from remedial action objectives (RAOs) 4 and 8 associated with migration of contaminated groundwater. The following values are used:
PCE = 0.24, TCE = 0.6, cis-1,2-DCE = 70, and VC = 0.022. All values in µg/L.

N

0 45 90 180
Feet

Figure 2b. Southeast Area CVOC Concentrations
August 2003 through April 2021
Northwest Pipe Company
Portland, Oregon

Jacobs

\\PDXFPP01\PROJ\NORTHWESTPIPECOMPANY\485880PORTHARBSUP\GIS\MAPFILES\2021\GROUNDWATERMONITORINGREPORTS\2Q2021\FIGURE2B_VOC_CONCENTRATIONS_2003-2020.MXD GGEE 5/24/2021 3:03:38 PM



\\PDXFPP01\PROJ\NORTHWESTPIPECOMPANY\485880PORTHARBSUP\GIS\MAPFILES\2021\SOIL GAS INVESTIGATION\FIGUREX_PSG_INVESTIGATION.MXD GGEE 4/5/2021 1:21:21 PM

LEGEND

- Actual Soil Gas Investigation Location
- Proposed Soil Gas Investigation Location

Current Monitoring Network

- Groundwater Quality Monitoring Well
- Well Used for Water Level Only
- Northwest Pipe Facility Boundary

1897 Surface Water Features

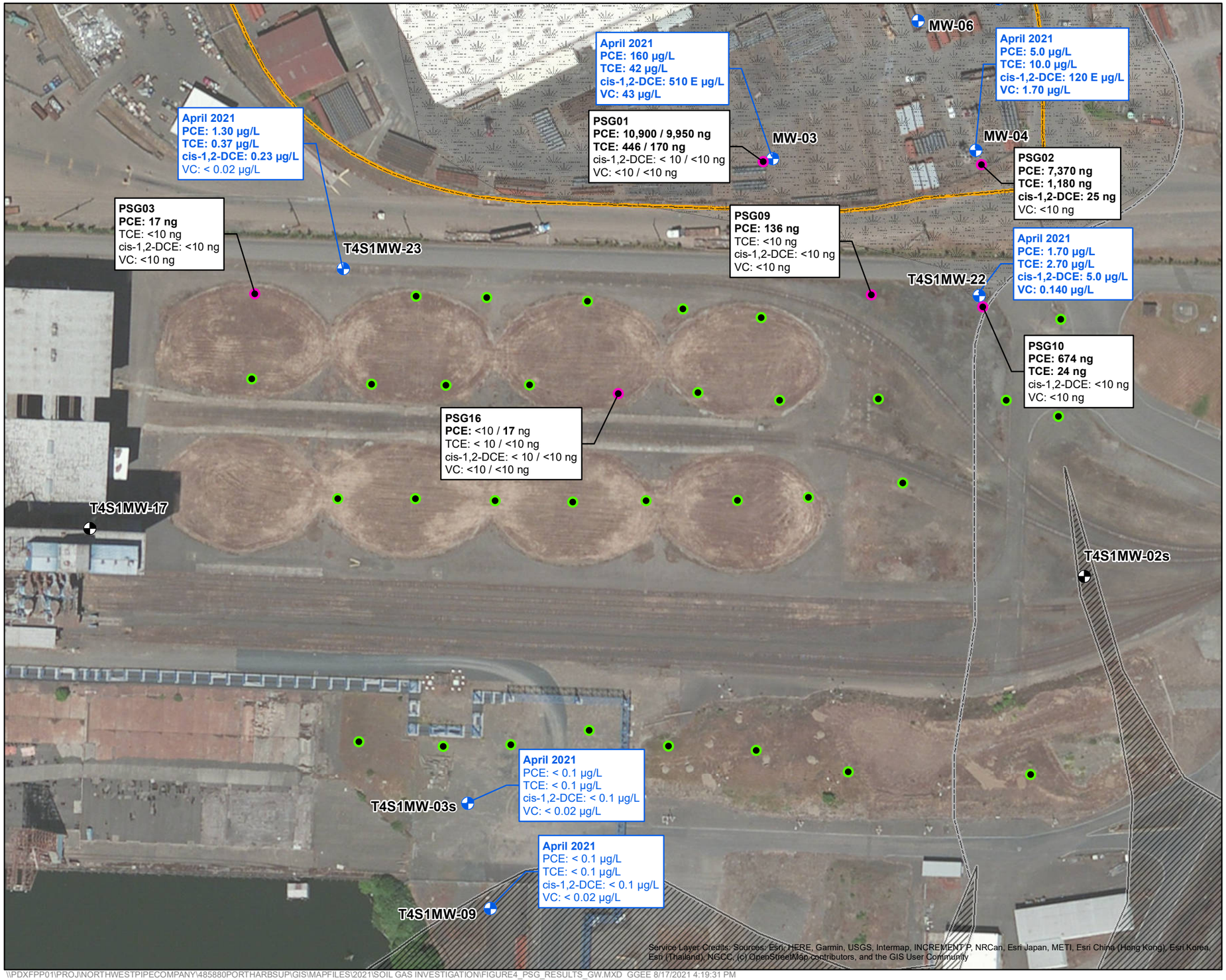
- Historical Waterbody
- Historical Marsh/Mudflat
- Historical Gatton Creek

N

0 50 100 200
Feet

Figure 3. Soil Gas Investigation Sample Locations
Northwest Pipe Company
Portland, Oregon

Jacobs



\\PDXFPP01\PROJ\NORTHWESTPIPECOMPANY\485880PORTHARBSUP\GIS\MAPFILES\2021\SOIL GAS INVESTIGATION\FIGURE4_PSG_RESULTS_GW.MXD GGEE 8/17/2021 4:19:31 PM

LEGEND

Soil Gas Investigation Location

- No Detected Constituents
- Detected Constituents (see point labels)

Current Monitoring Network

- Groundwater Quality Monitoring Well
- Well Used for Water Level Only
- Northwest Pipe Facility Boundary

1897 Surface Water Features

- Historical Waterbody
- Historical Marsh/Mudflat
- Historical Gatton Creek[1]

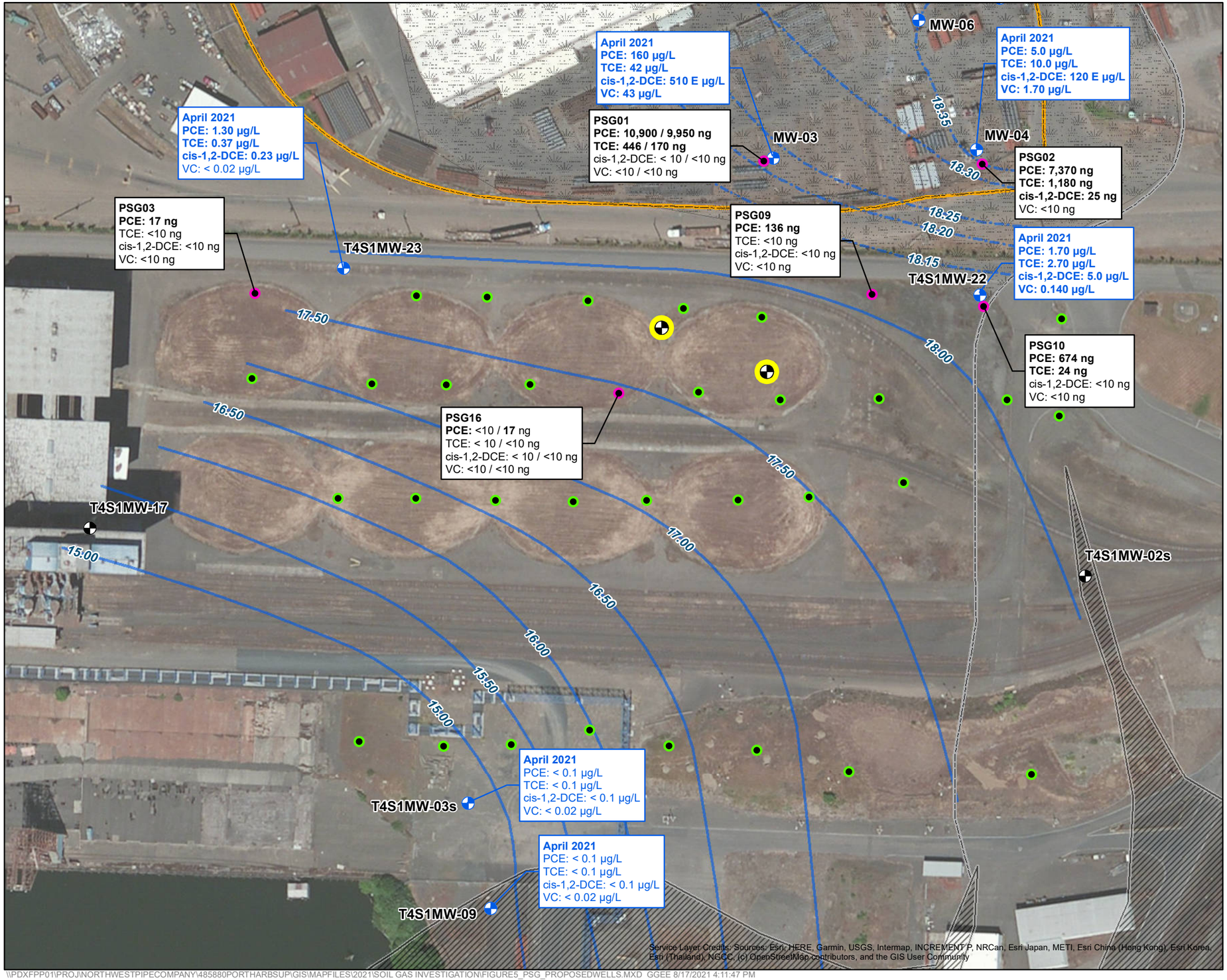
Notes:
PCE = Tetrachloroethene
TCE = Trichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
VC = Vinyl Chloride
ng = nanograms
< 10 = nondetect above reported value
Detected constituents are shown in bold text.
[1]The depicted location of Gatton Creek is based on its mapped location shown by the U.S. Geological Survey in its 1897 topographic map of the area. However, the creek channel may have shifted to the east or west over time, as is common for stream channels, before it was buried by fill placed in the area in the early 1940s.

N

0 50 100 200
Feet

Figure 4. Soil Gas and Groundwater Monitoring Results
Northwest Pipe Company
Portland, Oregon

Jacobs



LEGEND

- Proposed Monitoring Well

Soil Gas Investigation Location

- No Detected Constituents
- Detected Constituents (see point labels)

Current Monitoring Network

- Groundwater Quality Monitoring Well
- Well Used for Water Level Only
- Northwest Pipe Facility Boundary

1897 Surface Water Features

- Historical Waterbody
- Historical Marsh/Mudflat
- Historical Gatton Creek[1]
- Groundwater Elevation Contour, April 13, 2021 (0.5 ft contour interval, ft NGVD29)
- Groundwater Elevation Contour, April 13, 2021 (0.05 ft contour interval, to show detail in the NW Pipe Southeast Area, ft NGVD29)

Notes:
PCE = Tetrachloroethene
TCE = Trichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
VC = Vinyl Chloride
ng = nanograms
< 10 = nondetect above reported value
Detected constituents are shown in bold text.
[1]The depicted location of Gatton Creek is based on its mapped location shown by the U.S. Geological Survey in its 1897 topographic map of the area. However, the creek channel may have shifted to the east or west over time, as is common for stream channels, before it was buried by fill placed in the area in the early 1940s.

N

0 50 100 200
Feet

Figure 5. Proposed Monitoring Wells
Northwest Pipe Company
Portland, Oregon

Jacobs

\\PDXFPP01\PROJ\NORTHWESTPIPECOMPANY\485880PORTHARBSUP\GIS\MAPFILES\2021\SOIL GAS INVESTIGATION\FIGURE5_PSG_PROPOSEDWELLS.MXD GGEE 8/17/2021 4:11:47 PM

Appendix A

Groundwater Analytical Data

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-102494-1
Client Project/Site: Northwest Pipe Company GW 2021
Revision: 1

For:
Jacobs Engineering Group, Inc.
1501 W Fountainhead Parkway
Suite 401
Tempe, Arizona 85282

Attn: Bernice Kidd

Authorized for release by:
5/20/2021 9:08:48 AM

Pauline Matlock, Project Manager
(253)922-2310
pauline.matlock@eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 580-102494-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-102494-1

Comments
No additional comments.

Receipt
The samples were received on 4/16/2021 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.5º C.

Air Toxics
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method SM 5310C: The continuing calibration blank (CCB) for analytical batch 440-644524 contained Total Organic Carbon above the method detection limits limit (MDL). All reported samples associated with this CCB contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed.

Method 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 580-355193 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister
See attached subcontract report.

Definitions/Glossary

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102494-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102494-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: MW01-041521-0
Lab Sample ID: 580-102494-1
Date Collected: 04/15/21 08:35
Matrix: Water
Date Received: 04/16/21 09:50

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	11		1.0	0.078	ug/L			04/22/21 16:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.5	F1	1.5	0.43	mg/L			04/23/21 20:19	1
NO3 as N	0.63		0.20	0.030	mg/L			04/16/21 13:46	1
Sulfate	13	F1	1.5	0.80	mg/L			04/23/21 20:19	1
Total Organic Carbon	1.2		0.10	0.050	mg/L			04/20/21 12:51	1

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102494-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: MW03-041521-0
Lab Sample ID: 580-102494-2
Date Collected: 04/15/21 09:45
Matrix: Water
Date Received: 04/16/21 09:50

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	490		1.0	0.078	ug/L			04/22/21 16:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.5		1.5	0.43	mg/L			04/23/21 20:43	1
NO3 as N	0.13	J	0.20	0.030	mg/L			04/16/21 13:58	1
Sulfate	9.1		1.5	0.80	mg/L			04/23/21 20:43	1
Total Organic Carbon	1.4		0.10	0.050	mg/L			04/20/21 13:06	1

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102494-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: MW06-041521-0
Lab Sample ID: 580-102494-3
Date Collected: 04/15/21 11:20
Matrix: Water
Date Received: 04/16/21 09:50

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	280		1.0	0.078	ug/L			04/22/21 17:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.2		1.5	0.43	mg/L			04/27/21 11:06	1
NO3 as N	0.096	J	0.20	0.030	mg/L			04/16/21 14:10	1
Sulfate	15		1.5	0.80	mg/L			04/27/21 11:06	1
Total Organic Carbon	1.5		0.10	0.050	mg/L			04/20/21 13:20	1

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102494-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: MW05-041521-0
Lab Sample ID: 580-102494-4
Date Collected: 04/15/21 13:15
Matrix: Water
Date Received: 04/16/21 09:50

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	280		1.0	0.078	ug/L			04/22/21 18:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.5		1.5	0.43	mg/L			04/27/21 10:31	1
NO3 as N	0.26		0.20	0.030	mg/L			04/16/21 14:22	1
Sulfate	22		1.5	0.80	mg/L			04/27/21 10:31	1
Total Organic Carbon	1.7		0.10	0.050	mg/L			04/20/21 13:35	1

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102494-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: MW100-041521-0
Lab Sample ID: 580-102494-6
Date Collected: 04/15/21 12:00
Matrix: Water
Date Received: 04/16/21 09:50

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	230		1.0	0.078	ug/L			04/22/21 19:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.3		1.5	0.43	mg/L			04/27/21 10:43	1
NO3 as N	0.093	J	0.20	0.030	mg/L			04/16/21 14:33	1
Sulfate	15		1.5	0.80	mg/L			04/27/21 10:43	1
Total Organic Carbon	1.6		0.10	0.050	mg/L			04/20/21 13:49	1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 570-145152/4
Matrix: Water
Analysis Batch: 145152

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		1.0	0.078	ug/L			04/22/21 10:40	1

Lab Sample ID: LCS 570-145152/2
Matrix: Water
Analysis Batch: 145152

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			12.9	12.3		ug/L		95	80 - 120		

Lab Sample ID: LCSD 570-145152/3
Matrix: Water
Analysis Batch: 145152

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane			12.9	12.2		ug/L		94	80 - 120	1	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-354528/15
Matrix: Water
Analysis Batch: 354528

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NO3 as N	ND		0.20	0.030	mg/L			04/16/21 12:36	1

Lab Sample ID: LCS 580-354528/16
Matrix: Water
Analysis Batch: 354528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
NO3 as N			5.00	4.77		mg/L		95	90 - 110		

Lab Sample ID: LCSD 580-354528/17
Matrix: Water
Analysis Batch: 354528

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NO3 as N			5.00	5.07		mg/L		101	90 - 110	6	15

Lab Sample ID: MB 580-355193/32
Matrix: Water
Analysis Batch: 355193

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5	0.43	mg/L			04/23/21 23:30	1
Sulfate	ND		1.5	0.80	mg/L			04/23/21 23:30	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 580-355193/33
Matrix: Water
Analysis Batch: 355193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	50.6		mg/L		101	90 - 110
Sulfate	50.0	51.9		mg/L		104	90 - 110

Lab Sample ID: LCSD 580-355193/34
Matrix: Water
Analysis Batch: 355193

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	50.0	48.8		mg/L		98	90 - 110	4	15
Sulfate	50.0	45.7		mg/L		91	90 - 110	13	15

Lab Sample ID: 580-102494-1 MS
Matrix: Water
Analysis Batch: 355193

Client Sample ID: MW01-041521-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.5	F1	50.0	56.8		mg/L		109	90 - 110
Sulfate	13	F1	50.0	66.9		mg/L		108	90 - 110

Lab Sample ID: 580-102494-1 MSD
Matrix: Water
Analysis Batch: 355193

Client Sample ID: MW01-041521-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	2.5	F1	50.0	61.9	F1	mg/L		119	90 - 110	9	15
Sulfate	13	F1	50.0	73.2	F1	mg/L		120	90 - 110	9	15

Method: SM 5310C - TOC

Lab Sample ID: MB 440-644524/9
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		0.10	0.050	mg/L			04/20/21 08:34	1

Lab Sample ID: LCS 440-644524/8
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	5.00	5.20		mg/L		104	85 - 115

Lab Sample ID: MRL 440-644524/7
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	0.100	0.0735	J	mg/L		74	50 - 150

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102494-1

Client Sample ID: MW01-041521-0
Date Collected: 04/15/21 08:35
Date Received: 04/16/21 09:50

Lab Sample ID: 580-102494-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145152	04/22/21 16:07	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354528	04/16/21 13:46	AAC	FGS SEA
Total/NA	Analysis	300.0		1	355193	04/23/21 20:19	AAC	FGS SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 12:51	YO8L	TAL IRV

Client Sample ID: MW03-041521-0
Date Collected: 04/15/21 09:45
Date Received: 04/16/21 09:50

Lab Sample ID: 580-102494-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145152	04/22/21 16:41	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354528	04/16/21 13:58	AAC	FGS SEA
Total/NA	Analysis	300.0		1	355193	04/23/21 20:43	AAC	FGS SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 13:06	YO8L	TAL IRV

Client Sample ID: MW06-041521-0
Date Collected: 04/15/21 11:20
Date Received: 04/16/21 09:50

Lab Sample ID: 580-102494-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145152	04/22/21 17:13	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354528	04/16/21 14:10	AAC	FGS SEA
Total/NA	Analysis	300.0		1	355193	04/27/21 11:06	AAC	FGS SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 13:20	YO8L	TAL IRV

Client Sample ID: MW05-041521-0
Date Collected: 04/15/21 13:15
Date Received: 04/16/21 09:50

Lab Sample ID: 580-102494-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145152	04/22/21 18:29	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354528	04/16/21 14:22	AAC	FGS SEA
Total/NA	Analysis	300.0		1	355193	04/27/21 10:31	AAC	FGS SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 13:35	YO8L	TAL IRV

Client Sample ID: MW100-041521-0
Date Collected: 04/15/21 12:00
Date Received: 04/16/21 09:50

Lab Sample ID: 580-102494-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145152	04/22/21 19:03	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354528	04/16/21 14:33	AAC	FGS SEA
Total/NA	Analysis	300.0		1	355193	04/27/21 10:43	AAC	FGS SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 13:49	YO8L	TAL IRV

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102494-1

Laboratory References:

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

EMAX Lab. = EMAX Laboratories Inc, 1835 W. 205th Street, Torrance, CA 90501

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-102494-1
Project/Site: Northwest Pipe Company GW 2021

Laboratory: Eurofins FGS, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	WA100007	11-05-21

Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4028 - 010	04-27-21

Laboratory: Eurofins Calscience LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	CA300001	01-30-22

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102494-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-102494-1	MW01-041521-0	Water	04/15/21 08:35	04/16/21 09:50	
580-102494-2	MW03-041521-0	Water	04/15/21 09:45	04/16/21 09:50	
580-102494-3	MW06-041521-0	Water	04/15/21 11:20	04/16/21 09:50	
580-102494-4	MW05-041521-0	Water	04/15/21 13:15	04/16/21 09:50	
580-102494-5	TB-041521-0	Water	04/15/21 08:00	04/16/21 09:50	
580-102494-6	MW100-041521-0	Water	04/15/21 12:00	04/16/21 09:50	

MAX
RATORIES, INC.
S W. 205th Street
ance, CA 90501
(310) 618-8889

13-2021
n No.: 21D233

ine Matlock

ca, Inc.
Street East
98424

Laboratory Report
Project: NW PIPE COMPANY GW MONITORING

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s the Laboratory report for samples received on 04/20/21.
eported relate only to samples listed below :

D	Control #	Col Date	Matrix	Analysis
521-0	D233-01	04/15/21	WATER	VOC SIM
521-0	D233-02	04/15/21	WATER	VOC SIM
521-0	D233-03	04/15/21	WATER	VOC SIM
521-0	D233-04	04/15/21	WATER	VOC SIM
1-0	D233-05	04/15/21	WATER	VOC SIM
1521-0	D233-06	04/15/21	WATER	VOC SIM

s are summarized on the following pages.

l free to call if you have any questions concerning
lts.

yours,

Pang
Director

t is confidential and intended solely for the use of the individual or
whom it is addressed. This report shall not be reproduced except in full
the written approval of EMAX.

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

21D233

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89205.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: EMAX Laboratories Inc		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102494-1
Address: 1835 W. 205th Street, ,	Due Date Requested: 5/17/2021			
City: Torrance	TAT Requested (days):			
State, Zip: CA, 90501				
Phone:	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

	Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (TCE, cis 1,2-DCE, PCE, Vinyl Chloride - low level)/ TCE, cis 1,2-DCE, PCE, Vinyl Chloride -	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
1	MW01-041521-0	4/15/21	08:35 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
2	MW03-041521-0	4/15/21	09:45 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
3	MW06-041521-0	4/15/21	11:20 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
4	MW05-041521-0	4/15/21	13:15 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
5	TB-041521-0	4/15/21	08:00 Pacific		Water			X	6	Please provide CH2 Lab Spec EDD if possible.//
6	MW100-041521-0	4/15/21	12:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Tom Blankenship	4/19/21	EFGS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
					4/20/21 9:15	EMAX
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		Temp. 3.0

Type of Delivery	Airbill / Tracking Number	ECN 210233
☒ Fedex ☐ UPS ☐ GSO ☐ Others	5008 1328 3578	Recipient Maria Rivera
☐ EMAX Courier ☐ Client Delivery		Date 04/20/21 Time 9:15

COC INSPECTION

☒ Client Name	☒ Client PM/FC	☐ Sampler Name	☒ Sampling Date/Time	☒ Sample ID	☒ Matrix
☒ Address	☐ Tel # / Fax #	☐ Courier Signature	☒ Analysis Required	☐ Preservative (if any)	☒ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☒ Cooler	☐ Box	☐ Other		
Condition	☒ Custody Seal	☐ Intact	☐ Damaged		
Packaging	☒ Bubble Pack	☐ Styrofoam	☐ Popcorn	☐ Sufficient	☐ _____
Temperatures (Cool, ≤6 °C but not frozen)	☒ Cooler 1 3.0 °C	☐ Cooler 2 _____ °C	☐ Cooler 3 _____ °C	☐ Cooler 4 _____ °C	☐ Cooler 5 _____ °C
	☐ Cooler 6 _____ °C	☐ Cooler 7 _____ °C	☐ Cooler 8 _____ °C	☐ Cooler 9 _____ °C	☐ Cooler 10 _____ °C
Thermometer:	*A - S/N* 200291758	*B - S/N* 200291755	(C) *S/N* 200535195	*D - S/N* _____	

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS:

LEGEND:

☐ **Continue to next page.**

Code	Description- Sample Management
D1	Analysis is not indicated in _____
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in _____
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in _____
D7	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
D10	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in _____
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	_____
D23	_____
D24	_____

Code	Description-Sample Management
R1	Proceed as indicated in ☐ COC ☐ Label
R2	Refer to attached instruction
R3	Cancel the analysis
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	_____
R9	_____
R10	_____
R11	_____
R12	_____

REVIEWS:

Sample Labeling Maria Rivera — **Date** 04/20/21 4/20/21

SRF — **Date** 4/20/21

PM — **Date** 4/21/21

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TESTAMERICA, INC.

NW PIPE COMPANY GW MONITORING

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

SDG#: 21D233

CASE NARRATIVE

Client : TESTAMERICA, INC.

Project: NW PIPE COMPANY GW MONITORING

SDG : 21D233

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

A total of six(6) water samples were received on 04/20/21 to be analyzed for Volatile Organics by GC/MS SIM in accordance with Method SW5030B/8260B SIM and project specific requirements.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument tune check was performed prior to calibration. Result was within acceptance criteria. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried out at a frequency required by the project. There were two(2) CCVs (Data file IDs: RDY396 and RDY422) associated with this SDG. All calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, two(2) method blanks were analyzed. VOF5D20B and VOF5D21B were compliant to project requirement. Refer to sample result summary forms for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, two(2) sets of LCS/LCD were analyzed. VOF5D20X/VOF5D20C and VOF5D21L/VOF5D21C were within LCS limits. Refer to LCS summary forms for details.

Matrix QC Sample
No matrix QC sample was provided on this SDG.

Surrogate
Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.
Project : NW PIPE COMPANY GW MONITORING

SDG NO. : 21D233
Instrument ID : F5

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
LCD1W	VOF5D20C	1	NA	04/26/2109:27	04/26/2109:27	RDY398	RDY191	VOF5D20	LCS Duplicate
MBLK1W	VOF5D20B	1	NA	04/26/2110:15	04/26/2110:15	RDY400	RDY191	VOF5D20	Method Blank
LCS1W	VOF5D20X	1	NA	04/26/2110:40	04/26/2110:40	RDY401	RDY191	VOF5D20	Lab Control Sample (LCS)
TB-041521-0	21D233-05	1	NA	04/26/2111:04	04/26/2111:04	RDY402	RDY191	VOF5D20	Field Sample
MW03-041521-0	21D233-02I	250	NA	04/26/2113:06	04/26/2113:06	RDY407	RDY191	VOF5D20	Diluted Sample
MW06-041521-0	21D233-03	500	NA	04/26/2113:30	04/26/2113:30	RDY408	RDY191	VOF5D20	Field Sample
MW05-041521-0	21D233-04J	1000	NA	04/26/2117:08	04/26/2117:08	RDY417	RDY191	VOF5D20	Diluted Sample
MW100-041521-0	21D233-06	500	NA	04/26/2117:32	04/26/2117:32	RDY418	RDY191	VOF5D20	Field Sample
MW03-041521-0	21D233-02	100	NA	04/26/2117:56	04/26/2117:56	RDY419	RDY191	VOF5D20	Field Sample
MW01-041521-0	21D233-01	1	NA	04/26/2118:20	04/26/2118:20	RDY420	RDY191	VOF5D20	Field Sample
LCS2W	VOF5D21L	1	NA	04/27/2109:01	04/27/2109:01	RDY423	RDY191	VOF5D21	Lab Control Sample (LCS)
LCD2W	VOF5D21C	1	NA	04/27/2109:25	04/27/2109:25	RDY424	RDY191	VOF5D21	LCS Duplicate
MBLK2W	VOF5D21B	1	NA	04/27/2110:13	04/27/2110:13	RDY426	RDY191	VOF5D21	Method Blank
MW05-041521-0	21D233-04	100	NA	04/27/2111:01	04/27/2111:01	RDY428	RDY191	VOF5D21	Field Sample
MW01-041521-0	21D233-01J	50	NA	04/27/2111:26	04/27/2111:26	RDY429	RDY191	VOF5D21	Diluted Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/20/21
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/15/21 08:35
Batch No.	: 21D233	Date Extracted:	04/26/21 18:20 # 04/27/21 11:26
Sample ID	: MW01-041521-0	Date Analyzed:	04/26/21 18:20 # 04/27/21 11:26
Lab Samp ID:	D233-01 #21D233-01J	Dilution Factor:	1 # 50
Lab File ID:	RDY420 #RDY429	Matrix:	WATER
Ext Btch ID:	VOF5D20 #VOF5D21	% Moisture:	NA
Calib. Ref.:	RDY191 #RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
# cis-1,2-Dichloroethylene	56	10	5.0
Vinyl Chloride	0.47	0.10	0.020
# Tetrachloroethene	220	10	5.0
# TCE	24	10	5.0

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.586	0.500	117	70-130
4-Bromofluorobenzene	0.498	0.500	100	70-130
Toluene-d8	0.448	0.500	90	70-130
# 1,2-Dichloroethane-d4	0.563	0.500	113	70-130
# 4-Bromofluorobenzene	0.483	0.500	97	70-130
# Toluene-d8	0.418	0.500	84	70-130

Result(s) associated as marked on the header

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 08:35
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 18:20
Sample ID	: MW01-041521-0	Date Analyzed:	04/26/21 18:20
Lab Samp ID	: 21D233-01	Dilution Factor:	1
Lab File ID	: RDY420	Matrix:	WATER
Ext Btch ID	: VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	58E	0.20	0.10
Vinyl Chloride	0.47	0.10	0.020
Tetrachloroethene	280E	0.20	0.10
TCE	24E	0.20	0.10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.586	0.500	117	70-130
4-Bromofluorobenzene	0.498	0.500	100	70-130
Toluene-d8	0.448	0.500	90	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 08:35
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/27/21 11:26
Sample ID	: MW01-041521-0	Date Analyzed:	04/27/21 11:26
Lab Samp ID:	21D233-01J	Dilution Factor:	50
Lab File ID:	RDY429	Matrix:	WATER
Ext Btch ID:	VOF5D21	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	56	10	5.0
Vinyl Chloride	ND	5.0	1.0
Tetrachloroethene	220	10	5.0
TCE	24	10	5.0

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.563	0.500	113	70-130
4-Bromofluorobenzene	0.483	0.500	97	70-130
Toluene-d8	0.418	0.500	84	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/20/21
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/15/21 09:45
Batch No.	: 21D233	Date Extracted:	04/26/21 17:56 # 04/26/21 13:06
Sample ID	: MW03-041521-0	Date Analyzed:	04/26/21 17:56 # 04/26/21 13:06
Lab Samp ID:	D233-02 #21D233-02I	Dilution Factor:	100 # 250
Lab File ID:	RDY419 #RDY407	Matrix:	WATER
Ext Btch ID:	VOF5D20 #VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191 #RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
# cis-1,2-Dichloroethylene	490	50	25
Vinyl Chloride	43	10	2.0
Tetrachloroethene	160	20	10
TCE	42	20	10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.580	0.500	116	70-130
4-Bromofluorobenzene	0.478	0.500	96	70-130
Toluene-d8	0.453	0.500	91	70-130
# 1,2-Dichloroethane-d4	0.535	0.500	107	70-130
# 4-Bromofluorobenzene	0.508	0.500	102	70-130
# Toluene-d8	0.464	0.500	93	70-130

Result(s) associated as marked on the header

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 09:45
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 17:56
Sample ID	: MW03-041521-0	Date Analyzed:	04/26/21 17:56
Lab Samp ID:	21D233-02	Dilution Factor:	100
Lab File ID:	RDY419	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	510E	20	10
Vinyl Chloride	43	10	2.0
Tetrachloroethene	160	20	10
TCE	42	20	10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.580	0.500	116	70-130
4-Bromofluorobenzene	0.478	0.500	96	70-130
Toluene-d8	0.453	0.500	91	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 09:45
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 13:06
Sample ID	: MW03-041521-0	Date Analyzed:	04/26/21 13:06
Lab Samp ID:	21D233-02I	Dilution Factor:	250
Lab File ID:	RDY407	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	490	50	25
Vinyl Chloride	39	25	5.0
Tetrachloroethene	150	50	25
TCE	41J	50	25

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.535	0.500	107	70-130
4-Bromofluorobenzene	0.508	0.500	102	70-130
Toluene-d8	0.464	0.500	93	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 11:20
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 13:30
Sample ID	: MW06-041521-0	Date Analyzed:	04/26/21 13:30
Lab Samp ID:	21D233-03	Dilution Factor:	500
Lab File ID:	RDY408	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	2100	100	50
Vinyl Chloride	71	50	10
Tetrachloroethene	810	100	50
TCE	210	100	50

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.544	0.500	109	70-130
4-Bromofluorobenzene	0.509	0.500	102	70-130
Toluene-d8	0.454	0.500	91	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/20/21
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/15/21 13:15
Batch No.	: 21D233	Date Extracted:	04/27/21 11:01 # 04/26/21 17:08
Sample ID	: MW05-041521-0	Date Analyzed:	04/27/21 11:01 # 04/26/21 17:08
Lab Samp ID:	D233-04 #21D233-04J	Dilution Factor:	100 # 1000
Lab File ID:	RDY428 #RDY417	Matrix:	WATER
Ext Btch ID:	VOF5D21 #VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191 #RDY191	Instrument ID:	F5

	PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
#	cis-1,2-Dichloroethylene	1500	200	100
	Vinyl Chloride	26	10	2.0
#	Tetrachloroethene	3200	200	100
	TCE	170	20	10

	SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
	1,2-Dichloroethane-d4	0.558	0.500	112	70-130
	4-Bromofluorobenzene	0.492	0.500	98	70-130
	Toluene-d8	0.426	0.500	85	70-130
#	1,2-Dichloroethane-d4	0.589	0.500	118	70-130
#	4-Bromofluorobenzene	0.484	0.500	97	70-130
#	Toluene-d8	0.446	0.500	89	70-130

Result(s) associated as marked on the header

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 13:15
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/27/21 11:01
Sample ID	: MW05-041521-0	Date Analyzed:	04/27/21 11:01
Lab Samp ID:	21D233-04	Dilution Factor:	100
Lab File ID:	RDY428	Matrix:	WATER
Ext Btch ID:	VOF5D21	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	1800E	20	10
Vinyl Chloride	26	10	2.0
Tetrachloroethene	3700E	20	10
TCE	170	20	10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.558	0.500	112	70-130
4-Bromofluorcbenzene	0.492	0.500	98	70-130
Toluene-d8	0.426	0.500	85	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 13:15
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 17:08
Sample ID	: MW05-041521-0	Date Analyzed:	04/26/21 17:08
Lab Samp ID:	21D233-04J	Dilution Factor:	1000
Lab File ID:	RDY417	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	1500	200	100
Vinyl Chloride	36J	100	20
Tetrachloroethene	3200	200	100
TCE	160J	200	100

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.589	0.500	118	70-130
4-Bromofluorobenzene	0.484	0.500	97	70-130
Toluene-d8	0.446	0.500	89	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 08:00
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 11:04
Sample ID	: TB-041521-0	Date Analyzed:	04/26/21 11:04
Lab Samp ID:	21D233-05	Dilution Factor:	1
Lab File ID:	RDY402	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	ND	0.20	0.10
Vinyl Chloride	ND	0.10	0.020
Tetrachloroethene	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.495	0.500	99	70-130
4-Bromofluorobenzene	0.519	0.500	104	70-130
Toluene-d8	0.484	0.500	97	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 12:00
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 17:32
Sample ID	: MW100-041521-0	Date Analyzed:	04/26/21 17:32
Lab Samp ID:	21D233-06	Dilution Factor:	500
Lab File ID:	RDY418	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	2200	100	50
Vinyl Chloride	69	50	10
Tetrachloroethene	830	100	50
TCE	220	100	50

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.595	0.500	119	70-130
4-Bromofluorobenzene	0.485	0.500	97	70-130
Toluene-d8	0.444	0.500	89	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

QC SUMMARIES

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/26/21 10:15
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/26/21
Batch No.	: 21D233	Date Extracted:	04/26/21 10:15
Sample ID	: MBLK1W	Date Analyzed:	04/26/21 10:15
Lab Samp ID:	VOF5D20B	Dilution Factor:	1
Lab File ID:	RDY400	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	ND	0.20	0.10
Vinyl Chloride	ND	0.10	0.020
Tetrachloroethene	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.464	0.500	93	70-130
4-Bromofluorobenzene	0.534	0.500	107	70-130
Toluene-d8	0.491	0.500	98	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : TESTAMERICA, INC.
PROJECT : NW PIPE COMPANY GW MONITORING
BATCH NO. : 21D233
METHOD : SW5030B/8260B SIM

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR	: 1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: VOF5D20B	VOF5D20X	VOF5D20C
LAB FILE ID	: RDY400	RDY401	RDY398
DATE PREPARED	: 04/26/21 10:15	04/26/21 10:40	04/26/21 09:27
DATE ANALYZED	: 04/26/21 10:15	04/26/21 10:40	04/26/21 09:27
PREP BATCH	: VOF5D20	VOF5D20	VOF5D20
CALIBRATION REF	: RDY191	RDY191	RDY191

ACCESSION:

PARAMETERS	MBResult (ug/L)	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.496	99	0.500	0.556	111	11	70-130	20
Vinyl Chloride	ND	0.500	0.502	100	0.500	0.540	108	7	60-140	20
Tetrachloroethene	ND	0.500	0.470	94	0.500	0.505	101	7	70-130	20
TCE	ND	0.500	0.455	91	0.500	0.502	100	10	70-130	20

SURROGATE PARAMETERS	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	QCLimit (%)
1,2-Dichloroethane-d4	0.500	0.454	91	0.500	0.463	93	70-130
4-Bromofluorobenzene	0.500	0.531	106	0.500	0.543	109	70-130
Toluene-d8	0.500	0.490	98	0.500	0.498	100	70-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/27/21 10:13
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/27/21
Batch No.	: 21D233	Date Extracted:	04/27/21 10:13
Sample ID	: MBLK2W	Date Analyzed:	04/27/21 10:13
Lab Samp ID	: VOF5D21B	Dilution Factor:	1
Lab File ID	: RDY426	Matrix:	WATER
Ext Btch ID	: VOF5D21	% Moisture:	NA
Calib. Ref.	: RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	ND	0.20	0.10
Vinyl Chloride	ND	0.10	0.020
Tetrachloroethene	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.550	0.500	110	70-130
4-Bromofluorobenzene	0.478	0.500	96	70-130
Toluene-d8	0.462	0.500	92	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : TESTAMERICA, INC.
PROJECT : NW PIPE COMPANY GW MONITORING
BATCH NO. : 21D233
METHOD : SW5030B/8260B SIM

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR	: 1	1	1
SAMPLE ID	: MBLK2W	LCS2W	LCD2W
LAB SAMPLE ID	: VOF5D21B	VOF5D21L	VOF5D21C
LAB FILE ID	: RDY426	RDY423	RDY424
DATE PREPARED	: 04/27/21 10:13	04/27/21 09:01	04/27/21 09:25
DATE ANALYZED	: 04/27/21 10:13	04/27/21 09:01	04/27/21 09:25
PREP BATCH	: VOF5D21	VOF5D21	VOF5D21
CALIBRATION REF	: RDY191	RDY191	RDY191

ACCESSION:

PARAMETERS	MBResult (ug/L)	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.478	96	0.500	0.492	98	3	70-130	20
Vinyl Chloride	ND	0.500	0.486	97	0.500	0.514	103	6	60-140	20
Tetrachloroethene	ND	0.500	0.482	96	0.500	0.499	100	3	70-130	20
TCE	ND	0.500	0.462	92	0.500	0.476	95	3	70-130	20

SURROGATE PARAMETERS	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	QCLimit (%)
1,2-Dichloroethane-d4	0.500	0.543	109	0.500	0.517	103	70-130
4-Bromofluorobenzene	0.500	0.466	93	0.500	0.478	96	70-130
Toluene-d8	0.500	0.467	93	0.500	0.463	93	70-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: LAURA TOCHKIN	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-42614-13620.3
Client Contact: ~~Shannon Fitzsimmons~~ BERNIE KIDD	Phone: 425-891-2855	E-Mail: pauline.matlock@eurofinset.com	State of Origin:	Page: ~~Page 3 of 3~~ 1 OF 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #: 102494
Address: 2020 SW Fourth Ave, 3rd Floor	Due Date Requested:			
City: Portland	TAT Requested (days): STD			
State, Zip: OR, 97201	Compliance Project: Δ Yes Δ No			
Phone: 503-872-4666(Tel)	PO #: 3600021519			
Email: BERNIE.KIDD@JACOBS.COM ~~Shannon.Fitzsimmons@jacobs.com~~	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site: NNY	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

	Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	5310C - TOC	RSK_175 - Methane	300.0_28D - Chloride, Sulfate	300_48HR - Nitrate, NO3 as N	SUBCONTRACT (EMAX)- TCE, cis 1,2-DCE, PCE, Vinyl Chloride (8260B_SIM)	Total Number of containers	Special Instructions/Note:
	Preservation Code:								A	N	S	A		
-1	MW01-041521-0	04/15/21	0835	GRAB	Water	N	N	1	3	1	1	3	8	
	MW03-041521-0		0945		Water			1	3	1	1	3	8	
-3	MW06-041521-0		1120		Water			1	3	1	1	3	8	
	MW05-041521-0		1315		Water			1	3	1	1	3	8	
-5	TB-041521-0		0800		WATER							6	6	
	MW100-041521-0	4/15/21	1200	G	WATER			1	3	1	1	3	8	

580-102494 Chain of Custody

Therm. ID: A1 Cor: 0.5 ° Unc: 1.0 °
Cooler Dsc: LG
Packing: Loose
Cust. Seal: Yes ~~X~~ No
Blue Ice, Wet, Dry, None
FedEx: PO
UPS:
Lab Cour:
Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	LAURA TOCHKIN	4/15/21 1530	JACOBS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
					4/16/21 0950	EFS
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89206.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102494-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 5/16/2021			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	5310C/ TOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW01-041521-0 (580-102494-1)	4/15/21	08:35 Pacific		Water			X	1	
MW03-041521-0 (580-102494-2)	4/15/21	09:45 Pacific		Water			X	1	
MW06-041521-0 (580-102494-3)	4/15/21	11:20 Pacific		Water			X	1	
MW05-041521-0 (580-102494-4)	4/15/21	13:15 Pacific		Water			X	1	
MW100-041521-0 (580-102494-6)	4/15/21	12:00 Pacific		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Tom Blan	4/19/21	EFGS			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 4/20/21 1060	Company EC LRV

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: IR89 4.0/3.7

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone 253-922-2310 Fax: 425-420-9210

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89203.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102494-1
Address: 7440 Lincoln Way, ,	Due Date Requested: 5/16/2021			
City: Garden Grove	TAT Requested (days):			
State, Zip: CA, 92841				
Phone: 714-895-5494(Tel) 714-894-7501(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ Methane	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW01-041521-0	4/15/21	08 35 Pacific		Water			X	3	
MW03-041521-0	4/15/21	09:45 Pacific		Water			X	3	
MW06-041521-0	4/15/21	11 20 Pacific		Water			X	3	
MW05-041521-0	4/15/21	13.15 Pacific		Water			X	3	
MW100-041521-0	4/15/21	12:00 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately If all requested accreditations are current to date return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Tom Blanton	4/19/21	EFGS		4/20/21 1000	EFS
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact:	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:
☑ Yes ☐ No	1526179	2-7/3.1 SCS

Ver: 11/01/2020

eurofins | Environment Testing
eurofins | Environment Testing
TestAmerica
1526179
Custody Seal
DATE
SIGNATURE
EUROFINS TESTAM
5755 8TH ST E
FIFE, WA 98424
UNITED STATES US
BILL SENDER
CAD: 9897467CAFE3409
SHIPPING/RECEIVING
EUROFINS CALSCIENCE LLC
7440 LINCOLN WAY
GARDEN GROVE CA 92841
(714) 895-6494
REF 5580-43044
PO: YES
FedEx Express
TUE - 20 APR 10:30A
PRIORITY OVERNIGHT
TRK# 0201 5008 1328 3475
92 APVA
92841
SNA
CA-US
Part # 159471-434 RITE EXP 03/22

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102494-1

Login Number: 102494
List Number: 1
Creator: Blankinship, Tom X

List Source: Eurofins FGS, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102494-1

Login Number: 102494
List Number: 2
Creator: Lagunas, Jorge L

List Source: Eurofins Calscience Irvine
List Creation: 04/20/21 11:44 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102494-1

Login Number: 102494
List Number: 3
Creator: Stratford, Jordan

List Source: Eurofins Calscience LLC
List Creation: 04/20/21 04:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1526179
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889

Date: 05-13-2021
EMAX Batch No.: 21D233

Attn: Pauline Matlock

TestAmerica, Inc.
5755 8th Street East
Tacoma WA 98424

Subject: Laboratory Report
Project: NW PIPE COMPANY GW MONITORING

Enclosed is the Laboratory report for samples received on 04/20/21.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
MW01-041521-0	D233-01	04/15/21	WATER	VOC SIM
MW03-041521-0	D233-02	04/15/21	WATER	VOC SIM
MW06-041521-0	D233-03	04/15/21	WATER	VOC SIM
MW05-041521-0	D233-04	04/15/21	WATER	VOC SIM
TB-041521-0	D233-05	04/15/21	WATER	VOC SIM
MW100-041521-0	D233-06	04/15/21	WATER	VOC SIM

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

Caspar J. Pang
Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that results included in this report meets all TNI & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number CA002912020-17
ANAB Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing
California ELAP Accredited Certificate Number 2672

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

21D233

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89205.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: EMAX Laboratories Inc		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102494-1
Address: 1835 W. 205th Street, ,	Due Date Requested: 5/17/2021			
City: Torrance	TAT Requested (days):			
State, Zip: CA, 90501				
Phone:	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

	Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (TCE, cis 1,2-DCE, PCE, Vinyl Chloride - low level)/ TCE, cis 1,2-DCE, PCE, Vinyl Chloride -	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
1	MW01-041521-0	4/15/21	08:35 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
2	MW03-041521-0	4/15/21	09:45 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
3	MW06-041521-0	4/15/21	11:20 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
4	MW05-041521-0	4/15/21	13:15 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
5	TB-041521-0	4/15/21	08:00 Pacific		Water			X	6	Please provide CH2 Lab Spec EDD if possible.//
6	MW100-041521-0	4/15/21	12:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Tom Blankenship	4/19/21	EFGS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
					4/20/21 9:15	EMAX
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

SAMPLE RECEIPT FORM 1

Type of Delivery	Airbill / Tracking Number	ECN 210233
☒ Fedex ☐ UPS ☐ GSO ☐ Others	5008 1328 3578	Recipient Maria Rivera
☐ EMAX Courier ☐ Client Delivery		Date 04/20/21 Time 9:15

COC INSPECTION

☒ Client Name	☒ Client PM/FC	☐ Sampler Name	☒ Sampling Date/Time	☒ Sample ID	☒ Matrix
☒ Address	☐ Tel # / Fax #	☐ Courier Signature	☒ Analysis Required	☐ Preservative (if any)	☒ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☒ Cooler	☐ Box	☐ Other		
Condition	☒ Custody Seal	☐ Intact	☐ Damaged		
Packaging	☒ Bubble Pack	☐ Styrofoam	☐ Popcorn	☐ Sufficient	☐ _____
Temperatures (Cool, ≤6 °C but not frozen)	☒ Cooler 1 3.0 °C	☐ Cooler 2_____ °C	☐ Cooler 3_____ °C	☐ Cooler 4_____ °C	☐ Cooler 5_____ °C
	☐ Cooler 6_____ °C	☐ Cooler 7_____ °C	☐ Cooler 8_____ °C	☐ Cooler 9_____ °C	☐ Cooler 10_____ °C
Thermometer:	*A - S/N* 200291758	*B - S/N* 200291755	(C) *S/N* 200535195	*D - S/N* _____	

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action

4/20/21

RS 4/21/21

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS:

LEGEND:

☐ **Continue to next page.**

Code	Description- Sample Management
D1	Analysis is not indicated in _____
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in _____
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in _____
D7	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
D10	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in _____
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	_____
D23	_____
D24	_____

Code	Description-Sample Management
R1	Proceed as indicated in ☐ COC ☐ Label
R2	Refer to attached instruction
R3	Cancel the analysis
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	_____
R9	_____
R10	_____
R11	_____
R12	_____

REVIEWS:

Sample Labeling Maria Rivera — **Date** 04/20/21 4/20/21

SRF _____ — **Date** 4/20/21

PM _____ — **Date** 4/21/21

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TESTAMERICA, INC.

NW PIPE COMPANY GW MONITORING

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

SDG#: 21D233

CASE NARRATIVE

Client : TESTAMERICA, INC.

Project: NW PIPE COMPANY GW MONITORING

SDG : 21D233

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

A total of six(6) water samples were received on 04/20/21 to be analyzed for Volatile Organics by GC/MS SIM in accordance with Method SW5030B/8260B SIM and project specific requirements.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument tune check was performed prior to calibration. Result was within acceptance criteria. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried out at a frequency required by the project. There were two(2) CCVs (Data file IDs: RDY396 and RDY422) associated with this SDG. All calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, two(2) method blanks were analyzed. VOF5D20B and VOF5D21B were compliant to project requirement. Refer to sample result summary forms for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, two(2) sets of LCS/LCD were analyzed. VOF5D20X/VOF5D20C and VOF5D21L/VOF5D21C were within LCS limits. Refer to LCS summary forms for details.

Matrix QC Sample
No matrix QC sample was provided on this SDG.

Surrogate
Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.
Project : NW PIPE COMPANY GW MONITORING

SDG NO. : 21D233
Instrument ID : F5

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
LCD1W	VOF5D20C	1	NA	04/26/2109:27	04/26/2109:27	RDY398	RDY191	VOF5D20	LCS Duplicate
MBLK1W	VOF5D20B	1	NA	04/26/2110:15	04/26/2110:15	RDY400	RDY191	VOF5D20	Method Blank
LCS1W	VOF5D20X	1	NA	04/26/2110:40	04/26/2110:40	RDY401	RDY191	VOF5D20	Lab Control Sample (LCS)
TB-041521-0	21D233-05	1	NA	04/26/2111:04	04/26/2111:04	RDY402	RDY191	VOF5D20	Field Sample
MW03-041521-0	21D233-02I	250	NA	04/26/2113:06	04/26/2113:06	RDY407	RDY191	VOF5D20	Diluted Sample
MW06-041521-0	21D233-03	500	NA	04/26/2113:30	04/26/2113:30	RDY408	RDY191	VOF5D20	Field Sample
MW05-041521-0	21D233-04J	1000	NA	04/26/2117:08	04/26/2117:08	RDY417	RDY191	VOF5D20	Diluted Sample
MW100-041521-0	21D233-06	500	NA	04/26/2117:32	04/26/2117:32	RDY418	RDY191	VOF5D20	Field Sample
MW03-041521-0	21D233-02	100	NA	04/26/2117:56	04/26/2117:56	RDY419	RDY191	VOF5D20	Field Sample
MW01-041521-0	21D233-01	1	NA	04/26/2118:20	04/26/2118:20	RDY420	RDY191	VOF5D20	Field Sample
LCS2W	VOF5D21L	1	NA	04/27/2109:01	04/27/2109:01	RDY423	RDY191	VOF5D21	Lab Control Sample (LCS)
LCD2W	VOF5D21C	1	NA	04/27/2109:25	04/27/2109:25	RDY424	RDY191	VOF5D21	LCS Duplicate
MBLK2W	VOF5D21B	1	NA	04/27/2110:13	04/27/2110:13	RDY426	RDY191	VOF5D21	Method Blank
MW05-041521-0	21D233-04	100	NA	04/27/2111:01	04/27/2111:01	RDY428	RDY191	VOF5D21	Field Sample
MW01-041521-0	21D233-01J	50	NA	04/27/2111:26	04/27/2111:26	RDY429	RDY191	VOF5D21	Diluted Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/20/21
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/15/21 08:35
Batch No.	: 21D233	Date Extracted:	04/26/21 18:20 # 04/27/21 11:26
Sample ID	: MW01-041521-0	Date Analyzed:	04/26/21 18:20 # 04/27/21 11:26
Lab Samp ID:	D233-01 #21D233-01J	Dilution Factor:	1 # 50
Lab File ID:	RDY420 #RDY429	Matrix:	WATER
Ext Btch ID:	VOF5D20 #VOF5D21	% Moisture:	NA
Calib. Ref.:	RDY191 #RDY191	Instrument ID:	F5

	PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
#	cis-1,2-Dichloroethylene	56	10	5.0
	Vinyl Chloride	0.47	0.10	0.020
#	Tetrachloroethene	220	10	5.0
#	TCE	24	10	5.0

	SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
	1,2-Dichloroethane-d4	0.586	0.500	117	70-130
	4-Bromofluorobenzene	0.498	0.500	100	70-130
	Toluene-d8	0.448	0.500	90	70-130
#	1,2-Dichloroethane-d4	0.563	0.500	113	70-130
#	4-Bromofluorobenzene	0.483	0.500	97	70-130
#	Toluene-d8	0.418	0.500	84	70-130

Result(s) associated as marked on the header

Notes:

Sample Amount	: 25ml	Final Volume	: 25ml
Prepared by	: ODinh	Analyzed by	: ODinh

Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 08:35
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 18:20
Sample ID	: MW01-041521-0	Date Analyzed:	04/26/21 18:20
Lab Samp ID:	21D233-01	Dilution Factor:	1
Lab File ID:	RDY420	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	58E	0.20	0.10
Vinyl Chloride	0.47	0.10	0.020
Tetrachloroethene	280E	0.20	0.10
TCE	24E	0.20	0.10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.586	0.500	117	70-130
4-Bromofluorobenzene	0.498	0.500	100	70-130
Toluene-d8	0.448	0.500	90	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 08:35
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/27/21 11:26
Sample ID	: MW01-041521-0	Date Analyzed:	04/27/21 11:26
Lab Samp ID:	21D233-01J	Dilution Factor:	50
Lab File ID:	RDY429	Matrix:	WATER
Ext Btch ID:	VOF5D21	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	56	10	5.0
Vinyl Chloride	ND	5.0	1.0
Tetrachloroethene	220	10	5.0
TCE	24	10	5.0

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.563	0.500	113	70-130
4-Bromofluorobenzene	0.483	0.500	97	70-130
Toluene-d8	0.418	0.500	84	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/20/21
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/15/21 09:45
Batch No.	: 21D233	Date Extracted:	04/26/21 17:56 # 04/26/21 13:06
Sample ID	: MW03-041521-0	Date Analyzed:	04/26/21 17:56 # 04/26/21 13:06
Lab Samp ID:	D233-02 #21D233-02I	Dilution Factor:	100 # 250
Lab File ID:	RDY419 #RDY407	Matrix:	WATER
Ext Btch ID:	VOF5D20 #VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191 #RDY191	Instrument ID:	F5

	PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
#	cis-1,2-Dichloroethylene	490	50	25
	Vinyl Chloride	43	10	2.0
	Tetrachloroethene	160	20	10
	TCE	42	20	10

	SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
	1,2-Dichloroethane-d4	0.580	0.500	116	70-130
	4-Bromofluorobenzene	0.478	0.500	96	70-130
	Toluene-d8	0.453	0.500	91	70-130
#	1,2-Dichloroethane-d4	0.535	0.500	107	70-130
#	4-Bromofluorobenzene	0.508	0.500	102	70-130
#	Toluene-d8	0.464	0.500	93	70-130

Result(s) associated as marked on the header

Notes:

Sample Amount	: 25ml	Final Volume	: 25ml
Prepared by	: ODinh	Analyzed by	: ODinh

Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 09:45
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 17:56
Sample ID	: MW03-041521-0	Date Analyzed:	04/26/21 17:56
Lab Samp ID:	21D233-02	Dilution Factor:	100
Lab File ID:	RDY419	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	510E	20	10
Vinyl Chloride	43	10	2.0
Tetrachloroethene	160	20	10
TCE	42	20	10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.580	0.500	116	70-130
4-Bromofluorobenzene	0.478	0.500	96	70-130
Toluene-d8	0.453	0.500	91	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 09:45
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 13:06
Sample ID	: MW03-041521-0	Date Analyzed:	04/26/21 13:06
Lab Samp ID:	21D233-02I	Dilution Factor:	250
Lab File ID:	RDY407	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	490	50	25
Vinyl Chloride	39	25	5.0
Tetrachloroethene	150	50	25
TCE	41J	50	25

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.535	0.500	107	70-130
4-Bromofluorobenzene	0.508	0.500	102	70-130
Toluene-d8	0.464	0.500	93	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 11:20
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 13:30
Sample ID	: MW06-041521-0	Date Analyzed:	04/26/21 13:30
Lab Samp ID:	21D233-03	Dilution Factor:	500
Lab File ID:	RDY408	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	2100	100	50
Vinyl Chloride	71	50	10
Tetrachloroethene	810	100	50
TCE	210	100	50

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.544	0.500	109	70-130
4-Bromofluorobenzene	0.509	0.500	102	70-130
Toluene-d8	0.454	0.500	91	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/20/21
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/15/21 13:15
Batch No.	: 21D233	Date Extracted:	04/27/21 11:01 # 04/26/21 17:08
Sample ID	: MW05-041521-0	Date Analyzed:	04/27/21 11:01 # 04/26/21 17:08
Lab Samp ID:	D233-04 #21D233-04J	Dilution Factor:	100 # 1000
Lab File ID:	RDY428 #RDY417	Matrix:	WATER
Ext Btch ID:	VOF5D21 #VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191 #RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
# cis-1,2-Dichloroethylene	1500	200	100
Vinyl Chloride	26	10	2.0
# Tetrachloroethene	3200	200	100
TCE	170	20	10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.558	0.500	112	70-130
4-Bromofluorobenzene	0.492	0.500	98	70-130
Toluene-d8	0.426	0.500	85	70-130
# 1,2-Dichloroethane-d4	0.589	0.500	118	70-130
# 4-Bromofluorobenzene	0.484	0.500	97	70-130
# Toluene-d8	0.446	0.500	89	70-130

Result(s) associated as marked on the header

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 13:15
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/27/21 11:01
Sample ID	: MW05-041521-0	Date Analyzed:	04/27/21 11:01
Lab Samp ID:	21D233-04	Dilution Factor:	100
Lab File ID:	RDY428	Matrix:	WATER
Ext Btch ID:	VOF5D21	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	1800E	20	10
Vinyl Chloride	26	10	2.0
Tetrachloroethene	3700E	20	10
TCE	170	20	10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.558	0.500	112	70-130
4-Bromofluorcbenzene	0.492	0.500	98	70-130
Toluene-d8	0.426	0.500	85	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 13:15
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 17:08
Sample ID	: MW05-041521-0	Date Analyzed:	04/26/21 17:08
Lab Samp ID:	21D233-04J	Dilution Factor:	1000
Lab File ID:	RDY417	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	1500	200	100
Vinyl Chloride	36J	100	20
Tetrachloroethene	3200	200	100
TCE	160J	200	100

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.589	0.500	118	70-130
4-Bromofluorobenzene	0.484	0.500	97	70-130
Toluene-d8	0.446	0.500	89	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 08:00
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 11:04
Sample ID	: TB-041521-0	Date Analyzed:	04/26/21 11:04
Lab Samp ID:	21D233-05	Dilution Factor:	1
Lab File ID:	RDY402	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	ND	0.20	0.10
Vinyl Chloride	ND	0.10	0.020
Tetrachloroethene	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.495	0.500	99	70-130
4-Bromofluorobenzene	0.519	0.500	104	70-130
Toluene-d8	0.484	0.500	97	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/15/21 12:00
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D233	Date Extracted:	04/26/21 17:32
Sample ID	: MW100-041521-0	Date Analyzed:	04/26/21 17:32
Lab Samp ID:	21D233-06	Dilution Factor:	500
Lab File ID:	RDY418	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	2200	100	50
Vinyl Chloride	69	50	10
Tetrachloroethene	830	100	50
TCE	220	100	50

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.595	0.500	119	70-130
4-Bromofluorobenzene	0.485	0.500	97	70-130
Toluene-d8	0.444	0.500	89	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

QC SUMMARIES

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/26/21 10:15
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/26/21
Batch No.	: 21D233	Date Extracted:	04/26/21 10:15
Sample ID	: MBLK1W	Date Analyzed:	04/26/21 10:15
Lab Samp ID:	VOF5D20B	Dilution Factor:	1
Lab File ID:	RDY400	Matrix:	WATER
Ext Btch ID:	VOF5D20	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	ND	0.20	0.10
Vinyl Chloride	ND	0.10	0.020
Tetrachloroethene	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.464	0.500	93	70-130
4-Bromofluorobenzene	0.534	0.500	107	70-130
Toluene-d8	0.491	0.500	98	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : TESTAMERICA, INC.
PROJECT : NW PIPE COMPANY GW MONITORING
BATCH NO. : 21D233
METHOD : SW5030B/8260B SIM

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR	: 1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: VOF5D20B	VOF5D20X	VOF5D20C
LAB FILE ID	: RDY400	RDY401	RDY398
DATE PREPARED	: 04/26/21 10:15	04/26/21 10:40	04/26/21 09:27
DATE ANALYZED	: 04/26/21 10:15	04/26/21 10:40	04/26/21 09:27
PREP BATCH	: VOF5D20	VOF5D20	VOF5D20
CALIBRATION REF	: RDY191	RDY191	RDY191

ACCESSION:

PARAMETERS	MBResult (ug/L)	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.496	99	0.500	0.556	111	11	70-130	20
Vinyl Chloride	ND	0.500	0.502	100	0.500	0.540	108	7	60-140	20
Tetrachloroethene	ND	0.500	0.470	94	0.500	0.505	101	7	70-130	20
TCE	ND	0.500	0.455	91	0.500	0.502	100	10	70-130	20

SURROGATE PARAMETERS	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	QCLimit (%)
1,2-Dichloroethane-d4	0.500	0.454	91	0.500	0.463	93	70-130
4-Bromofluorobenzene	0.500	0.531	106	0.500	0.543	109	70-130
Toluene-d8	0.500	0.490	98	0.500	0.498	100	70-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/27/21 10:13
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/27/21
Batch No.	: 21D233	Date Extracted:	04/27/21 10:13
Sample ID	: MBLK2W	Date Analyzed:	04/27/21 10:13
Lab Samp ID:	VOF5D21B	Dilution Factor:	1
Lab File ID:	RDY426	Matrix:	WATER
Ext Btch ID:	VOF5D21	% Moisture:	NA
Calib. Ref.:	RDY191	Instrument ID:	F5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
cis-1,2-Dichloroethylene	ND	0.20	0.10
Vinyl Chloride	ND	0.10	0.020
Tetrachloroethene	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
1,2-Dichloroethane-d4	0.550	0.500	110	70-130
4-Bromofluorobenzene	0.478	0.500	96	70-130
Toluene-d8	0.462	0.500	92	70-130

Notes:
Sample Amount : 25ml Final Volume : 25ml
Prepared by : ODinh Analyzed by : ODinh
Detection limits are reported relative to sample result significant figures.

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : TESTAMERICA, INC.
PROJECT : NW PIPE COMPANY GW MONITORING
BATCH NO. : 21D233
METHOD : SW5030B/8260B SIM

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK2W	LCS2W	LCD2W
LAB SAMPLE ID	: VOF5D21B	VOF5D21L	VOF5D21C
LAB FILE ID	: RDY426	RDY423	RDY424
DATE PREPARED	: 04/27/21 10:13	04/27/21 09:01	04/27/21 09:25
DATE ANALYZED	: 04/27/21 10:13	04/27/21 09:01	04/27/21 09:25
PREP BATCH	: VOF5D21	VOF5D21	VOF5D21
CALIBRATION REF:	RDY191	RDY191	RDY191

ACCESSION:

PARAMETERS	MBResult (ug/L)	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.478	96	0.500	0.492	98	3	70-130	20
Vinyl Chloride	ND	0.500	0.486	97	0.500	0.514	103	6	60-140	20
Tetrachloroethene	ND	0.500	0.482	96	0.500	0.499	100	3	70-130	20
TCE	ND	0.500	0.462	92	0.500	0.476	95	3	70-130	20

SURROGATE PARAMETERS	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	QCLimit (%)
1,2-Dichloroethane-d4	0.500	0.543	109	0.500	0.517	103	70-130
4-Bromofluorobenzene	0.500	0.466	93	0.500	0.478	96	70-130
Toluene-d8	0.500	0.467	93	0.500	0.463	93	70-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-102459-1
Client Project/Site: Northwest Pipe Company GW 2021

For:
Jacobs Engineering Group, Inc.
1501 W Fountainhead Parkway
Suite 401
Tempe, Arizona 85282

Attn: Bernice Kidd

Authorized for release by:
5/14/2021 2:19:39 PM

Pauline Matlock, Project Manager
(253)922-2310
pauline.matlock@eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 580-102459-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-102459-1

Comments
No additional comments.

Receipt
The samples were received on 4/15/2021 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.3º C.

Air Toxics
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method SM 5310C: The continuing calibration blank (CCB) for analytical batch 440-644524 contained Total Organic Carbon above the method detection limits limit (MDL). All reported samples associated with this CCB contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed.

Method 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 580-354512 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 580-354528 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister
See attached subcontract report.

Definitions/Glossary

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102459-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102459-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: MW02-041421-0
Lab Sample ID: 580-102459-1
Date Collected: 04/14/21 09:30
Matrix: Water
Date Received: 04/15/21 09:40

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	5300		40	3.1	ug/L			04/22/21 18:37	40

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.3		1.5	0.43	mg/L			04/16/21 15:09	1
NO3 as N	0.13	J	0.20	0.030	mg/L			04/16/21 09:29	1
Sulfate	1.6		1.5	0.80	mg/L			04/16/21 15:09	1
Total Organic Carbon	1.5		0.10	0.050	mg/L			04/20/21 10:05	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.01	0.01	SU			04/19/21 12:30	1

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102459-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: MW04-041421-0
Lab Sample ID: 580-102459-2
Date Collected: 04/14/21 11:10
Matrix: Water
Date Received: 04/15/21 09:40

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	100		1.0	0.078	ug/L			04/22/21 20:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.0		1.5	0.43	mg/L			04/16/21 15:20	1
NO3 as N	0.031	J	0.20	0.030	mg/L			04/16/21 09:40	1
Sulfate	3.5		1.5	0.80	mg/L			04/16/21 15:20	1
Total Organic Carbon	1.2		0.10	0.050	mg/L			04/20/21 10:30	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.6	HF	0.01	0.01	SU			04/19/21 12:31	1

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102459-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: T4SIMW22-041421-0
Lab Sample ID: 580-102459-3
Date Collected: 04/14/21 13:00
Matrix: Water
Date Received: 04/15/21 09:40

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	18		1.0	0.078	ug/L			04/22/21 20:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.4		1.5	0.43	mg/L			04/16/21 10:16	1
NO3 as N	0.20		0.20	0.030	mg/L			04/16/21 10:16	1
Sulfate	9.7		1.5	0.80	mg/L			04/16/21 10:16	1
Total Organic Carbon	1.3		0.10	0.050	mg/L			04/20/21 10:44	1

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102459-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: T4SIMW23-041421-0
Lab Sample ID: 580-102459-4
Date Collected: 04/14/21 14:10
Matrix: Water
Date Received: 04/15/21 09:40

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	3.1		1.0	0.078	ug/L			04/22/21 21:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14	F1	1.5	0.43	mg/L			04/16/21 10:27	1
NO3 as N	0.50	F1	0.20	0.030	mg/L			04/16/21 10:27	1
Sulfate	9.3	F2 F1	1.5	0.80	mg/L			04/16/21 10:27	1
Total Organic Carbon	0.81		0.10	0.050	mg/L			04/20/21 10:58	1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 570-145151/4
Matrix: Water
Analysis Batch: 145151

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		1.0	0.078	ug/L			04/22/21 10:40	1

Lab Sample ID: LCS 570-145151/2
Matrix: Water
Analysis Batch: 145151

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	13.7	13.8		ug/L		101	80 - 120

Lab Sample ID: LCSD 570-145151/3
Matrix: Water
Analysis Batch: 145151

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	13.7	13.9		ug/L		101	80 - 120	0	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-354512/15
Matrix: Water
Analysis Batch: 354512

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5	0.43	mg/L			04/16/21 12:36	1
Sulfate	ND		1.5	0.80	mg/L			04/16/21 12:36	1

Lab Sample ID: LCS 580-354512/16
Matrix: Water
Analysis Batch: 354512

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	49.0		mg/L		98	90 - 110
Sulfate	50.0	52.1		mg/L		104	90 - 110

Lab Sample ID: LCSD 580-354512/17
Matrix: Water
Analysis Batch: 354512

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	50.0	47.2		mg/L		94	90 - 110	4	15
Sulfate	50.0	50.6		mg/L		101	90 - 110	3	15

Lab Sample ID: 580-102459-4 MS
Matrix: Water
Analysis Batch: 354512

Client Sample ID: T4SIMW23-041421-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	14	F1	50.0	68.8		mg/L		110	90 - 110
Sulfate	9.3	F2 F1	50.0	72.5	F1	mg/L		126	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 580-102459-4 MSD
Matrix: Water
Analysis Batch: 354512

Client Sample ID: T4SIMW23-041421-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	14	F1	50.0	70.1	F1	mg/L		113	90 - 110	2	15
Sulfate	9.3	F2 F1	50.0	62.0	F2	mg/L		105	90 - 110	16	15

Lab Sample ID: MB 580-354528/15
Matrix: Water
Analysis Batch: 354528

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NO3 as N	ND		0.20	0.030	mg/L			04/16/21 12:36	1

Lab Sample ID: LCS 580-354528/16
Matrix: Water
Analysis Batch: 354528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
NO3 as N	5.00	4.77		mg/L		95	90 - 110

Lab Sample ID: LCSD 580-354528/17
Matrix: Water
Analysis Batch: 354528

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NO3 as N	5.00	5.07		mg/L		101	90 - 110	6	15

Lab Sample ID: 580-102459-4 MS
Matrix: Water
Analysis Batch: 354528

Client Sample ID: T4SIMW23-041421-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
NO3 as N	0.50	F1	5.00	6.31	F1	mg/L		116	90 - 110

Lab Sample ID: 580-102459-4 MSD
Matrix: Water
Analysis Batch: 354528

Client Sample ID: T4SIMW23-041421-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NO3 as N	0.50	F1	5.00	5.58		mg/L		102	90 - 110	12	15

Method: SM 5310C - TOC

Lab Sample ID: MB 440-644524/9
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		0.10	0.050	mg/L			04/20/21 08:34	1

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102459-1

Method: SM 5310C - TOC (Continued)

Lab Sample ID: LCS 440-644524/8
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	5.00	5.20		mg/L		104	85 - 115

Lab Sample ID: MRL 440-644524/7
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	0.100	0.0735	J	mg/L		74	50 - 150

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102459-1

Client Sample ID: MW02-041421-0
Date Collected: 04/14/21 09:30
Date Received: 04/15/21 09:40

Lab Sample ID: 580-102459-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		40	145151	04/22/21 18:37	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354528	04/16/21 09:29	AAC	TAL SEA
Total/NA	Analysis	300.0		1	354512	04/16/21 15:09	AAC	TAL SEA
Total/NA	Analysis	SM 4500 H+ B		1	354585	04/19/21 12:30	HCC	TAL SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 10:05	YO8L	TAL IRV

Client Sample ID: MW04-041421-0
Date Collected: 04/14/21 11:10
Date Received: 04/15/21 09:40

Lab Sample ID: 580-102459-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145151	04/22/21 20:56	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354528	04/16/21 09:40	AAC	TAL SEA
Total/NA	Analysis	300.0		1	354512	04/16/21 15:20	AAC	TAL SEA
Total/NA	Analysis	SM 4500 H+ B		1	354585	04/19/21 12:31	HCC	TAL SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 10:30	YO8L	TAL IRV

Client Sample ID: T4SIMW22-041421-0
Date Collected: 04/14/21 13:00
Date Received: 04/15/21 09:40

Lab Sample ID: 580-102459-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145151	04/22/21 20:26	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354512	04/16/21 10:16	AAC	TAL SEA
Total/NA	Analysis	300.0		1	354528	04/16/21 10:16	AAC	TAL SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 10:44	YO8L	TAL IRV

Client Sample ID: T4SIMW23-041421-0
Date Collected: 04/14/21 14:10
Date Received: 04/15/21 09:40

Lab Sample ID: 580-102459-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145151	04/22/21 21:24	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354512	04/16/21 10:27	AAC	TAL SEA
Total/NA	Analysis	300.0		1	354528	04/16/21 10:27	AAC	TAL SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 10:58	YO8L	TAL IRV

Laboratory References:

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

EMAX Lab. = EMAX Laboratories Inc, 1835 W. 205th Street, Torrance, CA 90501

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-102459-1
Project/Site: Northwest Pipe Company GW 2021

Laboratory: Eurofins FGS, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	WA100007	11-05-21

Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4028 - 010	04-27-21

Laboratory: Eurofins Calscience LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	CA300001	01-30-22

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102459-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-102459-1	MW02-041421-0	Water	04/14/21 09:30	04/15/21 09:40	
580-102459-2	MW04-041421-0	Water	04/14/21 11:10	04/15/21 09:40	
580-102459-3	T4SIMW22-041421-0	Water	04/14/21 13:00	04/15/21 09:40	
580-102459-4	T4SIMW23-041421-0	Water	04/14/21 14:10	04/15/21 09:40	
580-102459-5	TB-041421-0	Water	04/14/21 08:00	04/15/21 09:40	

MAX
RATORIES, INC.
S W. 205th Street
ance, CA 90501
(310) 618-8889

-12-2021
n No.: 21D235

ine Matlock

ca, Inc.
Street East
98424

Laboratory Report
Project: NW PIPE COMPANY GW MONITORING

---

s the Laboratory report for samples received on 04/20/21.
eported relate only to samples listed below :

D	Control #	Col Date	Matrix	Analysis
421-0	D235-01	04/14/21	WATER	VOC SIM
421-0	D235-02	04/14/21	WATER	VOC SIM
-041421-0	D235-03	04/14/21	WATER	VOC SIM
-041421-0	D235-04	04/14/21	WATER	VOC SIM
1-0	D235-05	04/14/21	WATER	VOC SIM

s are summarized on the following pages.

l free to call if you have any questions concerning
lts.

yours,

Pang
Director

t is confidential and intended solely for the use of the individual or
whom it is addressed. This report shall not be reproduced except in full
the written approval of EMAX.

fies that results included in this report meets all TNI & DOD requirements
d in the Case Narrative

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

21D235

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89144.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: EMAX Laboratories Inc		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102459-1
Address: 1835 W. 205th Street, ,	Due Date Requested: 5/14/2021			
City: Torrance	TAT Requested (days):			
State, Zip: CA, 90501				
Phone:	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

	Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (TCE, cis 1,2-DCE, PCE, Vinyl Chloride - low level) TCE, cis 1,2-DCE, PCE, Vinyl Chloride -	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
1	MW02-041421-0	4/14/21	09:30 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
2	MW04-041421-0	4/14/21	11:10 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
3	T4SIMW22-041421-0	4/14/21	13:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
4	T4SIMW23-041421-0	4/14/21	14:10 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
5	TB-041421-0	4/14/21	08:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Tom Blankenship	4/19/21	EFGS			
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
				Marian Ni	4/20/21 9:15	EMAX
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Temp. 3.0°

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5/14/2021

Type of Delivery	Airbill / Tracking Number	ECN 210235
☒ Fedex ☐ UPS ☐ GSO ☐ Others	5008 1328 3578	Recipient Maria Rivera
☐ EMAX Courier ☐ Client Delivery		Date 04/20/21 Time 09:15

COC INSPECTION

☒ Client Name	☒ Client PM/FC	☐ Sampler Name	☒ Sampling Date/Time	☒ Sample ID	☒ Matrix
☒ Address	☒ Tel # / Fax #	☐ Courier Signature	☒ Analysis Required	☐ Preservative (if any)	☒ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☒ Cooler	☐ Box	☐ Other		
Condition	☒ Custody Seal	☐ Intact	☐ Damaged		
Packaging	☒ Bubble Pack	☐ Styrofoam	☐ Popcorn	☐ Sufficient	☐ _____
Temperatures (Cool, ≤6 °C but not frozen)	☒ Cooler 1 3.0 °C	☐ Cooler 2_____ °C	☐ Cooler 3_____ °C	☐ Cooler 4_____ °C	☐ Cooler 5_____ °C
	☐ Cooler 6_____ °C	☐ Cooler 7_____ °C	☐ Cooler 8_____ °C	☐ Cooler 9_____ °C	☐ Cooler 10_____ °C
Thermometer:	*A - S/N* 200291758	*B - S/N* 200291755	(C) *S/N* 200535195	*D - S/N* _____	

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action
4	12	D10		R1

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS:

LEGEND:

☐ **Continue to next page.**

Code	Description- Sample Management
D1	Analysis is not indicated in _____
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in _____
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in _____
D7	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
D10	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in _____
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	_____
D23	_____
D24	_____

Code	Description-Sample Management
R1	Proceed as indicated in ☒ COC ☐ Label
R2	Refer to attached instruction
R3	Cancel the analysis
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	_____
R9	_____
R10	_____
R11	_____
R12	_____

REVIEWS:

Sample Labeling Maria Rivera
Date 04/20/21 4/20/21

SRF
Date 4/20/21

PM
Date 4/21/21


TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Temperature Controlled
IF THIS SHIPMENT IS DELAYED IN TRANSIT,
STORE REFRIGERATED (2° TO 8° C / 36° TO 47° F)
TAL-0090(1016)
ORIGIN ID:TCMA (253) 922-2310
SAMPLE RECEIVING
EUROFINS TESTAMERICA, SEATTLE
5755 8TH ST E
FIFE, WA 98424
UNITED STATES US
SHIP DATE: 19APR21
ACTWGT: 17.80 LB
CAD: 989746/CAFE3409
BILL SENDER
TO SHIPPING/RECEIVING
EMAX LABORATORIES INC
1835 W. 205TH STREET
TORRANCE CA 90501
(253) 922-2310
PO: NO
REF: 8580-43042
3.0 °C
(C) Sealed
FedEx
Express
TRK# 0201 5008 1328 3578
TUE - 20 APR 10:30A
PRIORITY OVERNIGHT
92 HHRA
90501
CA-US LAX
Part #159471-434 GIT2 EXP 03/22

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TESTAMERICA, INC.

NW PIPE COMPANY GW MONITORING

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

SDG#: 21D235

CASE NARRATIVE

Client : TESTAMERICA, INC.

Project: NW PIPE COMPANY GW MONITORING

SDG : 21D235

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

A total of five(5) water samples were received on 04/20/21 to be analyzed for Volatile Organics by GC/MS SIM in accordance with Method SW5030B/8260B SIM and project specific requirements.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument tune check was performed prior to calibration. Result was within acceptance criteria. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried out at a frequency required by the project. All project calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, two(2) method blanks were analyzed. VOF5D20B and VOF5D21B were compliant to project requirement. Refer to sample result summary forms for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, two(2) sets of LCS/LCD were analyzed.
VOF5D20X/VOF5D20C and VOF5D21L/VOF5D21C were within LCS limits. Refer to LCS summary forms for details.

Matrix QC Sample
No matrix QC sample was provided on this SDG.

Surrogate
Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.
Sample 21D235-02 was analyzed at dilution due to high concentration.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.
Project : NW PIPE COMPANY GW MONITORING

SDG NO. : 21D235
Instrument ID : F5

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	VOF5D20B	1	NA	04/26/2110:15	04/26/2110:15	RDY400	RDY191	VOF5D20	Method Blank
LCS1W	VOF5D20X	1	NA	04/26/2110:40	04/26/2110:40	RDY401	RDY191	VOF5D20	Lab Control Sample (LCS)
LCD1W	VOF5D20C	1	NA	04/26/2109:27	04/26/2109:27	RDY398	RDY191	VOF5D20	LCS Duplicate
TB-041421-0	D235-05	1	NA	04/26/2111:53	04/26/2111:53	RDY404	RDY191	VOF5D20	Field Sample
MW04-041421-0DL	D235-02I	500	NA	04/26/2114:18	04/26/2114:18	RDY410	RDY191	VOF5D20	Diluted Sample
MW02-041421-0	D235-01	1	NA	04/26/2115:55	04/26/2115:55	RDY414	RDY191	VOF5D20	Field Sample
T4SIMW23-041421-0	D235-04	1	NA	04/26/2116:19	04/26/2116:19	RDY415	RDY191	VOF5D20	Field Sample
T4SIMW22-041421-0	D235-03	1	NA	04/26/2116:44	04/26/2116:44	RDY416	RDY191	VOF5D20	Field Sample
MBLK2W	VOF5D21B	1	NA	04/27/2110:13	04/27/2110:13	RDY426	RDY191	VOF5D21	Method Blank
LCS2W	VOF5D21L	1	NA	04/27/2109:01	04/27/2109:01	RDY423	RDY191	VOF5D21	Lab Control Sample (LCS)
LCD2W	VOF5D21C	1	NA	04/27/2109:25	04/27/2109:25	RDY424	RDY191	VOF5D21	LCS Duplicate
MW04-041421-0	D235-02	10	NA	04/27/2110:37	04/27/2110:37	RDY427	RDY191	VOF5D21	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 15:55
Sample ID: MW02-041421-O	Date Analyzed: 04/26/21 15:55
Lab Samp ID: D235-01	Dilution Factor: 1
Lab File ID: RDY414	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	0.26	0.20	0.10
VINYL CHLORIDE	0.60	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.591	0.5000	118	70-130
4-BROMOFLUOROBENZENE	0.494	0.5000	98.9	70-130
TOLUENE-D8	0.462	0.5000	92.3	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/27/21 10:37 # 04/26/21 14:18
Sample ID: MW04-041421-0	Date Analyzed: 04/27/21 10:37 # 04/26/21 14:18
Lab Samp ID: D235-02 #D235-02I	Dilution Factor: 10 # 500
Lab File ID: RDY427 #RDY410	Matrix : WATER
Ext Btch ID: VOF5D21 #VOF5D20	% Moisture : NA
Calib. Ref.: RDY191 #RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
# CIS-1,2-DICHLOROETHYLENE	110	100	50
VINYL CHLORIDE	1.7	1.0	0.20
TETRACHLOROETHENE	5.0	2.0	1.0
TCE	10	2.0	1.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	5.51	5.000	110	70-130
4-BROMOFLUOROBENZENE	4.69	5.000	93.7	70-130
TOLUENE-D8	4.65	5.000	92.9	70-130
# 1,2-DICHLOROETHANE-D4	285	250.0	114	70-130
# 4-BROMOFLUOROBENZENE	247	250.0	98.7	70-130
# TOLUENE-D8	228	250.0	91.4	70-130

Members of the Associated File

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/27/21 10:37
Sample ID: MW04-041421-0	Date Analyzed: 04/27/21 10:37
Lab Samp ID: D235-02	Dilution Factor: 10
Lab File ID: RDY427	Matrix : WATER
Ext Btch ID: VOF5D21	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	120E	2.0	1.0
VINYL CHLORIDE	1.7	1.0	0.20
TETRACHLOROETHENE	5.0	2.0	1.0
TCE	10	2.0	1.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	5.51	5.000	110	70-130
4-BROMOFLUOROBENZENE	4.69	5.000	93.7	70-130
TOLUENE-D8	4.65	5.000	92.9	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 14:18
Sample ID: MW04-041421-ODL	Date Analyzed: 04/26/21 14:18
Lab Samp ID: D235-02I	Dilution Factor: 500
Lab File ID: RDY410	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	110	100	50
VINYL CHLORIDE	ND	50	10
TETRACHLOROETHENE	ND	100	50
TCE	ND	100	50

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	285	250.0	114	70-130
4-BROMOFLUOROBENZENE	247	250.0	98.7	70-130
TOLUENE-D8	228	250.0	91.4	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 16:44
Sample ID: T4SIMW22-041421-0	Date Analyzed: 04/26/21 16:44
Lab Samp ID: D235-03	Dilution Factor: 1
Lab File ID: RDY416	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	5.0	0.20	0.10
VINYL CHLORIDE	0.14	0.10	0.020
TETRACHLOROETHENE	1.7	0.20	0.10
TCE	2.7	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.580	0.5000	116	70-130
4-BROMOFLUOROBENZENE	0.491	0.5000	98.1	70-130
TOLUENE-D8	0.465	0.5000	93.1	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 16:19
Sample ID: T4SIMW23-041421-0	Date Analyzed: 04/26/21 16:19
Lab Samp ID: D235-04	Dilution Factor: 1
Lab File ID: RDY415	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	0.23	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	1.3	0.20	0.10
TCE	0.37	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.588	0.5000	118	70-130
4-BROMOFLUOROBENZENE	0.481	0.5000	96.1	70-130
TOLUENE-D8	0.456	0.5000	91.2	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 11:53
Sample ID: T8-041421-0	Date Analyzed: 04/26/21 11:53
Lab Samp ID: D235-05	Dilution Factor: 1
Lab File ID: RDY404	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.519	0.5000	104	70-130
4-BROMOFLUOROBENZENE	0.518	0.5000	104	70-130
TOLUENE-D8	0.475	0.5000	95.0	70-130

QC SUMMARIES

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: NA
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/26/21
Batch No. : 21D235	Date Extracted: 04/26/21 10:15
Sample ID: MBLK1W	Date Analyzed: 04/26/21 10:15
Lab Samp ID: VOF5D20B	Dilution Factor: 1
Lab File ID: RDY400	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.464	0.5000	92.8	70-130
4-BROMOFLUOROBENZENE	0.534	0.5000	107	70-130
TOLUENE-D8	0.491	0.5000	98.2	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TESTAMERICA, INC.
PROJECT: NW PIPE COMPANY GW MONITORING
BATCH NO.: 21D235
METHOD: SW5030B/8260B SIM

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VOF5D20B	VOF5D20X	VOF5D20C		
LAB FILE ID:	RDY400	RDY401	RDY398		
DATE EXTRACTED:	04/26/2110:15	04/26/2110:40	04/26/2109:27	DATE COLLECTED:	NA
DATE ANALYZED:	04/26/2110:15	04/26/2110:40	04/26/2109:27	DATE RECEIVED:	04/26/21
PREP. BATCH:	VOF5D20	VOF5D20	VOF5D20		
CALIB. REF:	RDY191	RDY191	RDY191		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.496	99	0.500	0.556	111	12	70-130	20
Vinyl Chloride	ND	0.500	0.502	100	0.500	0.540	108	7	60-140	20
Tetrachloroethene	ND	0.500	0.470	94	0.500	0.505	101	7	70-130	20
TCE	ND	0.500	0.455	91	0.500	0.502	100	10	70-130	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	0.500	0.454	91	0.500	0.463	93	70-130
4-Bromofluorobenzene	0.500	0.531	106	0.500	0.543	109	70-130
Toluene-d8	0.500	0.490	98	0.500	0.498	100	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: NA
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/27/21
Batch No. : 21D235	Date Extracted: 04/27/21 10:13
Sample ID: MBLK2W	Date Analyzed: 04/27/21 10:13
Lab Samp ID: VOF5D21B	Dilution Factor: 1
Lab File ID: RDY426	Matrix : WATER
Ext Btch ID: VOF5D21	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.550	0.5000	110	70-130
4-BROMOFLUOROBENZENE	0.478	0.5000	95.6	70-130
TOLUENE-D8	0.462	0.5000	92.4	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TESTAMERICA, INC.
PROJECT: NW PIPE COMPANY GW MONITORING
BATCH NO.: 21D235
METHOD: SW5030B/8260B SIM

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK2W				
LAB SAMP ID:	VOF5D21B	VOF5D21L	VOF5D21C		
LAB FILE ID:	RDY426	RDY423	RDY424		
DATE EXTRACTED:	04/27/2110:13	04/27/2109:01	04/27/2109:25	DATE COLLECTED:	NA
DATE ANALYZED:	04/27/2110:13	04/27/2109:01	04/27/2109:25	DATE RECEIVED:	04/27/21
PREP. BATCH:	VOF5D21	VOF5D21	VOF5D21		
CALIB. REF:	RDY191	RDY191	RDY191		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.478	96	0.500	0.492	98	3	70-130	20
Vinyl Chloride	ND	0.500	0.486	97	0.500	0.514	103	6	60-140	20
Tetrachloroethene	ND	0.500	0.482	96	0.500	0.499	100	3	70-130	20
TCE	ND	0.500	0.462	92	0.500	0.476	95	3	70-130	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	0.500	0.543	109	0.500	0.517	103	70-130
4-Bromofluorobenzene	0.500	0.466	93	0.500	0.478	96	70-130
Toluene-d8	0.500	0.467	93	0.500	0.463	93	70-130

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler: LAURA TOCHKO	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-42614-13620.3
Client Contact: ~~Shannon Fitzsimmons~~ BERNICE KIDD	Phone: 425-891-2855	E-Mail: pauline.matlock@eurofinset.com	State of Origin:	Page: ~~Page 3 of 3~~ 1 OF 1
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #: 1024459
Address: 2020 SW Fourth Ave, 3rd Floor	Due Date Requested:			
City: Portland	TAT Requested (days): STD			
State, Zip: OR, 97201	Compliance Project: Δ Yes Δ No			
Phone: 503-872-4666(Tel)	PO #: 3600021519			
Email: BERNICE.KIDD@JACOBS.com ~~Shannon.Fitzsimmons@jacobs.com~~	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site: WWF	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	5310C - TOC	RSK_175 - Methane	300.0_28D - Chloride, Sulfate	300_48HR - Nitrate, NO3 as N	SUBCONTRACT (EMAX): TCE, cis 1,2-DCE, PCE, Vinyl Chloride (8260B_SIM)		Total Number of containers	Special Instructions/Note:
			Preservation Code:					A	N	S	A	H		
MW02 - 041421-0	04/14/21	0930	G	Water			1	3	1	1	3	1	3	
MW04 - 041421-0		1110		Water			1	3	1	1	3	1	3	
T4S1MW22 - 041421-0		1300		Water			1	3	1	1	3		3	
T4S1MW23 - 041421-0		1410		Water			1	3	1	1	3		3	
TB - 041421-0	↓	0800	↓	WATER							3		2	

580-102459 Chain of Custody

Therm. ID: IR 7 Cor: 1.3 °C Unc: 1.1 °C
Cooler Dsc: Lg Blue
Packing: Loose
Cust. Seal: Yes ~~No~~
Blue Ice (Wet) Dry, None
FedEx: PC
UPS:
Lab Cour:
Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
LAURA TOCHKO	4/14/21 1530	JACOBS			
				4/15/21 0940	EFGS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s): 5008 1328 3383	COC No: 580-89143.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102459-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 5/13/2021			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	5310C/ TOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW02-041421-0 (580-102459-1)	4/14/21	09:30 Pacific		Water			X	1	
MW04-041421-0 (580-102459-2)	4/14/21	11:10 Pacific		Water			X	1	
T4SIMW22-041421-0 (580-102459-3)	4/14/21	13:00 Pacific		Water			X	1	
T4SIMW23-041421-0 (580-102459-4)	4/14/21	14:10 Pacific		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Tom Blankenship	4/16/21	EFGS	Hugo Lagunas	4/17/21 1005	EL-IRV
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ⊘ Yes △ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.2/2.4 IR-93

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax. 425-420-9210

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89145.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102459-1
Address: 7440 Lincoln Way, ,	Due Date Requested: 5/13/2021			
City: Garden Grove	TAT Requested (days):			
State, Zip: CA, 92841				
Phone: 714-895-5494(Tel) 714-894-7501(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes.

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ Methane	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW02-041421-0	4/14/21	09.30 Pacific		Water			X	3	
MW04-041421-0	4/14/21	11 10 Pacific		Water			X	3	
T4SIMW22-041421-0	4/14/21	13:00 Pacific		Water			X	3	
T4SIMW23-041421-0	4/14/21	14.10 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately If all requested accreditations are current to date return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested I, II, III, IV, Other (specify) Primary Deliverable Rank. 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Tom Blank	4/16/21	EFGS			
2	Tom Blank	4/19/21	EFGS		4/20/21 1000	FDI
3						

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No. 1526179	Cooler Temperature(s) °C and Other Remarks: 2.7 / 3.1 5.5

Ver: 11/01/2020

Part # 159471-434 RITT2 EXP 03/22
92 APVA
CA-US SNA 92841
TUE - 20 APR 10:30A
PRIORITY OVERNIGHT
TRK# 0201 5008 1328 3475
FedEx Express
J2011201218011w
GARDEN GROVE CA 92841
(714) 896-6494 REF. 5580-43044
PO: YES
SHIPPING/RECEIVING
EUROFINS CALSCIENCE LLC
7440 LINCOLN WAY
FIFE, WA 98424
UNITED STATES US
BILL SENDER
CAD: 9897467/CAFE3409
5755 8TH ST E
EUROFINS TESTAM
eurofins
Environment Testing
Custody Seal
DATE
SIGNATURE
eurofins
Environment Testing
TestAmerica
152617

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc. Job Number: 580-102459-1

Login Number: 102459 **List Source: Eurofins TestAmerica, Seattle**
List Number: 1
Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102459-1

Login Number: 102459
List Number: 3
Creator: Stratford, Jordan

List Source: Eurofins Calscience
List Creation: 04/20/21 04:42 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1526179
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102459-1

Login Number: 102459
List Number: 2
Creator: Lagunas, Jorge L

List Source: Eurofins Irvine
List Creation: 04/17/21 11:27 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889

Date: 05-12-2021
EMAX Batch No.: 21D235

Attn: Pauline Matlock

TestAmerica, Inc.
5755 8th Street East
Tacoma WA 98424

Subject: Laboratory Report
Project: NW PIPE COMPANY GW MONITORING

Enclosed is the Laboratory report for samples received on 04/20/21.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
MW02-041421-0	D235-01	04/14/21	WATER	VOC SIM
MW04-041421-0	D235-02	04/14/21	WATER	VOC SIM
T4SIMW22-041421-0	D235-03	04/14/21	WATER	VOC SIM
T4SIMW23-041421-0	D235-04	04/14/21	WATER	VOC SIM
TB-041421-0	D235-05	04/14/21	WATER	VOC SIM

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

Caspar J. Pang
Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that results included in this report meets all TNI & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number CA002912020-17
ANAB Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing
California ELAP Accredited Certificate Number 2672

Eurofins FGS, Seattle 21D235
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89144.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: EMAX Laboratories Inc		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102459-1
Address: 1835 W. 205th Street, ,	Due Date Requested: 5/14/2021			
City: Torrance	TAT Requested (days):			
State, Zip: CA, 90501				
Phone:	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

	Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (TCE, cis 1,2-DCE, PCE, Vinyl Chloride - low level)/ TCE, cis 1,2-DCE, PCE, Vinyl Chloride -	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
1	MW02-041421-0	4/14/21	09:30 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
2	MW04-041421-0	4/14/21	11:10 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
3	T4SIMW22-041421-0	4/14/21	13:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
4	T4SIMW23-041421-0	4/14/21	14:10 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
5	TB-041421-0	4/14/21	08:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Tom Blankenship	4/19/21	EFGS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
				Marian Ti	4/20/21 9:15	EMAX
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

SAMPLE RECEIPT FORM 1

Reference: EMAX-SM02 Rev.11
Form: SM02F1

Type of Delivery	Airbill / Tracking Number	ECN 210235
☒ Fedex ☐ UPS ☐ GSO ☐ Others	5008 1328 3578	Recipient Maria Rivera
☐ EMAX Courier ☐ Client Delivery		Date 04/20/21 Time 09:15

COC INSPECTION

☒ Client Name	☒ Client PM/FC	☐ Sampler Name	☒ Sampling Date/Time	☒ Sample ID	☒ Matrix
☒ Address	☒ Tel # / Fax #	☐ Courier Signature	☒ Analysis Required	☐ Preservative (if any)	☒ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☒ Cooler	☐ Box	☐ Other		
Condition	☒ Custody Seal	☐ Intact	☐ Damaged		
Packaging	☒ Bubble Pack	☐ Styrofoam	☐ Popcorn	☐ Sufficient	☐ _____
Temperatures (Cool, ≤6 °C but not frozen)	☒ Cooler 1 3.0 °C	☐ Cooler 2 _____ °C	☐ Cooler 3 _____ °C	☐ Cooler 4 _____ °C	☐ Cooler 5 _____ °C
	☐ Cooler 6 _____ °C	☐ Cooler 7 _____ °C	☐ Cooler 8 _____ °C	☐ Cooler 9 _____ °C	☐ Cooler 10 _____ °C
Thermometer:	*A - S/N* 200291758	*B - S/N* 200291755	(C) *S/N* 200535195	*D - S/N* _____	

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action
4	12	D10		R1

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

RS 4/21/21

NOTES/OBSERVATIONS:

LEGEND:

☐ **Continue to next page.**

Code	Description- Sample Management
D1	Analysis is not indicated in _____
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in _____
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in _____
D7	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
(D10)	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in _____
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	_____
D23	_____
D24	_____

Code	Description-Sample Management
(R1)	Proceed as indicated in ☒ COC ☐ Label
R2	Refer to attached instruction
R3	Cancel the analysis
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	_____
R9	_____
R10	_____
R11	_____
R12	_____

REVIEWS:

Sample Labeling Maria Rivera
Date 04/20/21 4/21/21

SRF
Date 4/20/21

PM
Date 4/21/21


TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Temperature Controlled
IF THIS SHIPMENT IS DELAYED IN TRANSIT,
STORE REFRIGERATED (2° TO 8° C / 36° TO 47° F)
TAL-0090(1016)
ORIGIN ID:TCMA (253) 922-2310
SAMPLE RECEIVING
EUROFINS TESTAMERICA- SEATTLE
5755 8TH ST E
FIFE, WA 98424
UNITED STATES US
SHIP DATE: 19APR21
ACTWGT: 17.80 LB
CAD: 989746/CAFE3409
BILL SENDER
TO SHIPPING/RECEIVING
EMAX LABORATORIES INC
1835 W. 205TH STREET
TORRANCE CA 90501
(253) 922-2310
PO: NO
REF: 8580-43042
3.0 °C
(C) Sealed
FedEx
Express
TRK# 0201 5008 1328 3578
TUE - 20 APR 10:30A
PRIORITY OVERNIGHT
92 HHRA
90501
CA-US LAX
Part#159471-434 REV2 EXP 03/22

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TESTAMERICA, INC.

NW PIPE COMPANY GW MONITORING

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

SDG#: 21D235

CASE NARRATIVE

Client : TESTAMERICA, INC.

Project: NW PIPE COMPANY GW MONITORING

SDG : 21D235

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

A total of five(5) water samples were received on 04/20/21 to be analyzed for Volatile Organics by GC/MS SIM in accordance with Method SW5030B/8260B SIM and project specific requirements.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument tune check was performed prior to calibration. Result was within acceptance criteria. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried out at a frequency required by the project. All project calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, two(2) method blanks were analyzed. VOF5D20B and VOF5D21B were compliant to project requirement. Refer to sample result summary forms for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, two(2) sets of LCS/LCD were analyzed.
VOF5D20X/VOF5D20C and VOF5D21L/VOF5D21C were within LCS limits. Refer to LCS summary forms for details.

Matrix QC Sample
No matrix QC sample was provided on this SDG.

Surrogate
Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.
Sample 21D235-02 was analyzed at dilution due to high concentration.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.
Project : NW PIPE COMPANY GW MONITORING

SDG NO. : 21D235
Instrument ID : F5

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	VOF5D20B	1	NA	04/26/2110:15	04/26/2110:15	RDY400	RDY191	VOF5D20	Method Blank
LCS1W	VOF5D20X	1	NA	04/26/2110:40	04/26/2110:40	RDY401	RDY191	VOF5D20	Lab Control Sample (LCS)
LCD1W	VOF5D20C	1	NA	04/26/2109:27	04/26/2109:27	RDY398	RDY191	VOF5D20	LCS Duplicate
TB-041421-0	D235-05	1	NA	04/26/2111:53	04/26/2111:53	RDY404	RDY191	VOF5D20	Field Sample
MW04-041421-0DL	D235-02I	500	NA	04/26/2114:18	04/26/2114:18	RDY410	RDY191	VOF5D20	Diluted Sample
MW02-041421-0	D235-01	1	NA	04/26/2115:55	04/26/2115:55	RDY414	RDY191	VOF5D20	Field Sample
T4SIMW23-041421-0	D235-04	1	NA	04/26/2116:19	04/26/2116:19	RDY415	RDY191	VOF5D20	Field Sample
T4SIMW22-041421-0	D235-03	1	NA	04/26/2116:44	04/26/2116:44	RDY416	RDY191	VOF5D20	Field Sample
MBLK2W	VOF5D21B	1	NA	04/27/2110:13	04/27/2110:13	RDY426	RDY191	VOF5D21	Method Blank
LCS2W	VOF5D21L	1	NA	04/27/2109:01	04/27/2109:01	RDY423	RDY191	VOF5D21	Lab Control Sample (LCS)
LCD2W	VOF5D21C	1	NA	04/27/2109:25	04/27/2109:25	RDY424	RDY191	VOF5D21	LCS Duplicate
MW04-041421-0	D235-02	10	NA	04/27/2110:37	04/27/2110:37	RDY427	RDY191	VOF5D21	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 15:55
Sample ID: MW02-041421-O	Date Analyzed: 04/26/21 15:55
Lab Samp ID: D235-01	Dilution Factor: 1
Lab File ID: RDY414	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	0.26	0.20	0.10
VINYL CHLORIDE	0.60	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.591	0.5000	118	70-130
4-BROMOFLUOROBENZENE	0.494	0.5000	98.9	70-130
TOLUENE-D8	0.462	0.5000	92.3	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/27/21 10:37 # 04/26/21 14:18
Sample ID: MW04-041421-0	Date Analyzed: 04/27/21 10:37 # 04/26/21 14:18
Lab Samp ID: D235-02 #D235-02I	Dilution Factor: 10 # 500
Lab File ID: RDY427 #RDY410	Matrix : WATER
Ext Btch ID: VOF5D21 #VOF5D20	% Moisture : NA
Calib. Ref.: RDY191 #RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)		MDL (ug/L)
# CIS-1,2-DICHLOROETHYLENE	110	100		50
VINYL CHLORIDE	1.7	1.0		0.20
TETRACHLOROETHENE	5.0	2.0		1.0
TCE	10	2.0		1.0
SURROGATE PARAMETERS	**RESULTS**	**SPK_AMT**	**% RECOVERY**	**QC LIMIT**
1,2-DICHLOROETHANE-D4	5.51	5.000	110	70-130
4-BROMOFLUOROBENZENE	4.69	5.000	93.7	70-130
TOLUENE-D8	4.65	5.000	92.9	70-130
# 1,2-DICHLOROETHANE-D4	285	250.0	114	70-130
# 4-BROMOFLUOROBENZENE	247	250.0	98.7	70-130
# TOLUENE-D8	228	250.0	91.4	70-130

Members of the Associated File

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/27/21 10:37
Sample ID: MW04-041421-0	Date Analyzed: 04/27/21 10:37
Lab Samp ID: D235-02	Dilution Factor: 10
Lab File ID: RDY427	Matrix : WATER
Ext Btch ID: VOF5D21	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	120E	2.0	1.0
VINYL CHLORIDE	1.7	1.0	0.20
TETRACHLOROETHENE	5.0	2.0	1.0
TCE	10	2.0	1.0

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	5.51	5.000	110	70-130
4-BROMOFLUOROBENZENE	4.69	5.000	93.7	70-130
TOLUENE-D8	4.65	5.000	92.9	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 14:18
Sample ID: MW04-041421-ODL	Date Analyzed: 04/26/21 14:18
Lab Samp ID: D235-02I	Dilution Factor: 500
Lab File ID: RDY410	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	110	100	50
VINYL CHLORIDE	ND	50	10
TETRACHLOROETHENE	ND	100	50
TCE	ND	100	50

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	285	250.0	114	70-130
4-BROMOFLUOROBENZENE	247	250.0	98.7	70-130
TOLUENE-D8	228	250.0	91.4	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 16:44
Sample ID: T4SIMW22-041421-0	Date Analyzed: 04/26/21 16:44
Lab Samp ID: D235-03	Dilution Factor: 1
Lab File ID: RDY416	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	5.0	0.20	0.10
VINYL CHLORIDE	0.14	0.10	0.020
TETRACHLOROETHENE	1.7	0.20	0.10
TCE	2.7	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.580	0.5000	116	70-130
4-BROMOFLUOROBENZENE	0.491	0.5000	98.1	70-130
TOLUENE-D8	0.465	0.5000	93.1	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 16:19
Sample ID: T4SIMW23-041421-0	Date Analyzed: 04/26/21 16:19
Lab Samp ID: D235-04	Dilution Factor: 1
Lab File ID: RDY415	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	0.23	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	1.3	0.20	0.10
TCE	0.37	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.588	0.5000	118	70-130
4-BROMOFLUOROBENZENE	0.481	0.5000	96.1	70-130
TOLUENE-D8	0.456	0.5000	91.2	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/14/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D235	Date Extracted: 04/26/21 11:53
Sample ID: T8-041421-0	Date Analyzed: 04/26/21 11:53
Lab Samp ID: D235-05	Dilution Factor: 1
Lab File ID: RDY404	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.519	0.5000	104	70-130
4-BROMOFLUOROBENZENE	0.518	0.5000	104	70-130
TOLUENE-D8	0.475	0.5000	95.0	70-130

QC SUMMARIES

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: NA
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/26/21
Batch No. : 21D235	Date Extracted: 04/26/21 10:15
Sample ID: MBLK1W	Date Analyzed: 04/26/21 10:15
Lab Samp ID: VOF5D20B	Dilution Factor: 1
Lab File ID: RDY400	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.464	0.5000	92.8	70-130
4-BROMOFLUOROBENZENE	0.534	0.5000	107	70-130
TOLUENE-D8	0.491	0.5000	98.2	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TESTAMERICA, INC.
PROJECT: NW PIPE COMPANY GW MONITORING
BATCH NO.: 21D235
METHOD: SW5030B/8260B SIM

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VOF5D20B	VOF5D20X	VOF5D20C		
LAB FILE ID:	RDY400	RDY401	RDY398		
DATE EXTRACTED:	04/26/2110:15	04/26/2110:40	04/26/2109:27	DATE COLLECTED:	NA
DATE ANALYZED:	04/26/2110:15	04/26/2110:40	04/26/2109:27	DATE RECEIVED:	04/26/21
PREP. BATCH:	VOF5D20	VOF5D20	VOF5D20		
CALIB. REF:	RDY191	RDY191	RDY191		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.496	99	0.500	0.556	111	12	70-130	20
Vinyl Chloride	ND	0.500	0.502	100	0.500	0.540	108	7	60-140	20
Tetrachloroethene	ND	0.500	0.470	94	0.500	0.505	101	7	70-130	20
TCE	ND	0.500	0.455	91	0.500	0.502	100	10	70-130	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	0.500	0.454	91	0.500	0.463	93	70-130
4-Bromofluorobenzene	0.500	0.531	106	0.500	0.543	109	70-130
Toluene-d8	0.500	0.490	98	0.500	0.498	100	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: NA
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/27/21
Batch No. : 21D235	Date Extracted: 04/27/21 10:13
Sample ID: MBLK2W	Date Analyzed: 04/27/21 10:13
Lab Samp ID: VOF5D21B	Dilution Factor: 1
Lab File ID: RDY426	Matrix : WATER
Ext Btch ID: VOF5D21	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.550	0.5000	110	70-130
4-BROMOFLUOROBENZENE	0.478	0.5000	95.6	70-130
TOLUENE-D8	0.462	0.5000	92.4	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TESTAMERICA, INC.
PROJECT: NW PIPE COMPANY GW MONITORING
BATCH NO.: 21D235
METHOD: SW5030B/8260B SIM

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK2W				
LAB SAMP ID:	VOF5D21B	VOF5D21L	VOF5D21C		
LAB FILE ID:	RDY426	RDY423	RDY424		
DATE EXTRACTED:	04/27/2110:13	04/27/2109:01	04/27/2109:25	DATE COLLECTED:	NA
DATE ANALYZED:	04/27/2110:13	04/27/2109:01	04/27/2109:25	DATE RECEIVED:	04/27/21
PREP. BATCH:	VOF5D21	VOF5D21	VOF5D21		
CALIB. REF:	RDY191	RDY191	RDY191		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	8SD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.478	96	0.500	0.492	98	3	70-130	20
Vinyl Chloride	ND	0.500	0.486	97	0.500	0.514	103	6	60-140	20
Tetrachloroethene	ND	0.500	0.482	96	0.500	0.499	100	3	70-130	20
TCE	ND	0.500	0.462	92	0.500	0.476	95	3	70-130	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	0.500	0.543	109	0.500	0.517	103	70-130
4-Bromofluorobenzene	0.500	0.466	93	0.500	0.478	96	70-130
Toluene-d8	0.500	0.467	93	0.500	0.463	93	70-130

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-102448-1
Client Project/Site: Northwest Pipe Company GW 2021

For:
Jacobs Engineering Group, Inc.
1501 W Fountainhead Parkway
Suite 401
Tempe, Arizona 85282

Attn: Bernice Kidd

Authorized for release by:
5/13/2021 7:14:19 PM

Pauline Matlock, Project Manager
(253)922-2310
pauline.matlock@eurofinset.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 580-102448-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-102448-1

Comments
No additional comments.

Receipt
The samples were received on 4/14/2021 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6º C.

Air Toxics
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method SM 5310C: The continuing calibration blank (CCB) for analytical batch 440-644524 contained Total Organic Carbon above the method detection limits limit (MDL). All reported samples associated with this CCB contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed.

Method 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for analytical batch 580-354479 was outside control limits. Sample non-homogeneity is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister
See attached subcontract report.

Definitions/Glossary

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102448-1
Project/Site: Northwest Pipe Company GW 2021

Qualifiers

GC VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102448-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: T451MW09-041321-0
Lab Sample ID: 580-102448-1
Date Collected: 04/13/21 15:00
Matrix: Water
Date Received: 04/14/21 09:30

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	46		1.0	0.078	ug/L			04/22/21 12:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.9		1.5	0.43	mg/L			04/24/21 01:50	1
NO3 as N	2.4		0.20	0.030	mg/L			04/14/21 14:27	1
Sulfate	11		1.5	0.80	mg/L			04/24/21 01:50	1
Total Organic Carbon	0.90		0.10	0.050	mg/L			04/20/21 09:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.5	HF	0.01	0.01	SU			04/19/21 12:24	1

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102448-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: T451MW03S-041321-0
Lab Sample ID: 580-102448-2
Date Collected: 04/13/21 16:30
Matrix: Water
Date Received: 04/14/21 09:30

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.70	J	1.0	0.078	ug/L			04/22/21 12:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.3	J	1.5	0.43	mg/L			04/24/21 02:13	1
NO3 as N	4.6	F1 F2	0.20	0.030	mg/L			04/14/21 14:39	1
Sulfate	6.9		1.5	0.80	mg/L			04/24/21 02:13	1
Total Organic Carbon	0.77		0.10	0.050	mg/L			04/20/21 09:27	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.6	HF	0.01	0.01	SU			04/19/21 12:28	1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 570-145152/4
Matrix: Water
Analysis Batch: 145152

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		1.0	0.078	ug/L			04/22/21 10:40	1

Lab Sample ID: LCS 570-145152/2
Matrix: Water
Analysis Batch: 145152

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			12.9	12.3		ug/L		95	80 - 120		

Lab Sample ID: LCSD 570-145152/3
Matrix: Water
Analysis Batch: 145152

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane			12.9	12.2		ug/L		94	80 - 120	1	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-354479/7
Matrix: Water
Analysis Batch: 354479

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NO3 as N	ND		0.20	0.030	mg/L			04/14/21 15:14	1

Lab Sample ID: LCS 580-354479/8
Matrix: Water
Analysis Batch: 354479

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
NO3 as N			5.00	5.22		mg/L		104	90 - 110		

Lab Sample ID: LCSD 580-354479/9
Matrix: Water
Analysis Batch: 354479

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NO3 as N			5.00	4.67		mg/L		93	90 - 110	11	15

Lab Sample ID: 580-102448-2 MS
Matrix: Water
Analysis Batch: 354479

Client Sample ID: T451MW03S-041321-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
NO3 as N	4.6	F1 F2	5.00	7.73	F1	mg/L		62	90 - 110		

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 580-102448-2 MSD
Matrix: Water
Analysis Batch: 354479

Client Sample ID: T451MW03S-041321-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NO3 as N	4.6	F1 F2	5.00	9.30	F2	mg/L		94	90 - 110	18	15

Lab Sample ID: MB 580-355223/36
Matrix: Water
Analysis Batch: 355223

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5	0.43	mg/L			04/23/21 23:30	1
Sulfate	ND		1.5	0.80	mg/L			04/23/21 23:30	1

Lab Sample ID: LCS 580-355223/37
Matrix: Water
Analysis Batch: 355223

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	50.6		mg/L		101	90 - 110
Sulfate	50.0	51.9		mg/L		104	90 - 110

Lab Sample ID: LCSD 580-355223/38
Matrix: Water
Analysis Batch: 355223

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	50.0	48.8		mg/L		98	90 - 110	4	15
Sulfate	50.0	45.7		mg/L		91	90 - 110	13	15

Method: SM 4500 H+ B - pH

Lab Sample ID: 580-102448-1 DU
Matrix: Water
Analysis Batch: 354585

Client Sample ID: T451MW09-041321-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	6.5	HF	6.5		SU		0.3	1

Method: SM 5310C - TOC

Lab Sample ID: MB 440-644524/9
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		0.10	0.050	mg/L			04/20/21 08:34	1

Lab Sample ID: LCS 440-644524/8
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	5.00	5.20		mg/L		104	85 - 115

Method: SM 5310C - TOC (Continued)

Lab Sample ID: MRL 440-644524/7
Matrix: Water
Analysis Batch: 644524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			0.100	0.0735	J	mg/L		74	50 - 150		

Lab Sample ID: 580-102448-1 MS
Matrix: Water
Analysis Batch: 644524

Client Sample ID: T451MW09-041321-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon	0.90		6.00	6.78		mg/L		98	85 - 115		

Lab Sample ID: 580-102448-1 MSD
Matrix: Water
Analysis Batch: 644524

Client Sample ID: T451MW09-041321-0
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	0.90		6.00	6.81		mg/L		98	85 - 115	0	20

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102448-1

Client Sample ID: T451MW09-041321-0

Lab Sample ID: 580-102448-1

Date Collected: 04/13/21 15:00

Matrix: Water

Date Received: 04/14/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145152	04/22/21 12:11	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354479	04/14/21 14:27	AAC	TAL SEA
Total/NA	Analysis	300.0		1	355223	04/24/21 01:50	AAC	TAL SEA
Total/NA	Analysis	SM 4500 H+ B		1	354585	04/19/21 12:24	HCC	TAL SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 09:14	YO8L	TAL IRV

Client Sample ID: T451MW03S-041321-0

Lab Sample ID: 580-102448-2

Date Collected: 04/13/21 16:30

Matrix: Water

Date Received: 04/14/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	145152	04/22/21 12:37	I9H5	ECL 2
Total/NA	Analysis	300.0		1	354479	04/14/21 14:39	AAC	TAL SEA
Total/NA	Analysis	300.0		1	355223	04/24/21 02:13	AAC	TAL SEA
Total/NA	Analysis	SM 4500 H+ B		1	354585	04/19/21 12:28	HCC	TAL SEA
Total/NA	Analysis	SM 5310C		1	644524	04/20/21 09:27	YO8L	TAL IRV

Laboratory References:

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

EMAX Lab. = EMAX Laboratories Inc, 1835 W. 205th Street, Torrance, CA 90501

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-102448-1
Project/Site: Northwest Pipe Company GW 2021

Laboratory: Eurofins FGS, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	WA100007	11-05-21

Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4028 - 010	04-27-21

Laboratory: Eurofins Calscience LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	CA300001	01-30-22

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102448-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-102448-1	T451MW09-041321-0	Water	04/13/21 15:00	04/14/21 09:30	
580-102448-2	T451MW03S-041321-0	Water	04/13/21 16:30	04/14/21 09:30	
580-102448-3	TB-041321-0	Water	04/13/21 08:00	04/14/21 09:30	

MAX
RATORIES, INC.
S W. 205th Street
ance, CA 90501
(310) 618-8889

12-2021
n No.: 21D234

ine Matlock

a, Inc.
Street East
98424

Laboratory Report
Project: NW PIPE COMPANY GW MONITORING

---

s the Laboratory report for samples received on 04/20/21.
eported relate only to samples listed below :

D	Control #	Col Date	Matrix	Analysis
-041321-0	D234-01	04/13/21	WATER	VOC SIM
S-041321-0	D234-02	04/13/21	WATER	VOC SIM
1-0	D234-03	04/13/21	WATER	VOC SIM

s are summarized on the following pages.

l free to call if you have any questions concerning
lts.

yours,

Pang
Director

t is confidential and intended solely for the use of the individual or
whom it is addressed. This report shall not be reproduced except in full
the written approval of EMAX.

fies that results included in this report meets all TNI & DOD requirements
d in the Case Narrative.

dited Certificate Number CA00001

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

21D234

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89144.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: EMAX Laboratories Inc		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102448-1
Address: 1835 W. 205th Street, ,	Due Date Requested: 5/13/2021			
City: Torrance	TAT Requested (days):			
State, Zip: CA, 90501				
Phone:	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

	Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (TCE, cis 1,2-DCE, PCE, Vinyl Chloride - low level)/ TCE, cis 1,2-DCE, PCE, Vinyl Chloride -	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
1	T451MW09-041321-0	4/13/21	15:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
2	T451MW03S-041321-0	4/13/21	16:30 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
3	TB-041321-0	4/13/21	08:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Tom Blankenship	4/19/21	ETGS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
					4/20/21 9:15	EMAX
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		Temp. 3.0 °C

SAMPLE RECEIPT FORM 1

Reference: EMAX-SM02 Rev.11
Form: SM02F1

Type of Delivery	Airbill / Tracking Number	ECN 210234
☒ Fedex ☐ UPS ☐ GSO ☐ Others	5008 1328 3578	Recipient Maria Rivera
☐ EMAX Courier ☐ Client Delivery		Date 04/20/21 Time 9:15

COC INSPECTION

☒ Client Name	☒ Client PM/FC	☐ Sampler Name	☒ Sampling Date/Time	☒ Sample ID	☒ Matrix
☒ Address	☐ Tel # / Fax #	☐ Courier Signature	☒ Analysis Required	☐ Preservative (if any)	☒ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☒ Cooler	☐ Box	☐ Other		
Condition	☒ Custody Seal	☐ Intact	☐ Damaged		
Packaging	☒ Bubble Pack	☐ Styrofoam	☐ Popcorn	☐ Sufficient	☐ _____
Temperatures (Cool, ≤6 °C but not frozen)	☒ Cooler 1 3.0 °C	☐ Cooler 2_____ °C	☐ Cooler 3_____ °C	☐ Cooler 4_____ °C	☐ Cooler 5_____ °C
	☐ Cooler 6_____ °C	☐ Cooler 7_____ °C	☐ Cooler 8_____ °C	☐ Cooler 9_____ °C	☐ Cooler 10_____ °C
Thermometer:	*A - S/N* 200291758	*B - S/N* 200291755	*C - S/N* 200535195	*D - S/N* _____	

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action

4/20/21 4/21/21

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS:

LEGEND:

Code	Description- Sample Management
D1	Analysis is not indicated in _____
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in _____
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in _____
D7	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
D10	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in _____
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	_____
D23	_____
D24	_____

☐ **Continue to next page.**

Code	Description-Sample Management
R1	Proceed as indicated in ☐ COC ☐ Label
R2	Refer to attached instruction
R3	Cancel the analysis
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	_____
R9	_____
R10	_____
R11	_____
R12	_____

REVIEWS:

Sample Labeling Maria Rivera
Date 04/20/21 4/20/21

SRF
Date 4/20/21

PM
Date 4/21/21

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TESTAMERICA, INC.

NW PIPE COMPANY GW MONITORING

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

SDG#: 21D234

CASE NARRATIVE

Client : TESTAMERICA, INC.

Project: NW PIPE COMPANY GW MONITORING

SDG : 21D234

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

A total of three(3) water samples were received on 04/20/21 to be analyzed for Volatile Organics by GC/MS SIM in accordance with Method SW5030B/8260B SIM and project specific requirements.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument tune check was performed prior to calibration. Result was within acceptance criteria. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried out at a frequency required by the project. All project calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. VOF5D20B - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. VOF5D20X/VOF5D20C were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample
No matrix QC sample was provided on this SDG.

Surrogate
Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.
Project : NW PIPE COMPANY GW MONITORING

SDG NO. : 21D234
Instrument ID : F5

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	VOF5D20B	1	NA	04/26/2110:15	04/26/2110:15	RDY400	RDY191	VOF5D20	Method Blank
LCS1W	VOF5D20X	1	NA	04/26/2110:40	04/26/2110:40	RDY401	RDY191	VOF5D20	Lab Control Sample (LCS)
LCD1W	VOF5D20C	1	NA	04/26/2109:27	04/26/2109:27	RDY398	RDY191	VOF5D20	LCS Duplicate
TB-041321-0	D234-03	1	NA	04/26/2111:28	04/26/2111:28	RDY403	RDY191	VOF5D20	Field Sample
T451MW09-041321-0	D234-01	1	NA	04/26/2115:06	04/26/2115:06	RDY412	RDY191	VOF5D20	Field Sample
T451MW03S-041321-0	D234-02	1	NA	04/26/2115:31	04/26/2115:31	RDY413	RDY191	VOF5D20	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/13/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D234	Date Extracted: 04/26/21 15:06
Sample ID: T451MW09-041321-0	Date Analyzed: 04/26/21 15:06
Lab Samp ID: D234-01	Dilution Factor: 1
Lab File ID: RDY412	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.593	0.5000	119	70-130
4-BROMOFLUOROBENZENE	0.496	0.5000	99.3	70-130
TOLUENE-D8	0.478	0.5000	95.6	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/13/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D234	Date Extracted: 04/26/21 15:31
Sample ID: T451MW03S-041321-0	Date Analyzed: 04/26/21 15:31
Lab Samp ID: D234-02	Dilution Factor: 1
Lab File ID: RDY413	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.581	0.5000	116	70-130
4-BROMOFLUOROBENZENE	0.491	0.5000	98.3	70-130
TOLUENE-D8	0.467	0.5000	93.4	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	04/13/21
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	04/20/21
Batch No.	: 21D234	Date Extracted:	04/26/21 11:28
Sample ID:	TB-041321-0	Date Analyzed:	04/26/21 11:28
Lab Samp ID:	D234-03	Dilution Factor:	1
Lab File ID:	RDY403	Matrix :	WATER
Ext Btch ID:	VOF5D20	% Moisture :	NA
Calib. Ref.:	RDY191	Instrument ID :	TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.513	0.5000	103	70-130
4-BROMOFLUOROBENZENE	0.519	0.5000	104	70-130
TOLUENE-D8	0.483	0.5000	96.6	70-130

QC SUMMARIES

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: NA
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/26/21
Batch No. : 21D234	Date Extracted: 04/26/21 10:15
Sample ID: MBLK1W	Date Analyzed: 04/26/21 10:15
Lab Samp ID: VOF5D20B	Dilution Factor: 1
Lab File ID: RDY400	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.464	0.5000	92.8	70-130
4-BROMOFLUOROBENZENE	0.534	0.5000	107	70-130
TOLUENE-D8	0.491	0.5000	98.2	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TESTAMERICA, INC.
PROJECT: NW PIPE COMPANY GW MONITORING
BATCH NO.: 21D234
METHOD: SW5030B/8260B SIM

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VOF5D20B	VOF5D20X	VOF5D20C		
LAB FILE ID:	RDY400	RDY401	RDY398		
DATE EXTRACTED:	04/26/2110:15	04/26/2110:40	04/26/2109:27	DATE COLLECTED:	NA
DATE ANALYZED:	04/26/2110:15	04/26/2110:40	04/26/2109:27	DATE RECEIVED:	04/26/21
PREP. BATCH:	VOF5D20	VOF5D20	VOF5D20		
CALIB. REF:	RDY191	RDY191	RDY191		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.496	99	0.500	0.556	111	12	70-130	20
Vinyl Chloride	ND	0.500	0.502	100	0.500	0.540	108	7	60-140	20
Tetrachloroethene	ND	0.500	0.470	94	0.500	0.505	101	7	70-130	20
TCE	ND	0.500	0.455	91	0.500	0.502	100	10	70-130	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	0.500	0.454	91	0.500	0.463	93	70-130
4-Bromofluorobenzene	0.500	0.531	106	0.500	0.543	109	70-130
Toluene-d8	0.500	0.490	98	0.500	0.498	100	70-130

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

eurofins Environment Testing America

Client Information
Client Contact: ~~Shannon Fitzsimmons~~ BERNICE KIDD
Company: Jacobs Engineering Group, Inc.
Address: 2020 SW Fourth Ave, 3rd Floor
City: Portland
State, Zip: OR, 97201
Phone: 503-872-4666(Tel)
Email: BERNICE.KIDD@JACOBS.COM ~~Shannon.Fitzsimmons@jacobs.com~~
Project Name: Northwest Pipe Company GW 2021
Site: NWP

Sampler: LAURA TOLIKO
Phone: 425-891-2855
PWSID:
Due Date Requested:
TAT Requested (days): STD
Compliance Project: Δ Yes Δ No
PO #: 3600021519
WO #:
Project #: 58016285
SSOW#:

Lab PM: Matlock, Pauline M
E-Mail: pauline.matlock@eurofinset.com
Carrier Tracking No(s):
State of Origin:

COC No: 580-42614-13620.3
Page: ~~Page 3 of 3~~ 1 OF 1
Job #:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	5310C - TOC	RSK_175 - Methane	300.0_28D - Chloride, Sulfate	300_48HR - Nitrate, NO3 as N	SUBCONTRACT (EMAX)- TCE, cis 1,2-DCE, PCE, Vinyl Chloride (8260B_SIM)	pH	Total Number of containers
			Preservation Code:				A	N	S	A			
T4S1MW09-041321-0	04/13/21	1500	G	Water	N	N	1	3	1	1	3	X	3
T4S1MW03S-041321-0	04/13/21	1630	G	Water	N	N	1	3	1	1	3	X	3
TB-041321-0	04/13/21	0800	G	Water	N	N					3		6
				Water									

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Special Instructions/Note:

580-102448 Chain of Custody

Therm. ID: A1 Cor: 1.6° Unc: 2.1°
Cooler Dsc: Lg Blue FedEx: PO
Packing: bub UPS:
Cust. Seal: Yes ~~No~~ Lab Cour:
Blue Ice (Wet) Dry, None Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological
Deliverable Requested: I, II, III, IV, Other (specify)

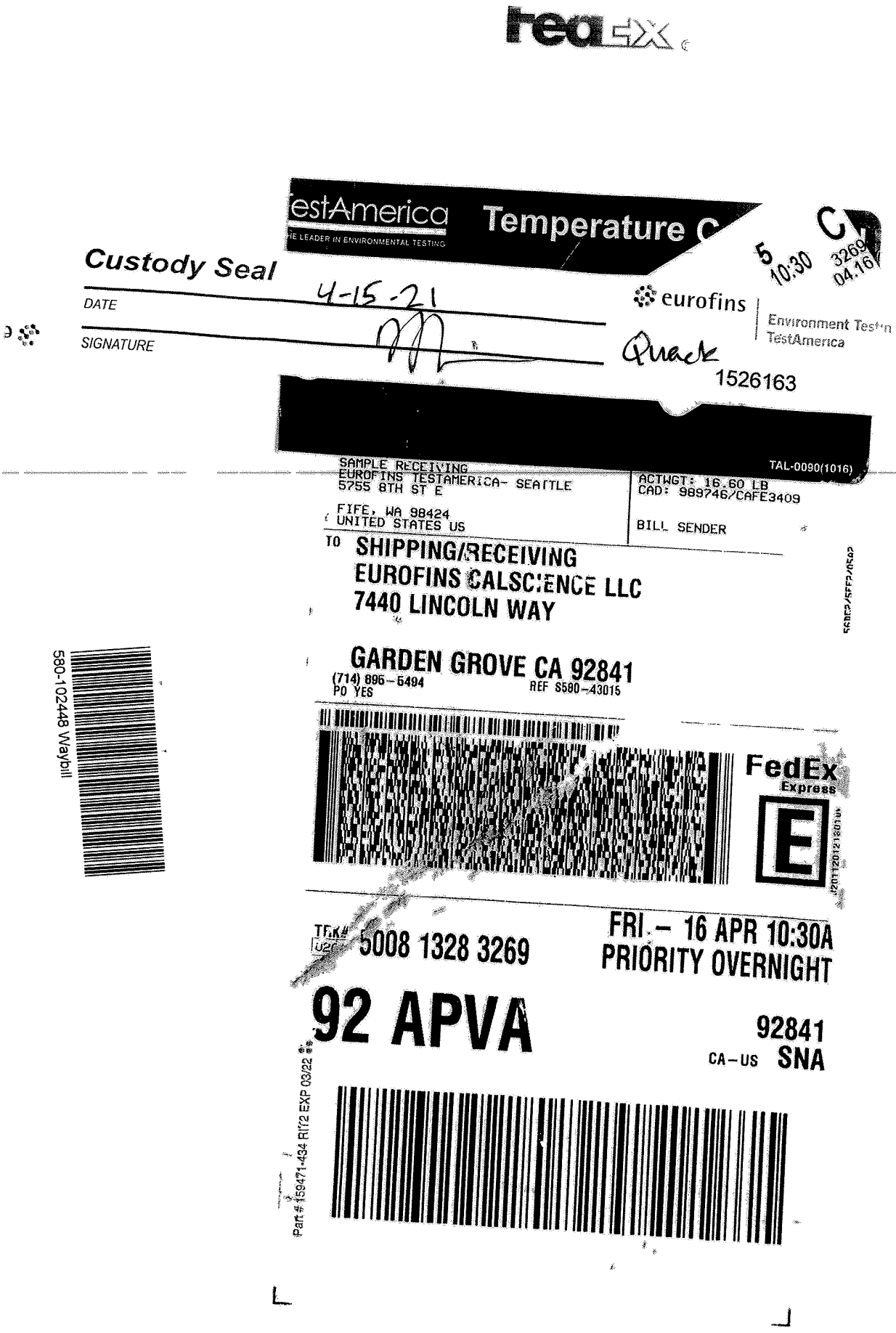
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months
Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

	Date/Time	Company	Received by	Date/Time	Company
Relinquished by: LAURA TOLIKO	4/13/21 17:30	JACOBS			
Relinquished by:			Received by: Tom Blum	4/14/21 0931	EDGSea
Relinquished by:			Received by:		

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

102448
Ver: 01/16/2019 5/13/2021


FedEx
TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Temperature C
Custody Seal
DATE
4-15-21
SIGNATURE
Quack
eurofins
Environment Test'n
TestAmerica
1526163
TAL-0090(1016)
SAMPLE RECEIVING
EUROFINS TESTAMERICA- SEATTLE
5755 8TH ST E
FIFE, WA 98424
UNITED STATES US
ACTWGT: 16.60 LB
CAD: 989746/CAFE3409
BILL SENDER
TO SHIPPING/RECEIVING
EUROFINS CALSCIENCE LLC
7440 LINCOLN WAY
GARDEN GROVE CA 92841
(714) 895-5494
PO YES
REF S580-43015
580-102448 Waybill
FedEx Express
TRK# 5008 1328 3269
FRI - 16 APR 10:30A
PRIORITY OVERNIGHT
92 APVA
92841
CA-US SNA
Part # 159471-434 Rif2 EXP 03/22

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s): 500G 1329 3258	COC No: 580-89110 1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): NELAP Oregon		Job #: 580-102448-1
Address: 17461 Derian Ave, Suite 100	Due Date Requested: 5/12/2021			Preservation Codes:
City: Irvine	TAT Requested (days):			A HCL M Hexane B NaOH N None C Zn Acetate O AsNaO2 D Nitric Acid P Na2O4S E NaHSO4 Q Na2SO3 F MeOH R Na2S2O3 G Amchlor S H2SO4 H Ascorbic Acid T TSP Dodecahydrate I Ice U Acetone J DI Water V MCAA K EDTA W pH 4-5 L EDA Z other (specify) Other:
State, Zip: CA, 92614-5817				
Phone: 949-261 1022(Tel) 949-260-3297(Fax)	PO #:			
Email	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	5310C/ TOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
T451MW09-041321-0 (580-102448-1)	4/13/21	15:00 Pacific		Water			X	1	
T451MW03S-041321-0 (580-102448-2)	4/13/21	16.30 Pacific		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested I II, III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:			
Relinquished by:	Date/Time: 4/15/21 1225	Company EFGS	Received by:	Date/Time: 4/16 4.15.21	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 4/16/21	Company OCIRU	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	

Custody Seals Intact: (Δ) Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks: 1.9/2.1 1k.98

Ver: 11/01/2020

Eurofins FGS, Seattle
5755 8th Street East
Tacoma WA 98424
Phone 253-922-2310 Fax. 425-420-9210

Chain of Custody Record

eurofins | Environment Testing America

5/13/2021

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89113.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102448-1
Address: 7440 Lincoln Way,	Due Date Requested: 5/12/2021			
City: Garden Grove	TAT Requested (days):			
State, Zip: CA, 92841				
Phone: 714-895-5494(Tel) 714-894-7501(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ Methane	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
T451MW09-041321-0 (580-102448-1)	4/13/21	15:00 Pacific		Water			X	3	
T451MW03S-041321-0 (580-102448-2)	4/13/21	16 30 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	4/15/21 1340	EFGS	[signature]	[redacted]	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 4/16/21 0850	Company EC
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes ☐ No	Custody Seal No: 1526163	Cooler Temperature(s) °C and Other Remarks: 3.3/3.7 SCS

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102448-1

Login Number: 102448
List Number: 1
Creator: Vallelunga, Diana L

List Source: Eurofins TestAmerica, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.6/2.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102448-1

Login Number: 102448
List Number: 3
Creator: Ortiz-Luis, Michael

List Source: Eurofins Calscience
List Creation: 04/16/21 03:30 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1526163
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102448-1

Login Number: 102448
List Number: 2
Creator: Ornelas, Olga

List Source: Eurofins Irvine
List Creation: 04/16/21 11:44 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889

Date: 05-12-2021
EMAX Batch No.: 21D234

Attn: Pauline Matlock

TestAmerica, Inc.
5755 8th Street East
Tacoma WA 98424

Subject: Laboratory Report
Project: NW PIPE COMPANY GW MONITORING

Enclosed is the Laboratory report for samples received on 04/20/21.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
T451MW09-041321-0	D234-01	04/13/21	WATER	VOC SIM
T451MW03S-041321-0	D234-02	04/13/21	WATER	VOC SIM
TB-041321-0	D234-03	04/13/21	WATER	VOC SIM

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

Caspar J. Pang
Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that results included in this report meets all TNI & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number CA002912020-17
ANAB Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing
California ELAP Accredited Certificate Number 2672

Eurofins FGS, Seattle 21D234
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 425-420-9210

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-89144.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: EMAX Laboratories Inc		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102448-1
Address: 1835 W. 205th Street, ,	Due Date Requested: 5/13/2021			
City: Torrance	TAT Requested (days):			
State, Zip: CA, 90501	PO #:			
Phone:	WO #:			
Email:	Project #: 58016285			
Project Name: Northwest Pipe Company GW 2021	SSOW#:			
Site:				

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

	Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (TCE, cis 1,2-DCE, PCE, Vinyl Chloride - low level)/ TCE, cis 1,2-DCE, PCE, Vinyl Chloride -	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
1	T451MW09-041321-0	4/13/21	15:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
2	T451MW03S-041321-0	4/13/21	16:30 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//
3	TB-041321-0	4/13/21	08:00 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//

Note: Since laboratory accreditations are subject to change, Eurofins Frontier Global Sciences LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Frontier Global Sciences LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Frontier Global Sciences LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Frontier Global Sciences LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Tom Blankinship	4/19/21	EFGS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
					4/20/21 9:15	EMAX
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Temp. 3.0°C

SAMPLE RECEIPT FORM 1

Type of Delivery	Airbill / Tracking Number	ECN 210234
☒ Fedex ☐ UPS ☐ GSO ☐ Others	5008 1328 3578	Recipient Maria Rivera
☐ EMAX Courier ☐ Client Delivery		Date 04/20/21 Time 9:15

COC INSPECTION

☒ Client Name	☒ Client PM/FC	☐ Sampler Name	☒ Sampling Date/Time	☒ Sample ID	☒ Matrix
☒ Address	☐ Tel # / Fax #	☐ Courier Signature	☒ Analysis Required	☐ Preservative (if any)	☒ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☒ Cooler	☐ Box	☐ Other		
Condition	☒ Custody Seal	☐ Intact	☐ Damaged		
Packaging	☒ Bubble Pack	☐ Styrofoam	☐ Popcorn	☐ Sufficient	☐ _____
Temperatures (Cool, ≤6 °C but not frozen)	☒ Cooler 1 3.0 °C	☐ Cooler 2_____ °C	☐ Cooler 3_____ °C	☐ Cooler 4_____ °C	☐ Cooler 5_____ °C
	☐ Cooler 6_____ °C	☐ Cooler 7_____ °C	☐ Cooler 8_____ °C	☐ Cooler 9_____ °C	☐ Cooler 10_____ °C
Thermometer:	*A - S/N* 200291758	*B - S/N* 200291755	*C - S/N* 200535195	*D - S/N* _____	

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS:

LEGEND:

☐ **Continue to next page.**

Code	Description- Sample Management
D1	Analysis is not indicated in _____
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in _____
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in _____
D7	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
D10	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in _____
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	_____
D23	_____
D24	_____

Code	Description-Sample Management
R1	Proceed as indicated in ☐ COC ☐ Label
R2	Refer to attached instruction
R3	Cancel the analysis
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	_____
R9	_____
R10	_____
R11	_____
R12	_____

REVIEWS:

Sample Labeling Maria Rivera
Date 04/20/21 4/20/21

SRF
Date 4/20/21

PM
Date 4/21/21

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TESTAMERICA, INC.

NW PIPE COMPANY GW MONITORING

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

SDG#: 21D234

CASE NARRATIVE

Client : TESTAMERICA, INC.

Project: NW PIPE COMPANY GW MONITORING

SDG : 21D234

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

A total of three(3) water samples were received on 04/20/21 to be analyzed for Volatile Organics by GC/MS SIM in accordance with Method SW5030B/8260B SIM and project specific requirements.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument tune check was performed prior to calibration. Result was within acceptance criteria. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried out at a frequency required by the project. All project calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. VOF5D20B - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. VOF5D20X/VOF5D20C were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample
No matrix QC sample was provided on this SDG.

Surrogate
Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.
Project : NW PIPE COMPANY GW MONITORING

SDG NO. : 21D234
Instrument ID : F5

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	V0F5D20B	1	NA	04/26/2110:15	04/26/2110:15	RDY400	RDY191	V0F5D20	Method Blank
LCS1W	V0F5D20X	1	NA	04/26/2110:40	04/26/2110:40	RDY401	RDY191	V0F5D20	Lab Control Sample (LCS)
LCD1W	V0F5D20C	1	NA	04/26/2109:27	04/26/2109:27	RDY398	RDY191	V0F5D20	LCS Duplicate
TB-041321-0	D234-03	1	NA	04/26/2111:28	04/26/2111:28	RDY403	RDY191	V0F5D20	Field Sample
T451MW09-041321-0	D234-01	1	NA	04/26/2115:06	04/26/2115:06	RDY412	RDY191	V0F5D20	Field Sample
T451MW03S-041321-0	D234-02	1	NA	04/26/2115:31	04/26/2115:31	RDY413	RDY191	V0F5D20	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/13/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D234	Date Extracted: 04/26/21 15:06
Sample ID: T451MW09-041321-0	Date Analyzed: 04/26/21 15:06
Lab Samp ID: D234-01	Dilution Factor: 1
Lab File ID: RDY412	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.593	0.5000	119	70-130
4-BROMOFLUOROBENZENE	0.496	0.5000	99.3	70-130
TOLUENE-D8	0.478	0.5000	95.6	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/13/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D234	Date Extracted: 04/26/21 15:31
Sample ID: T451MW03S-041321-0	Date Analyzed: 04/26/21 15:31
Lab Samp ID: D234-02	Dilution Factor: 1
Lab File ID: RDY413	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.581	0.5000	116	70-130
4-BROMOFLUOROBENZENE	0.491	0.5000	98.3	70-130
TOLUENE-D8	0.467	0.5000	93.4	70-130

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: 04/13/21
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/20/21
Batch No. : 21D234	Date Extracted: 04/26/21 11:28
Sample ID: TB-041321-0	Date Analyzed: 04/26/21 11:28
Lab Samp ID: D234-03	Dilution Factor: 1
Lab File ID: RDY403	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.513	0.5000	103	70-130
4-BROMOFLUOROBENZENE	0.519	0.5000	104	70-130
TOLUENE-D8	0.483	0.5000	96.6	70-130

QC SUMMARIES

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: NA
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/26/21
Batch No. : 21D234	Date Extracted: 04/26/21 10:15
Sample ID: MBLK1W	Date Analyzed: 04/26/21 10:15
Lab Samp ID: VOF5D20B	Dilution Factor: 1
Lab File ID: RDY400	Matrix : WATER
Ext Btch ID: VOF5D20	% Moisture : NA
Calib. Ref.: RDY191	Instrument ID : TOF5

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.464	0.5000	92.8	70-130
4-BROMOFLUOROBENZENE	0.534	0.5000	107	70-130
TOLUENE-D8	0.491	0.5000	98.2	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TESTAMERICA, INC.
PROJECT: NW PIPE COMPANY GW MONITORING
BATCH NO.: 21D234
METHOD: SW5030B/8260B SIM

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VOF5D20B	VOF5D20X	VOF5D20C		
LAB FILE ID:	RDY400	RDY401	RDY398		
DATE EXTRACTED:	04/26/2110:15	04/26/2110:40	04/26/2109:27	DATE COLLECTED:	NA
DATE ANALYZED:	04/26/2110:15	04/26/2110:40	04/26/2109:27	DATE RECEIVED:	04/26/21
PREP. BATCH:	VOF5D20	VOF5D20	VOF5D20		
CALIB. REF:	RDY191	RDY191	RDY191		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.496	99	0.500	0.556	111	12	70-130	20
Vinyl Chloride	ND	0.500	0.502	100	0.500	0.540	108	7	60-140	20
Tetrachloroethene	ND	0.500	0.470	94	0.500	0.505	101	7	70-130	20
TCE	ND	0.500	0.455	91	0.500	0.502	100	10	70-130	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	0.500	0.454	91	0.500	0.463	93	70-130
4-Bromofluorobenzene	0.500	0.531	106	0.500	0.543	109	70-130
Toluene-d8	0.500	0.490	98	0.500	0.498	100	70-130

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-102028-1
Client Project/Site: Northwest Pipe Company GW 2021

For:
Jacobs Engineering Group, Inc.
1501 W Fountainhead Parkway
Suite 401
Tempe, Arizona 85282

Attn: Bernice Kidd

Authorized for release by:
4/21/2021 5:05:20 PM

Pauline Matlock, Project Manager
(253)922-2310
pauline.matlock@eurofinset.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 580-102028-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-102028-1

Comments
No additional comments.

Receipt
The sample was received on 3/26/2021 9:40 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.6º C.

Air Toxics
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 580-353010 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister
See attached subcontract report.

Definitions/Glossary

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102028-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102028-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: NWP-PSG-EB
Lab Sample ID: 580-102028-1
Date Collected: 03/25/21 15:40
Matrix: Water
Date Received: 03/26/21 09:40

Method: RSK-175 - Dissolved Gases (GC) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.13**	**J**	1.0	0.078	ug/L			04/06/21 16:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.71**	**J F1**	1.5	0.43	mg/L			03/26/21 17:07	1
NO3 as N	**0.054**	**J**	0.20	0.030	mg/L			03/26/21 17:07	1
Sulfate	ND		1.5	0.80	mg/L			03/26/21 17:07	1
Total Organic Carbon	**0.22**		0.10	0.050	mg/L			04/07/21 10:44	1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 570-141249/4
Matrix: Water
Analysis Batch: 141249

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		1.0	0.078	ug/L			04/06/21 11:00	1

Lab Sample ID: LCS 570-141249/2
Matrix: Water
Analysis Batch: 141249

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Methane			12.9	12.2		ug/L		94	80 - 120		

Lab Sample ID: LCSD 570-141249/3
Matrix: Water
Analysis Batch: 141249

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane			12.9	12.3		ug/L		95	80 - 120	1	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-353009/6
Matrix: Water
Analysis Batch: 353009

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NO3 as N	ND		0.20	0.030	mg/L			03/26/21 17:42	1

Lab Sample ID: LCS 580-353009/7
Matrix: Water
Analysis Batch: 353009

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
NO3 as N			5.00	4.54		mg/L		91	90 - 110		

Lab Sample ID: LCSD 580-353009/8
Matrix: Water
Analysis Batch: 353009

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NO3 as N			5.00	4.80		mg/L		96	90 - 110	6	15

Lab Sample ID: 580-102028-1 MS
Matrix: Water
Analysis Batch: 353009

Client Sample ID: NWP-PSG-EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
NO3 as N	0.054	J	5.00	4.86		mg/L		96	90 - 110		

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 580-102028-1 MSD
Matrix: Water
Analysis Batch: 353009

Client Sample ID: NWP-PSG-EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NO3 as N	0.054	J	5.00	5.17		mg/L		102	90 - 110	6	15

Lab Sample ID: MB 580-353010/6
Matrix: Water
Analysis Batch: 353010

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5	0.43	mg/L			03/26/21 17:42	1
Sulfate	ND		1.5	0.80	mg/L			03/26/21 17:42	1

Lab Sample ID: LCS 580-353010/7
Matrix: Water
Analysis Batch: 353010

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	50.6		mg/L		101	90 - 110
Sulfate	50.0	48.0		mg/L		96	90 - 110

Lab Sample ID: LCSD 580-353010/8
Matrix: Water
Analysis Batch: 353010

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	50.0	54.9		mg/L		110	90 - 110	8	15
Sulfate	50.0	53.9		mg/L		108	90 - 110	12	15

Lab Sample ID: 580-102028-1 MS
Matrix: Water
Analysis Batch: 353010

Client Sample ID: NWP-PSG-EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	0.71	J F1	50.0	56.8	F1	mg/L		112	90 - 110
Sulfate	ND		50.0	54.3		mg/L		109	90 - 110

Lab Sample ID: 580-102028-1 MSD
Matrix: Water
Analysis Batch: 353010

Client Sample ID: NWP-PSG-EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	0.71	J F1	50.0	53.6		mg/L		106	90 - 110	6	15
Sulfate	ND		50.0	46.9		mg/L		94	90 - 110	14	15

Method: SM 5310C - TOC

Lab Sample ID: MB 440-643448/9
Matrix: Water
Analysis Batch: 643448

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		0.10	0.050	mg/L			04/07/21 10:33	1

Method: SM 5310C - TOC (Continued)

Lab Sample ID: LCS 440-643448/8
Matrix: Water
Analysis Batch: 643448

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			5.00	5.32		mg/L		106	85 - 115		

Lab Sample ID: MRL 440-643448/7
Matrix: Water
Analysis Batch: 643448

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			0.100	0.138		mg/L		138	50 - 150		

Lab Sample ID: 580-102028-1 MS
Matrix: Water
Analysis Batch: 643448

Client Sample ID: NWP-PSG-EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon	0.20		5.00	5.71		mg/L		110	85 - 115		

Lab Sample ID: 580-102028-1 MSD
Matrix: Water
Analysis Batch: 643448

Client Sample ID: NWP-PSG-EB
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	0.20		5.00	5.43		mg/L		104	85 - 115	5	20

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 580-102028-1
Project/Site: Northwest Pipe Company GW 2021

Client Sample ID: NWP-PSG-EB
Lab Sample ID: 580-102028-1
Date Collected: 03/25/21 15:40
Matrix: Water
Date Received: 03/26/21 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175	RA	1	141249	04/06/21 16:27	I9H5	ECL 2
Total/NA	Analysis	300.0		1	353009	03/26/21 17:07	AAC	TAL SEA
Total/NA	Analysis	300.0		1	353010	03/26/21 17:07	AAC	TAL SEA
Total/NA	Analysis	SM 5310C		1	643448	04/07/21 10:44	YO8L	TAL IRV

Laboratory References:

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

EMAX Lab. = EMAX Laboratories Inc, 1835 W. 205th Street, Torrance, CA 90501

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-102028-1
Project/Site: Northwest Pipe Company GW 2021

Laboratory: Eurofins FGS, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	WA100007	11-05-21

Laboratory: Eurofins Calscience Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4028 - 009	01-29-22

Laboratory: Eurofins Calscience LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	CA300001	01-30-22

Sample Summary

Client: Jacobs Engineering Group, Inc.
Project/Site: Northwest Pipe Company GW 2021

Job ID: 580-102028-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-102028-1	NWP-PSG-EB	Water	03/25/21 15:40	03/26/21 09:40	

EMAX
LABORATORIES, INC.®
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889

Date: 04-21-2021
EMAX Batch No.: 21C353

Attn: Kris Allen

TestAmerica, Inc.
5755 8th Street East
Tacoma WA 98424

Subject: Laboratory Report
Project: NW PIPE COMPANY GW MONITORING

Enclosed is the Laboratory report for samples received on 03/31/21.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
NWP-PSG-EB (580-102028-1)	C353-01	03/25/21	WATER	VOC SIM

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

Caspar J. Pang
Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that results included in this report meets all TNI & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number CA002912020-17
ANAB Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing
California ELAP Accredited Certificate Number 2672

21C353

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 253-922-5047

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-88489.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: EMAX Laboratories Inc		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102028-1
Address: 1835 W. 205th Street, ,	Due Date Requested: 4/9/2021			
City: Torrance	TAT Requested (days):			
State, Zip: CA, 90501				
Phone:	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (TCE, cis 1,2-DCE, PCE, Vinyl Chloride - low level) TCE, cis 1,2-DCE, PCE, Vinyl Chloride -	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
NWP-PSG-EB (580-102028-1)	3/25/21	15:40 Pacific		Water			X	3	Please provide CH2 Lab Spec EDD if possible.//

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	3-30-21	TASe2			
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by: [signature]	Date/Time: 03/31/21 9:30	Company EMAX
				Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

temp. 3.8

SAMPLE RECEIPT FORM 1

Reference: EMAX-SM02 Rev.11
Form: SM02F1

Type of Delivery	Airbill / Tracking Number	ECN 21C353
☒ Fedex ☐ UPS ☐ GSO ☐ Others	5008 1328 0719	Recipient Maria Rivera
☐ EMAX Courier ☐ Client Delivery		Date 03/31/21 Time 9:30

COC INSPECTION

☒ Client Name	☒ Client PM/FC	☐ Sampler Name	☒ Sampling Date/Time	☒ Sample ID	☒ Matrix
☒ Address	☒ Tel # / Fax #	☐ Courier Signature	☒ Analysis Required	☐ Preservative (if any)	☐ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☒ Cooler	☐ Box	☐ Other		
Condition	☒ Custody Seal	☐ Intact	☐ Damaged		
Packaging	☐ Bubble Pack	☒ Styrofoam	☐ Popcorn	☐ Sufficient	☒ bag
Temperatures (Cool, ≤6 °C but not frozen)	☒ Cooler 1 3.8 °C	☐ Cooler 2 ____ °C	☐ Cooler 3 ____ °C	☐ Cooler 4 ____ °C	☐ Cooler 5 ____ °C
	☐ Cooler 6 ____ °C	☐ Cooler 7 ____ °C	☐ Cooler 8 ____ °C	☐ Cooler 9 ____ °C	☐ Cooler 10 ____ °C
Thermometer:	(A) - S/N 200291758	B - S/N 200291755	C - S/N ____	D - S/N ____	

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action
1	1-3	D7	One label reads 13:40,	R1
			2nd label is correct with	15:40

3/31/21

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS:

LEGEND:

Code	Description- Sample Management
D1	Analysis is not indicated in _____
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in _____
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in _____
(D7)	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
D10	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in _____
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	_____
D23	_____
D24	_____

☐ **Continue to next page.**

Code	Description-Sample Management
R1	Proceed as indicated in ☒ COC ☐ Label
R2	Refer to attached instruction
R3	Cancel the analysis
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	_____
R9	_____
R10	_____
R11	_____
R12	_____

REVIEWS:

Sample Labeling Maria Rivera
Date 03/31/21 3/31/21

SRF
Date 3/31/21

PM
Date 3/31/21


ORIGIN ID:TCMA (253) 922-2310
SAMPLE RECEIVING
EUROFINS TESTAMERICA- SEATTLE
5755 8TH ST E
FIFE, WA 98424
UNITED STATES US
SHIP DATE: 30MAR21
ACTWGT: 14.40 LB
CAD: 989746/CAFE3409
BILL SENDER
TO SHIPPING/RECEIVING
EMAX LABORATORIES INC
1835 W. 205TH STREET
TORRANCE CA 90501
(253) 922-2310
PO: NO
REF: 8580-42795
3.8 Soaked
FedEx
Express
TRK# 0201 5008 1328 0719
WED - 31 MAR 10:30A
PRIORITY OVERNIGHT
92 HHRA
90501
CA-US LAX

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

TESTAMERICA, INC.

NW PIPE COMPANY GW MONITORING

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

SDG#: 21C353

CASE NARRATIVE

Client : TESTAMERICA, INC.

Project: NW PIPE COMPANY GW MONITORING

SDG : 21C353

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

One(1) water sample was received on 03/31/21 to be analyzed for Volatile Organics by GC/MS SIM in accordance with Method SW5030B/8260B SIM and project specific requirements.

Holding Time
The sample was analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument tune check was performed prior to calibration. Result was within acceptance criteria. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried out at a frequency required by the project. All project calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. VO05D03B - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. VO05D03L/VO05D03C were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample
No matrix QC sample was provided on this SDG.

Surrogate
Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis
The sample was analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.
Project : NW PIPE COMPANY GW MONITORING

SDG NO. : 21C353
Instrument ID : 05

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	V005D03B	1	NA	04/05/2111:54	04/05/2111:54	RDQ031	RDQ020	V005D03	Method Blank
LCS1W	V005D03L	1	NA	04/05/2110:39	04/05/2110:39	RDQ028	RDQ020	V005D03	Lab Control Sample (LCS)
LCD1W	V005D03C	1	NA	04/05/2111:04	04/05/2111:04	RDQ029	RDQ020	V005D03	LCS Duplicate
NWP-PSG-EB (580-102028-1)	C353-01	1	NA	04/05/2112:18	04/05/2112:18	RDQ032	RDQ020	V005D03	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client	: TESTAMERICA, INC.	Date Collected:	03/25/21
Project	: NW PIPE COMPANY GW MONITORING	Date Received:	03/31/21
Batch No.	: 21C353	Date Extracted:	04/05/21 12:18
Sample ID:	NWP-PSG-EB (580-102028-1)	Date Analyzed:	04/05/21 12:18
Lab Samp ID:	C353-01	Dilution Factor:	1
Lab File ID:	RDQ032	Matrix :	WATER
Ext Btch ID:	VOO5D03	% Moisture :	NA
Calib. Ref.:	RDQ020	Instrument ID :	T-005

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.464	0.5000	92.8	70-130
4-BROMOFLUOROBENZENE	0.484	0.5000	96.8	70-130
TOLUENE-D8	0.472	0.5000	94.5	70-130

QC SUMMARIES

METHOD SW5030B/8260B SIM
VOLATILE ORGANICS BY GC/MS SIM

Client : TESTAMERICA, INC.	Date Collected: NA
Project : NW PIPE COMPANY GW MONITORING	Date Received: 04/05/21
Batch No. : 21C353	Date Extracted: 04/05/21 11:54
Sample ID: MBLK1W	Date Analyzed: 04/05/21 11:54
Lab Samp ID: V005D03B	Dilution Factor: 1
Lab File ID: RDQ031	Matrix : WATER
Ext Btch ID: V005D03	% Moisture : NA
Calib. Ref.: RDQ020	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
CIS-1,2-DICHLOROETHYLENE	ND	0.20	0.10
VINYL CHLORIDE	ND	0.10	0.020
TETRACHLOROETHENE	ND	0.20	0.10
TCE	ND	0.20	0.10

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	0.459	0.5000	91.7	70-130
4-BROMOFLUOROBENZENE	0.478	0.5000	95.6	70-130
TOLUENE-D8	0.463	0.5000	92.6	70-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: TESTAMERICA, INC.
PROJECT: NW PIPE COMPANY GW MONITORING
BATCH NO.: 21C353
METHOD: SW5030B/8260B SIM

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	V005D03B	V005D03L	V005D03C		
LAB FILE ID:	RDQ031	RDQ028	RDQ029		
DATE EXTRACTED:	04/05/2111:54	04/05/2110:39	04/05/2111:04	DATE COLLECTED:	NA
DATE ANALYZED:	04/05/2111:54	04/05/2110:39	04/05/2111:04	DATE RECEIVED:	04/05/21
PREP. BATCH:	V005D03	V005D03	V005D03		
CALIB. REF:	RDQ020	RDQ020	RDQ020		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
cis-1,2-Dichloroethylene	ND	0.500	0.457	91	0.500	0.456	91	0	70-130	20
Vinyl Chloride	ND	0.500	0.464	93	0.500	0.437	87	6	60-140	20
Tetrachloroethene	ND	0.500	0.489	98	0.500	0.453	91	7	70-130	20
TCE	ND	0.500	0.463	93	0.500	0.448	90	3	70-130	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichloroethane-d4	0.500	0.459	92	0.500	0.451	90	70-130
4-Bromofluorobenzene	0.500	0.474	95	0.500	0.475	95	70-130
Toluene-d8	0.500	0.476	95	0.500	0.465	93	70-130

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Brandon Jones-Stanley	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-42614-13620.3
Client Contact: Shannon Fitzsimmons	Phone: 541-760-7130	E-Mail: pauline.matlock@eurofinset.com	State of Origin: OK	Page: Page 3 of 3
Company: Jacobs Engineering Group, Inc.	PWSID:			Job #:
Address: 2020 SW Fourth Ave, 3rd Floor	Due Date Requested: STD			
City: Portland	TAT Requested (days):			
State, Zip: OR, 97201	Compliance Project: Δ Yes Δ No			
Phone: 503-872-4666(Tel)	PO #: 3600021519			
Email: Shannon.Fitzsimmons@jacobs.com	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Loc: 580
102028

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	5310C - TOC	RSK_175 - Methane	300.0_28D - Chloride, Sulfate	300_48HR - Nitrate, NO3 as N	SUBCONTRACT (EMAX)- TCE, cis 1,2-DCE, PCE, Vinyl Chloride (8260B_SIM)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	A	N	S	A		X	
NWP-BSG-EB	3/25/21	1540	G	Water			X	X	X	X	X		
				Water									
				Water									
				Water									

580-102028 Chain of Custody

Therm. ID: 92 Cor: 3.6 ° Unc: 4.0 °
Cooler Dsc: Sm Blue
Packing: bub
Cust. Seal: Yes No
Blue Ice (Wet) Dry, None
FedEx: PO
UPS:
Lab Cour:
Other:

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	[signature]	3/25/21 1640	Jacobs	Tom Blank	3/26/21 0940	ETAS
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

eurofins

Environment Testing
TestAmerica

ORIGIN ID:TCMA (253) 922-2310
SAMPLE RECEIVING
EUROFINS TESTAMERICA- SEATTLE
5755 8TH ST E
FIFE, WA 98424
UNITED STATES US

SHIP DATE: 29MAR21
ACTWGT: 8.05 LB
CAD: 9897467/CAFE3402

BILL SENDER

TO SHIPPING/RECEIVING
EUROFINS CALSCIENCE LLC
7440 LINCOLN WAY
GARDEN GROVE CA 92841
(714) 895-5494
PO YES
REF: 8580-42783

TRK# 0201 5008 1328 0579

TUE - 30 MAR
PRIORITY OVER

92 APVA

CA-US SNA

92701

Seal 3/29/21

ATURE

TestAmerica
THE LEADER IN ENVIRON
4847

580-102028 Waybill

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma WA 98424
Phone: 253-922-2310 Fax: 253-922-5047

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s): 5608 1328 0557	COC No: 580-88395.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): NELAP Oregon		Job #: 580-102028-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 4/8/2021			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261 1022(Tel) 949-260-3297(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A	HCL	M	Hexane
B	NaOH	N	None
C	Zn Acetate	O	AsNaO2
D	Nitric Acid	P	Na2O4S
E	NaHSO4	Q	Na2SO3
F	MeOH	R	Na2S2O3
G	Amchlor	S	H2SO4
H	Ascorbic Acid	T	TSP Dodecahydrate
I	Ice	U	Acetone
J	DI Water	V	MCAA
K	EDTA	W	pH 4-5
L	EDA	Z	other (specify)

Other:

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	5310C/ TOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
NWP-PSG-EB (580-102028-1)	3/25/21	15:40 Pacific		Water			X	1	TB 3/29/21

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I II III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Tony Blanchard	3/29/21	ETA Sea		3/30/21 0915	ECIRV
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact:	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks:
☐ Yes ☐ No		08/10 IR-93

Ver: 11/01/2020

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone 253-922-2310 Fax. 253-922-5047

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-88398 1
Client Contact: Shipping/Receiving	Phone:	E-Mail: pauline.matlock@eurofinset.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): NELAP - Oregon		Job #: 580-102028-1
Address: 7440 Lincoln Way, ,	Due Date Requested: 4/8/2021			
City: Garden Grove	TAT Requested (days):			
State, Zip: CA, 92841				
Phone: 714-895-5494(Tel) 714-894-7501(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company GW 2021	Project #: 58016285			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ Methane	Total Number of containers	Special Instructions/Note:
		Preservation Code:							
NWP-PSG-EB[redacted]	3/25/21	15:40 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested I, II, III, IV, Other (specify) Primary Deliverable Rank. 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Tom Bamforth	3/19/21			3/20/21 10:00	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No. 484778	Cooler Temperature(s) °C and Other Remarks: 4-7/3-6 SG

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc. Job Number: 580-102028-1

Login Number: 102028 **List Source: Eurofins TestAmerica, Seattle**
List Number: 1
Creator: Hobbs, Kenneth F

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102028-1

Login Number: 102028
List Number: 3
Creator: Cortez Diaz, Antonio

List Source: Eurofins Calscience
List Creation: 03/30/21 12:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	484778
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-102028-1

Login Number: 102028
List Number: 2
Creator: Skinner, Alma D

List Source: Eurofins Irvine
List Creation: 03/30/21 09:20 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix B

Passive Soil Gas Analytical Data

Beacon Environmental
2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Beacon Proposal No.: 201009R01

Laboratory Work Order: 0005717R

Project Description:
Northwest Pipe
Portland, OR

Client PO No.: NWP21002

Prepared for:
Kris Ivarson
Jacobs
2020 SW Fourth Avenue, Suite 300
Portland, OR 97201-4973

Ryan W. Schneider
Senior Project Manager

April 26, 2021
Report amended to add Level IV

All data meet requirements as specified in the Beacon Environmental Quality Assurance Project Plan and the results relate only to the samples reported. The work performed was in accordance with ISO/IEC 17025:2017, except samples were analyzed within a 24-hour tune window. This report shall not be reproduced, except in full, without written approval of the laboratory. Release of the data contained in this data package has been authorized by the Laboratory Director or his signee, as verified by the following signatures:

Steven C. Thornley
Laboratory Director

Peter B. Kelly
Interim Quality Manager

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BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Summary

Lab Sample ID	Client Sample ID	Received	Analysis	Matrix
0005717-01	Trip-1	04/08/2021	EPA 8260C	Air
Sampler Type:	Beacon Passive Sampler			
0005717-02	Trip-2	04/08/2021	EPA 8260C	Air
Sampler Type:	Beacon Passive Sampler			
0005717-03	NWP_PSG01-03262021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-04	NWP_PSG02-03262021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-05	NWP_PSG03-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-06	NWP_PSG04-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-07	NWP_PSG05-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-08	NWP_PSG06-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-09	NWP_PSG07-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-10	NWP_PSG08-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-11	NWP_PSG09-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-12	NWP_PSG10-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-13	NWP_PSG11-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-14	NWP_PSG12-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-15	NWP_PSG13-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-16	NWP_PSG14-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-17	NWP_PSG15-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-18	NWP_PSG16-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-19	NWP_PSG17-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-20	NWP_PSG18-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID	Client Sample ID	Received	Analysis	Matrix
0005717-21	NWP_PSG19-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-22	NWP_PSG20-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-23	NWP_PSG21-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-24	NWP_PSG22-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-25	NWP_PSG23-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-26	NWP_PSG24-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-27	NWP_PSG25-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-28	NWP_PSG26-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-29	NWP_PSG27-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-30	NWP_PSG28-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-31	NWP_PSG29-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-32	NWP_PSG30-03242021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-33	NWP_PSG31-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-34	NWP_PSG32-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-35	NWP_PSG33-03262021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-36	NWP_PSG34-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-37	NWP_PSG35-03252021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-38	NWP_PSG36-03262021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-39	NWP_PSG37-03262021	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-40	NWP_PSG01-03262021-Dup	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			
0005717-41	NWP_PSG16-03242021-Dup	04/08/2021	EPA 8260C	Soil Gas
Sampler Type:	Beacon Passive Sampler			

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Project Completeness

Samples Received: 41
Samples Analyzed: 41

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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Case Narrative

U.S. EPA Method 8260C

All samples were analyzed using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation following U.S. EPA Method 8260C, with laboratory results provided in nanograms (ng). Laboratory QA/QC procedures included internal standards, surrogates, and blanks based on EPA Method 8260C. Analyses and reporting were in accordance with BEACON's Quality Assurance Project Plan.

Passive Soil-Gas Survey Notes

If sample locations are covered with or near the edge of an impervious surface (*e.g.*, asphalt or concrete), the concentrations of compounds in soil gas are higher than if the surfacing was not present. Therefore, the sample location conditions should be considered when comparing results between locations.

Survey findings are exclusive to this project and when the spatial relationships are compared with results of other BEACON Surveys it is necessary to incorporate information from both investigations (*e.g.*, depth to sources, soil types, porosity, soil moisture, presence of impervious surfacing, sample collection times).

Reporting Limits

The RLs represent a baseline above which results meet laboratory-determined limits of precision and accuracy. Field sample measurements above the upper calibration standard are estimated; however, these values are reported without qualifiers because all reported measurements are relative to each other and are appropriate to meet the survey objectives of locating source areas and vapor intrusion pathways and defining the lateral extent of the contamination.

Project Details

Samples were received in proper condition and laboratory control parameters were met unless otherwise noted below. The work performed was in accordance with ISO/IEC 17025:2017, except samples were analyzed within a 24-hour tune window. Sample chromatograms are included in the Raw Data section.

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

STATEMENT OF DATA QUALIFICATIONS

Qualifier Summary:

Analysis: EPA 8260C / Soil-Gas Sample Analysis by EPA Method 8260C

0005717-28 **NWP_PSG26-03252021**

Compound	Q	Q Explanation
1,2-DCA-d4	S4	Matrix interference caused surrogate recovery outside control limits.

0005717-29 **NWP_PSG27-03252021**

Compound	Q	Q Explanation
1,2-DCA-d4	S4	Matrix interference caused surrogate recovery outside control limits.

0005717-36 **NWP_PSG34-03252021**

Compound	Q	Q Explanation
1,2-DCA-d4	S4	Matrix interference caused surrogate recovery outside control limits.

0005717-38 **NWP_PSG36-03262021**

Compound	Q	Q Explanation
1,2-DCA-d4	S4	Matrix interference caused surrogate recovery outside control limits.

End of Case Narrative

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Analytical Results

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Summary of Compound Detections - Mass

Lab Sample ID: 0005717-03 **NWP_PSG01-03262021** Method: EPA 8260C

Soil Gas

Analyte	CAS#	Result (ng)	Q	RT	LOQ (ng)	Analyzed	File ID
Trichloroethene	79-01-6	**446**		4.125	10	04/12/2021 15:58	C21041207.D
Tetrachloroethene	127-18-4	**10,900**		5.804	10	04/12/2021 15:58	C21041207.D

Lab Sample ID: 0005717-04 **NWP_PSG02-03262021** Method: EPA 8260C

Soil Gas

Analyte	CAS#	Result (ng)	Q	RT	LOQ (ng)	Analyzed	File ID
cis-1,2-Dichloroethene	156-59-2	**25**		2.937	10	04/12/2021 16:22	C21041208.D
Trichloroethene	79-01-6	**1,180**		4.125	10	04/12/2021 16:22	C21041208.D
Tetrachloroethene	127-18-4	**7,370**		5.798	10	04/12/2021 16:22	C21041208.D

Lab Sample ID: 0005717-05 **NWP_PSG03-03242021** Method: EPA 8260C

Soil Gas

Analyte	CAS#	Result (ng)	Q	RT	LOQ (ng)	Analyzed	File ID
Tetrachloroethene	127-18-4	**17**		5.798	10	04/12/2021 16:46	C21041209.D

Lab Sample ID: 0005717-11 **NWP_PSG09-03252021** Method: EPA 8260C

Soil Gas

Analyte	CAS#	Result (ng)	Q	RT	LOQ (ng)	Analyzed	File ID
Tetrachloroethene	127-18-4	**136**		5.792	10	04/12/2021 19:10	C21041215.D

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-12 **NWP_PSG10-03252021** Method: EPA 8260C

Soil Gas

Analyte	CAS#	Result (ng)	Q	RT	LOQ (ng)	Analyzed	File ID
Trichloroethene	79-01-6	**24**		4.125	10	04/12/2021 19:34	C21041216.D
Tetrachloroethene	127-18-4	**674**		5.792	10	04/12/2021 19:34	C21041216.D

Lab Sample ID: 0005717-40 **NWP_PSG01-03262021-Dup** Method: EPA 8260C

Soil Gas

Analyte	CAS#	Result (ng)	Q	RT	LOQ (ng)	Analyzed	File ID
Trichloroethene	79-01-6	**170**		4.122	10	04/14/2021 10:43	C21041355.D
Tetrachloroethene	127-18-4	**9,950**		5.801	10	04/14/2021 10:43	C21041355.D

Lab Sample ID: 0005717-41 **NWP_PSG16-03242021-Dup** Method: EPA 8260C

Soil Gas

Analyte	CAS#	Result (ng)	Q	RT	LOQ (ng)	Analyzed	File ID
Tetrachloroethene	127-18-4	**17**		5.795	10	04/14/2021 11:07	C21041356.D

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CERTIFICATE OF ANALYSIS

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2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Data Summary Table- Mass

Compound	Frequency	LOQ (ng)	Max Value (ng)
cis-1,2-Dichloroethene	1	10	25
Trichloroethene	3	10	1,180
Tetrachloroethene	5	10	10,900

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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Detailed Analytical Results

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Detailed Analytical Results- Mass

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-01

Trip-1

Air

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 15:10	C21041205.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 15:10	C21041205.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 15:10	C21041205.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 15:10	C21041205.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*107%*	*70-130*		*0.00*	*04/12/2021 15:10*	*C21041205.D*
Surrogate: Toluene-d8	2037-26-5	*90.9%*	*70-130*		*0.00*	*04/12/2021 15:10*	*C21041205.D*
Surrogate: Bromofluorobenzene	460-00-4	*81.4%*	*70-130*		*0.00*	*04/12/2021 15:10*	*C21041205.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-02

Trip-2

Air

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 15:34	C21041206.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 15:34	C21041206.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 15:34	C21041206.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 15:34	C21041206.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*107%*	*70-130*		*0.00*	*04/12/2021 15:34*	*C21041206.D*
Surrogate: Toluene-d8	2037-26-5	*92.4%*	*70-130*		*0.00*	*04/12/2021 15:34*	*C21041206.D*
Surrogate: Bromofluorobenzene	460-00-4	*81.2%*	*70-130*		*0.00*	*04/12/2021 15:34*	*C21041206.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-03

NWP_PSG01-03262021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 15:58	C21041207.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 15:58	C21041207.D
Trichloroethene	79-01-6	**446**		10	0.00	04/12/2021 15:58	C21041207.D
Tetrachloroethene	127-18-4	**10,900**		10	0.00	04/12/2021 15:58	C21041207.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*107%*	*70-130*		*0.00*	*04/12/2021 15:58*	*C21041207.D*
Surrogate: Toluene-d8	2037-26-5	*85.9%*	*70-130*		*0.00*	*04/12/2021 15:58*	*C21041207.D*
Surrogate: Bromofluorobenzene	460-00-4	*85.7%*	*70-130*		*0.00*	*04/12/2021 15:58*	*C21041207.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-04

NWP_PSG02-03262021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 16:22	C21041208.D
cis-1,2-Dichloroethene	156-59-2	**25**		10	0.00	04/12/2021 16:22	C21041208.D
Trichloroethene	79-01-6	**1,180**		10	0.00	04/12/2021 16:22	C21041208.D
Tetrachloroethene	127-18-4	**7,370**		10	0.00	04/12/2021 16:22	C21041208.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*102%*	*70-130*		*0.00*	*04/12/2021 16:22*	*C21041208.D*
Surrogate: Toluene-d8	2037-26-5	*87.9%*	*70-130*		*0.00*	*04/12/2021 16:22*	*C21041208.D*
Surrogate: Bromofluorobenzene	460-00-4	*87.2%*	*70-130*		*0.00*	*04/12/2021 16:22*	*C21041208.D*

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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-05

NWP_PSG03-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 16:46	C21041209.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 16:46	C21041209.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 16:46	C21041209.D
Tetrachloroethene	127-18-4	**17**		10	0.00	04/12/2021 16:46	C21041209.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*104%*	*70-130*		*0.00*	*04/12/2021 16:46*	*C21041209.D*
Surrogate: Toluene-d8	2037-26-5	*89.2%*	*70-130*		*0.00*	*04/12/2021 16:46*	*C21041209.D*
Surrogate: Bromofluorobenzene	460-00-4	*84.8%*	*70-130*		*0.00*	*04/12/2021 16:46*	*C21041209.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-06

NWP_PSG04-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 17:10	C21041210.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 17:10	C21041210.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 17:10	C21041210.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 17:10	C21041210.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*96.3%*	*70-130*		*0.00*	*04/12/2021 17:10*	*C21041210.D*
Surrogate: Toluene-d8	2037-26-5	*89.3%*	*70-130*		*0.00*	*04/12/2021 17:10*	*C21041210.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.4%*	*70-130*		*0.00*	*04/12/2021 17:10*	*C21041210.D*

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-07

NWP_PSG05-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 17:33	C21041211.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 17:33	C21041211.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 17:33	C21041211.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 17:33	C21041211.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*89.4%*	*70-130*		*0.00*	*04/12/2021 17:33*	*C21041211.D*
Surrogate: Toluene-d8	2037-26-5	*91.9%*	*70-130*		*0.00*	*04/12/2021 17:33*	*C21041211.D*
Surrogate: Bromofluorobenzene	460-00-4	*87.5%*	*70-130*		*0.00*	*04/12/2021 17:33*	*C21041211.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-08

NWP_PSG06-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 17:57	C21041212.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 17:57	C21041212.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 17:57	C21041212.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 17:57	C21041212.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*100%*	*70-130*		*0.00*	*04/12/2021 17:57*	*C21041212.D*
Surrogate: Toluene-d8	2037-26-5	*91.3%*	*70-130*		*0.00*	*04/12/2021 17:57*	*C21041212.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.4%*	*70-130*		*0.00*	*04/12/2021 17:57*	*C21041212.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-09

NWP_PSG07-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 18:21	C21041213.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 18:21	C21041213.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 18:21	C21041213.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 18:21	C21041213.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*89.2%*	*70-130*		*0.00*	*04/12/2021 18:21*	*C21041213.D*
Surrogate: Toluene-d8	2037-26-5	*88.3%*	*70-130*		*0.00*	*04/12/2021 18:21*	*C21041213.D*
Surrogate: Bromofluorobenzene	460-00-4	*85.7%*	*70-130*		*0.00*	*04/12/2021 18:21*	*C21041213.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-10

NWP_PSG08-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 18:45	C21041214.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 18:45	C21041214.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 18:45	C21041214.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 18:45	C21041214.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*98.4%*	*70-130*		*0.00*	*04/12/2021 18:45*	*C21041214.D*
Surrogate: Toluene-d8	2037-26-5	*91.5%*	*70-130*		*0.00*	*04/12/2021 18:45*	*C21041214.D*
Surrogate: Bromofluorobenzene	460-00-4	*83.5%*	*70-130*		*0.00*	*04/12/2021 18:45*	*C21041214.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-11

NWP_PSG09-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 19:10	C21041215.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 19:10	C21041215.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 19:10	C21041215.D
Tetrachloroethene	127-18-4	**136**		10	0.00	04/12/2021 19:10	C21041215.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*105%*	*70-130*		*0.00*	*04/12/2021 19:10*	*C21041215.D*
Surrogate: Toluene-d8	2037-26-5	*88.0%*	*70-130*		*0.00*	*04/12/2021 19:10*	*C21041215.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.1%*	*70-130*		*0.00*	*04/12/2021 19:10*	*C21041215.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-12

NWP_PSG10-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 19:34	C21041216.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 19:34	C21041216.D
Trichloroethene	79-01-6	**24**		10	0.00	04/12/2021 19:34	C21041216.D
Tetrachloroethene	127-18-4	**674**		10	0.00	04/12/2021 19:34	C21041216.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*104%*	*70-130*		*0.00*	*04/12/2021 19:34*	*C21041216.D*
Surrogate: Toluene-d8	2037-26-5	*87.7%*	*70-130*		*0.00*	*04/12/2021 19:34*	*C21041216.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.5%*	*70-130*		*0.00*	*04/12/2021 19:34*	*C21041216.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-13

NWP_PSG11-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 19:59	C21041217.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 19:59	C21041217.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 19:59	C21041217.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 19:59	C21041217.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*96.1%*	*70-130*		*0.00*	*04/12/2021 19:59*	*C21041217.D*
Surrogate: Toluene-d8	2037-26-5	*88.1%*	*70-130*		*0.00*	*04/12/2021 19:59*	*C21041217.D*
Surrogate: Bromofluorobenzene	460-00-4	*87.1%*	*70-130*		*0.00*	*04/12/2021 19:59*	*C21041217.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-14

NWP_PSG12-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 20:23	C21041218.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 20:23	C21041218.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 20:23	C21041218.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 20:23	C21041218.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*97.6%*	*70-130*		*0.00*	*04/12/2021 20:23*	*C21041218.D*
Surrogate: Toluene-d8	2037-26-5	*87.4%*	*70-130*		*0.00*	*04/12/2021 20:23*	*C21041218.D*
Surrogate: Bromofluorobenzene	460-00-4	*84.0%*	*70-130*		*0.00*	*04/12/2021 20:23*	*C21041218.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-15

NWP_PSG13-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 20:47	C21041219.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 20:47	C21041219.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 20:47	C21041219.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 20:47	C21041219.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*94.2%*	*70-130*		*0.00*	*04/12/2021 20:47*	*C21041219.D*
Surrogate: Toluene-d8	2037-26-5	*89.8%*	*70-130*		*0.00*	*04/12/2021 20:47*	*C21041219.D*
Surrogate: Bromofluorobenzene	460-00-4	*85.7%*	*70-130*		*0.00*	*04/12/2021 20:47*	*C21041219.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-16

NWP_PSG14-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 21:11	C21041220.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 21:11	C21041220.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 21:11	C21041220.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 21:11	C21041220.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*86.5%*	*70-130*		*0.00*	*04/12/2021 21:11*	*C21041220.D*
Surrogate: Toluene-d8	2037-26-5	*85.9%*	*70-130*		*0.00*	*04/12/2021 21:11*	*C21041220.D*
Surrogate: Bromofluorobenzene	460-00-4	*90.5%*	*70-130*		*0.00*	*04/12/2021 21:11*	*C21041220.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-17

NWP_PSG15-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 21:34	C21041221.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 21:34	C21041221.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 21:34	C21041221.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 21:34	C21041221.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*89.0%*	*70-130*		*0.00*	*04/12/2021 21:34*	*C21041221.D*
Surrogate: Toluene-d8	2037-26-5	*89.0%*	*70-130*		*0.00*	*04/12/2021 21:34*	*C21041221.D*
Surrogate: Bromofluorobenzene	460-00-4	*88.6%*	*70-130*		*0.00*	*04/12/2021 21:34*	*C21041221.D*

BEACON ENVIRONMENTAL

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Forest Hill, MD 21050 USA
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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-18

NWP_PSG16-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 21:58	C21041222.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 21:58	C21041222.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 21:58	C21041222.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 21:58	C21041222.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*91.8%*	*70-130*		*0.00*	*04/12/2021 21:58*	*C21041222.D*
Surrogate: Toluene-d8	2037-26-5	*90.2%*	*70-130*		*0.00*	*04/12/2021 21:58*	*C21041222.D*
Surrogate: Bromofluorobenzene	460-00-4	*88.1%*	*70-130*		*0.00*	*04/12/2021 21:58*	*C21041222.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-19

NWP_PSG17-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 22:22	C21041223.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 22:22	C21041223.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 22:22	C21041223.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 22:22	C21041223.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*101%*	*70-130*		*0.00*	*04/12/2021 22:22*	*C21041223.D*
Surrogate: Toluene-d8	2037-26-5	*85.8%*	*70-130*		*0.00*	*04/12/2021 22:22*	*C21041223.D*
Surrogate: Bromofluorobenzene	460-00-4	*88.6%*	*70-130*		*0.00*	*04/12/2021 22:22*	*C21041223.D*

BEACON ENVIRONMENTAL

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Forest Hill, MD 21050 USA
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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-20

NWP_PSG18-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 22:46	C21041224.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 22:46	C21041224.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 22:46	C21041224.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 22:46	C21041224.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*97.8%*	*70-130*		*0.00*	*04/12/2021 22:46*	*C21041224.D*
Surrogate: Toluene-d8	2037-26-5	*89.0%*	*70-130*		*0.00*	*04/12/2021 22:46*	*C21041224.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.2%*	*70-130*		*0.00*	*04/12/2021 22:46*	*C21041224.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-21

NWP_PSG19-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 23:11	C21041225.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 23:11	C21041225.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 23:11	C21041225.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 23:11	C21041225.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*97.2%*	*70-130*		*0.00*	*04/12/2021 23:11*	*C21041225.D*
Surrogate: Toluene-d8	2037-26-5	*87.1%*	*70-130*		*0.00*	*04/12/2021 23:11*	*C21041225.D*
Surrogate: Bromofluorobenzene	460-00-4	*83.1%*	*70-130*		*0.00*	*04/12/2021 23:11*	*C21041225.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-22

NWP_PSG20-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 23:35	C21041226.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 23:35	C21041226.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 23:35	C21041226.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 23:35	C21041226.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*105%*	*70-130*		*0.00*	*04/12/2021 23:35*	*C21041226.D*
Surrogate: Toluene-d8	2037-26-5	*87.7%*	*70-130*		*0.00*	*04/12/2021 23:35*	*C21041226.D*
Surrogate: Bromofluorobenzene	460-00-4	*83.8%*	*70-130*		*0.00*	*04/12/2021 23:35*	*C21041226.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-23

NWP_PSG21-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/12/2021 23:59	C21041227.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/12/2021 23:59	C21041227.D
Trichloroethene	79-01-6	<10		10	0.00	04/12/2021 23:59	C21041227.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/12/2021 23:59	C21041227.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*95.3%*	*70-130*		*0.00*	*04/12/2021 23:59*	*C21041227.D*
Surrogate: Toluene-d8	2037-26-5	*86.4%*	*70-130*		*0.00*	*04/12/2021 23:59*	*C21041227.D*
Surrogate: Bromofluorobenzene	460-00-4	*89.0%*	*70-130*		*0.00*	*04/12/2021 23:59*	*C21041227.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-24

NWP_PSG22-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 00:23	C21041228.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 00:23	C21041228.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 00:23	C21041228.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 00:23	C21041228.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*94.6%*	*70-130*		*0.00*	*04/13/2021 00:23*	*C21041228.D*
Surrogate: Toluene-d8	2037-26-5	*88.3%*	*70-130*		*0.00*	*04/13/2021 00:23*	*C21041228.D*
Surrogate: Bromofluorobenzene	460-00-4	*85.8%*	*70-130*		*0.00*	*04/13/2021 00:23*	*C21041228.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-25

NWP_PSG23-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 00:47	C21041229.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 00:47	C21041229.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 00:47	C21041229.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 00:47	C21041229.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*98.0%*	*70-130*		*0.00*	*04/13/2021 00:47*	*C21041229.D*
Surrogate: Toluene-d8	2037-26-5	*86.9%*	*70-130*		*0.00*	*04/13/2021 00:47*	*C21041229.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.5%*	*70-130*		*0.00*	*04/13/2021 00:47*	*C21041229.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-26

NWP_PSG24-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 01:11	C21041230.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 01:11	C21041230.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 01:11	C21041230.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 01:11	C21041230.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*87.5%*	*70-130*		*0.00*	*04/13/2021 01:11*	*C21041230.D*
Surrogate: Toluene-d8	2037-26-5	*88.6%*	*70-130*		*0.00*	*04/13/2021 01:11*	*C21041230.D*
Surrogate: Bromofluorobenzene	460-00-4	*87.8%*	*70-130*		*0.00*	*04/13/2021 01:11*	*C21041230.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-27

NWP_PSG25-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 01:35	C21041231.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 01:35	C21041231.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 01:35	C21041231.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 01:35	C21041231.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*81.7%*	*70-130*		*0.00*	*04/13/2021 01:35*	*C21041231.D*
Surrogate: Toluene-d8	2037-26-5	*84.6%*	*70-130*		*0.00*	*04/13/2021 01:35*	*C21041231.D*
Surrogate: Bromofluorobenzene	460-00-4	*90.1%*	*70-130*		*0.00*	*04/13/2021 01:35*	*C21041231.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-28

NWP_PSG26-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 01:59	C21041232.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 01:59	C21041232.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 01:59	C21041232.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 01:59	C21041232.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*65.4%*	*70-130*	*S4*	*0.00*	*04/13/2021 01:59*	*C21041232.D*
Surrogate: Toluene-d8	2037-26-5	*86.7%*	*70-130*		*0.00*	*04/13/2021 01:59*	*C21041232.D*
Surrogate: Bromofluorobenzene	460-00-4	*88.6%*	*70-130*		*0.00*	*04/13/2021 01:59*	*C21041232.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-29

NWP_PSG27-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 02:23	C21041233.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 02:23	C21041233.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 02:23	C21041233.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 02:23	C21041233.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*55.8%*	*70-130*	*S4*	*0.00*	*04/13/2021 02:23*	*C21041233.D*
Surrogate: Toluene-d8	2037-26-5	*88.4%*	*70-130*		*0.00*	*04/13/2021 02:23*	*C21041233.D*
Surrogate: Bromofluorobenzene	460-00-4	*87.7%*	*70-130*		*0.00*	*04/13/2021 02:23*	*C21041233.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-30

NWP_PSG28-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 02:47	C21041234.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 02:47	C21041234.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 02:47	C21041234.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 02:47	C21041234.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*90.4%*	*70-130*		*0.00*	*04/13/2021 02:47*	*C21041234.D*
Surrogate: Toluene-d8	2037-26-5	*89.1%*	*70-130*		*0.00*	*04/13/2021 02:47*	*C21041234.D*
Surrogate: Bromofluorobenzene	460-00-4	*88.0%*	*70-130*		*0.00*	*04/13/2021 02:47*	*C21041234.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-31

NWP_PSG29-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 03:12	C21041235.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 03:12	C21041235.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 03:12	C21041235.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 03:12	C21041235.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*88.7%*	*70-130*		*0.00*	*04/13/2021 03:12*	*C21041235.D*
Surrogate: Toluene-d8	2037-26-5	*88.0%*	*70-130*		*0.00*	*04/13/2021 03:12*	*C21041235.D*
Surrogate: Bromofluorobenzene	460-00-4	*87.9%*	*70-130*		*0.00*	*04/13/2021 03:12*	*C21041235.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-32

NWP_PSG30-03242021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 03:36	C21041236.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 03:36	C21041236.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 03:36	C21041236.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 03:36	C21041236.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*90.4%*	*70-130*		*0.00*	*04/13/2021 03:36*	*C21041236.D*
Surrogate: Toluene-d8	2037-26-5	*86.3%*	*70-130*		*0.00*	*04/13/2021 03:36*	*C21041236.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.8%*	*70-130*		*0.00*	*04/13/2021 03:36*	*C21041236.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-33

NWP_PSG31-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 04:00	C21041237.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 04:00	C21041237.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 04:00	C21041237.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 04:00	C21041237.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*81.6%*	*70-130*		*0.00*	*04/13/2021 04:00*	*C21041237.D*
Surrogate: Toluene-d8	2037-26-5	*90.4%*	*70-130*		*0.00*	*04/13/2021 04:00*	*C21041237.D*
Surrogate: Bromofluorobenzene	460-00-4	*83.1%*	*70-130*		*0.00*	*04/13/2021 04:00*	*C21041237.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-34

NWP_PSG32-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 04:24	C21041238.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 04:24	C21041238.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 04:24	C21041238.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 04:24	C21041238.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*94.0%*	*70-130*		*0.00*	*04/13/2021 04:24*	*C21041238.D*
Surrogate: Toluene-d8	2037-26-5	*88.9%*	*70-130*		*0.00*	*04/13/2021 04:24*	*C21041238.D*
Surrogate: Bromofluorobenzene	460-00-4	*85.7%*	*70-130*		*0.00*	*04/13/2021 04:24*	*C21041238.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-35

NWP_PSG33-03262021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 04:48	C21041239.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 04:48	C21041239.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 04:48	C21041239.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 04:48	C21041239.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*103%*	*70-130*		*0.00*	*04/13/2021 04:48*	*C21041239.D*
Surrogate: Toluene-d8	2037-26-5	*86.2%*	*70-130*		*0.00*	*04/13/2021 04:48*	*C21041239.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.6%*	*70-130*		*0.00*	*04/13/2021 04:48*	*C21041239.D*

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-36

NWP_PSG34-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 05:12	C21041240.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 05:12	C21041240.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 05:12	C21041240.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 05:12	C21041240.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*66.3%*	*70-130*	*S4*	*0.00*	*04/13/2021 05:12*	*C21041240.D*
Surrogate: Toluene-d8	2037-26-5	*98.2%*	*70-130*		*0.00*	*04/13/2021 05:12*	*C21041240.D*
Surrogate: Bromofluorobenzene	460-00-4	*88.2%*	*70-130*		*0.00*	*04/13/2021 05:12*	*C21041240.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-37

NWP_PSG35-03252021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 05:36	C21041241.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 05:36	C21041241.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 05:36	C21041241.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 05:36	C21041241.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*82.4%*	*70-130*		*0.00*	*04/13/2021 05:36*	*C21041241.D*
Surrogate: Toluene-d8	2037-26-5	*118%*	*70-130*		*0.00*	*04/13/2021 05:36*	*C21041241.D*
Surrogate: Bromofluorobenzene	460-00-4	*85.3%*	*70-130*		*0.00*	*04/13/2021 05:36*	*C21041241.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-38

NWP_PSG36-03262021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 06:00	C21041242.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 06:00	C21041242.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 06:00	C21041242.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 06:00	C21041242.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*66.7%*	*70-130*	*S4*	*0.00*	*04/13/2021 06:00*	*C21041242.D*
Surrogate: Toluene-d8	2037-26-5	*87.5%*	*70-130*		*0.00*	*04/13/2021 06:00*	*C21041242.D*
Surrogate: Bromofluorobenzene	460-00-4	*90.2%*	*70-130*		*0.00*	*04/13/2021 06:00*	*C21041242.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-39

NWP_PSG37-03262021

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/13/2021 06:24	C21041243.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/13/2021 06:24	C21041243.D
Trichloroethene	79-01-6	<10		10	0.00	04/13/2021 06:24	C21041243.D
Tetrachloroethene	127-18-4	<10		10	0.00	04/13/2021 06:24	C21041243.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*80.7%*	*70-130*		*0.00*	*04/13/2021 06:24*	*C21041243.D*
Surrogate: Toluene-d8	2037-26-5	*88.1%*	*70-130*		*0.00*	*04/13/2021 06:24*	*C21041243.D*
Surrogate: Bromofluorobenzene	460-00-4	*85.7%*	*70-130*		*0.00*	*04/13/2021 06:24*	*C21041243.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-40

NWP_PSG01-03262021-Dup

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/14/2021 10:43	C21041355.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/14/2021 10:43	C21041355.D
Trichloroethene	79-01-6	**170**		10	0.00	04/14/2021 10:43	C21041355.D
Tetrachloroethene	127-18-4	**9,950**		10	0.00	04/14/2021 10:43	C21041355.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*107%*	*70-130*		*0.00*	*04/14/2021 10:43*	*C21041355.D*
Surrogate: Toluene-d8	2037-26-5	*87.5%*	*70-130*		*0.00*	*04/14/2021 10:43*	*C21041355.D*
Surrogate: Bromofluorobenzene	460-00-4	*86.4%*	*70-130*		*0.00*	*04/14/2021 10:43*	*C21041355.D*

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab Sample ID: 0005717-41

NWP_PSG16-03242021-Dup

Soil Gas

Method: EPA 8260C

Analyte	CAS#	Result (ng)	Q	LOQ (ng)	RRT Eval	Analyzed	File ID
Vinyl Chloride	75-01-4	<10		10	0.00	04/14/2021 11:07	C21041356.D
cis-1,2-Dichloroethene	156-59-2	<10		10	0.00	04/14/2021 11:07	C21041356.D
Trichloroethene	79-01-6	<10		10	0.00	04/14/2021 11:07	C21041356.D
Tetrachloroethene	127-18-4	**17**		10	0.00	04/14/2021 11:07	C21041356.D

Analyte	*CAS#*	*% Recovery*	*Recovery Limits*	*Q*	*RRT Eval*	*Analyzed*	*File ID*
Surrogate: 1,2-DCA-d4	17060-07-0	*100%*	*70-130*		*0.00*	*04/14/2021 11:07*	*C21041356.D*
Surrogate: Toluene-d8	2037-26-5	*88.7%*	*70-130*		*0.00*	*04/14/2021 11:07*	*C21041356.D*
Surrogate: Bromofluorobenzene	460-00-4	*88.7%*	*70-130*		*0.00*	*04/14/2021 11:07*	*C21041356.D*

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

QC Information/Summary

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Soil-Gas Sample Analysis by EPA Method 8260C - Quality Control Summary

Analyte	Result	LOQ	LOD	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sequence: B21D004 - Instrument: C System - File ID: 21040116.D												
B21D004-ICV1 (LCSD/Second Source Verification/CALV)												
Vinyl Chloride	60.9	10	5	2.5	ng	50.0		122	70-130			
cis-1,2-Dichloroethene	49.6	10	5	2.5	ng	50.0		99.1	70-130			
Trichloroethene	48.1	10	5	2.5	ng	50.0		96.2	70-130			
Tetrachloroethene	51.9	10	5	2.5	ng	50.0		104	70-130			
Surrogate: 1,2-DCA-d4	*51.1*				*ng*	50.0		*102*	*70-130*			
Surrogate: Toluene-d8	*52.9*				*ng*	50.0		*106*	*70-130*			
Surrogate: Bromofluorobenzene	*48.4*				*ng*	50.0		*96.7*	*70-130*			

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Soil-Gas Sample Analysis by EPA Method 8260C - Quality Control Summary

Analyte	Result	LOQ	LOD	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sequence: B21D004 - Instrument: C System - File ID: 21040117.D												
B21D004-ICB1 (Lab Blank/Initial Calibration Blank)												
Vinyl Chloride	<5	10	5	2.5	ng							U
cis-1,2-Dichloroethene	<5	10	5	2.5	ng							U
Trichloroethene	<5	10	5	2.5	ng							U
Tetrachloroethene	<5	10	5	2.5	ng							U
Surrogate: 1,2-DCA-d4	*100*				*ng*	100		*100*	*70-130*			
Surrogate: Toluene-d8	*96.9*				*ng*	100		*96.9*	*70-130*			
Surrogate: Bromofluorobenzene	*91.5*				*ng*	100		*91.5*	*70-130*			

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Soil-Gas Sample Analysis by EPA Method 8260C - Quality Control Summary

Analyte	Result	LOQ	LOD	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sequence: B21D035 - Batch: 21D0032 - Instrument: C System - File ID: C21041202.D												
21D0032-BS1 (LCS, Calibration Source Verification)												
Vinyl Chloride	42.9	10	5	2.5	ng	50.0		85.7	80-120			
cis-1,2-Dichloroethene	53.6	10	5	2.5	ng	50.0		107	80-120			
Trichloroethene	49.7	10	5	2.5	ng	50.0		99.4	80-120			
Tetrachloroethene	51.7	10	5	2.5	ng	50.0		103	80-120			
Surrogate: 1,2-DCA-d4	*54.4*				*ng*	50.0		*109*	*70-130*			
Surrogate: Toluene-d8	*47.9*				*ng*	50.0		*95.8*	*70-130*			
Surrogate: Bromofluorobenzene	*43.2*				*ng*	50.0		*86.4*	*70-130*			

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Soil-Gas Sample Analysis by EPA Method 8260C - Quality Control Summary

Analyte	Result	LOQ	LOD	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sequence: B21D035 - Batch: 21D0032 - Instrument: C System - File ID: C21041203.D												
21D0032-BLK1 (Lab Blank)												
Vinyl Chloride	<5	10	5	2.5	ng							
cis-1,2-Dichloroethene	<5	10	5	2.5	ng							
Trichloroethene	<5	10	5	2.5	ng							
Tetrachloroethene	<5	10	5	2.5	ng							
Surrogate: 1,2-DCA-d4	*105*				*ng*	100		*105*	*70-130*			
Surrogate: Toluene-d8	*96.1*				*ng*	100		*96.1*	*70-130*			
Surrogate: Bromofluorobenzene	*81.6*				*ng*	100		*81.6*	*70-130*			

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Soil-Gas Sample Analysis by EPA Method 8260C - Quality Control Summary

Analyte	Result	LOQ	LOD	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sequence: B21D035 - Instrument: C System - File ID: C21041204.D												
B21D035-ICV1 (LCSD/Second Source Verification/CALV)												
Vinyl Chloride	44.1	10	5	2.5	ng	50.0		88.1	70-130			
cis-1,2-Dichloroethene	49.3	10	5	2.5	ng	50.0		98.6	70-130			
Trichloroethene	50.4	10	5	2.5	ng	50.0		101	70-130			
Tetrachloroethene	51.4	10	5	2.5	ng	50.0		103	70-130			
Surrogate: 1,2-DCA-d4	*52.2*				*ng*	50.0		*104*	*70-130*			
Surrogate: Toluene-d8	*47.8*				*ng*	50.0		*95.5*	*70-130*			
Surrogate: Bromofluorobenzene	*42.4*				*ng*	50.0		*84.8*	*70-130*			

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Soil-Gas Sample Analysis by EPA Method 8260C - Quality Control Summary

Analyte	Result	LOQ	LOD	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sequence: B21D042 - Batch: 21D0038 - Instrument: C System - File ID: C21041302.D												
21D0038-BS1 (LCS, Calibration Source Verification)												
Vinyl Chloride	47.7	10	5	2.5	ng	50.0		95.4	80-120			
cis-1,2-Dichloroethene	51.4	10	5	2.5	ng	50.0		103	80-120			
Trichloroethene	51.2	10	5	2.5	ng	50.0		102	80-120			
Tetrachloroethene	51.3	10	5	2.5	ng	50.0		103	80-120			
Surrogate: 1,2-DCA-d4	*54.4*				*ng*	50.0		*109*	*70-130*			
Surrogate: Toluene-d8	*48.1*				*ng*	50.0		*96.1*	*70-130*			
Surrogate: Bromofluorobenzene	*44.4*				*ng*	50.0		*88.8*	*70-130*			

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Soil-Gas Sample Analysis by EPA Method 8260C - Quality Control Summary

Analyte	Result	LOQ	LOD	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sequence: B21D042 - Batch: 21D0038 - Instrument: C System - File ID: C21041303.D												
21D0038-BLK1 (Lab Blank)												
Vinyl Chloride	<5	10	5	2.5	ng							
cis-1,2-Dichloroethene	<5	10	5	2.5	ng							
Trichloroethene	<5	10	5	2.5	ng							
Tetrachloroethene	<5	10	5	2.5	ng							
Surrogate: 1,2-DCA-d4	*109*				*ng*	100		*109*	*70-130*			
Surrogate: Toluene-d8	*96.6*				*ng*	100		*96.6*	*70-130*			
Surrogate: Bromofluorobenzene	*81.6*				*ng*	100		*81.6*	*70-130*			

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Soil-Gas Sample Analysis by EPA Method 8260C - Quality Control Summary

Analyte	Result	LOQ	LOD	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sequence: B21D042 - Instrument: C System - File ID: C21041304.D												
B21D042-ICV1 (LCSD/Second Source Verification/CALV)												
Vinyl Chloride	56.8	10	5	2.5	ng	50.0		114	70-130			
cis-1,2-Dichloroethene	52.2	10	5	2.5	ng	50.0		104	70-130			
Trichloroethene	49.8	10	5	2.5	ng	50.0		99.7	70-130			
Tetrachloroethene	52.7	10	5	2.5	ng	50.0		105	70-130			
Surrogate: 1,2-DCA-d4	*54.6*				*ng*	50.0		*109*	*70-130*			
Surrogate: Toluene-d8	*47.3*				*ng*	50.0		*94.6*	*70-130*			
Surrogate: Bromofluorobenzene	*42.4*				*ng*	50.0		*84.8*	*70-130*			

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

EPA 8260C - LCS/LCSD Quality Control Summary

LCS: 21D0032-BS1 ***File ID: C21041202.D*** Analyzed: 4/12/21 14:45
LCSD: B21D035-ICV1 ***File ID: C21041204.D*** Analyzed: 4/12/21 13:57

Analyte	CAS#	LCS Result (ng)	%REC	Q	Spike Level (ng)	LCSD Result (ng)	%REC	%REC Limits	RPD	RPD Limit	Q
Vinyl Chloride	75-01-4	42.85	85.7		50	44.05	88.10	80-120	2.76	30	
cis-1,2-Dichloroethene	156-59-2	53.61	107.22		50	49.31	98.60	80-120	8.36	30	
Trichloroethene	79-01-6	49.68	99.36		50	50.42	101.00	80-120	1.48	30	
Tetrachloroethene	127-18-4	51.74	103.48		50	51.36	103.00	80-120	0.74	30	

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

EPA 8260C - LCS/LCSD Quality Control Summary

LCS: 21D0038-BS1 ***File ID: C21041302.D*** Analyzed: 4/13/21 13:51
LCSD: B21D042-ICV1 ***File ID: C21041304.D*** Analyzed: 4/13/21 13:03

Analyte	CAS#	LCS Result (ng)	%REC	Q	Spike Level (ng)	LCSD Result (ng)	%REC	%REC Limits	RPD	RPD Limit	Q
Vinyl Chloride	75-01-4	47.68	95.36		50	56.75	114.00	80-120	17.37	30	
cis-1,2-Dichloroethene	156-59-2	51.40	102.8		50	52.2	104.00	80-120	1.54	30	
Trichloroethene	79-01-6	51.21	102.42		50	49.83	99.70	80-120	2.73	30	
Tetrachloroethene	127-18-4	51.28	102.56		50	52.72	105.00	80-120	2.77	30	

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Duplicate RPD Summary

Soil-Gas Sample Analysis by EPA Method 8260C

Duplicate Sample: NWP_PSG01-03262021-Dup (0005717-40) ***Sample: NWP_PSG01-03262021 (0005717-03)*** ***Average RPD:*** 24.7%

Analyte	CAS#	Duplicate Result (ng)	LOQ (ng)	Sample Result (ng)	LOQ (ng)	RPD (%)
Vinyl Chloride	75-01-4	<10	10	<10	10	0.0
cis-1,2-Dichloroethene	156-59-2	<10	10	<10	10	0.0
Trichloroethene	79-01-6	170	10	446	10	89.6
Tetrachloroethene	127-18-4	9,950	10	10,900	10	9.1

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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Duplicate RPD Summary

Soil-Gas Sample Analysis by EPA Method 8260C

Duplicate Sample: NWP_PSG16-03242021-Dup (0005717-41) ***Sample: NWP_PSG16-03242021 (0005717-18)*** ***Average RPD:*** 13.0%

Analyte	CAS#	Duplicate Result (ng)	LOQ (ng)	Sample Result (ng)	LOQ (ng)	RPD (%)
Vinyl Chloride	75-01-4	<10	10	<10	10	0.0
cis-1,2-Dichloroethene	156-59-2	<10	10	<10	10	0.0
Trichloroethene	79-01-6	<10	10	<10	10	0.0
Tetrachloroethene	127-18-4	17.0	10	<10	10	51.9

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2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

QC/CLP Tables

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Form 1
Volatile Analysis Data Package Sequence Summary

Method: EPA 8260C

Sequence: B21D035 **Instrument:** C System

Lab Sample ID	Client Sample ID	DF	File ID	QC Description
B21D035-TUN1	MS Tune	1.00	BC21041202.D	MS Tune
21D0032-BS1	LCS	1.00	C21041202.D	LCS, Calibration Source Verification
21D0032-BLK1	Blank	1.00	C21041203.D	Method Blank
B21D035-ICV1	Initial Cal Check	1.00	C21041204.D	LCSD, Second Source Verification/ICV
0005717-01	Trip-1	1.00	C21041205.D	
0005717-02	Trip-2	1.00	C21041206.D	
0005717-03	NWP_PSG01-03262021	1.00	C21041207.D	
0005717-04	NWP_PSG02-03262021	1.00	C21041208.D	
0005717-05	NWP_PSG03-03242021	1.00	C21041209.D	
0005717-06	NWP_PSG04-03242021	1.00	C21041210.D	
0005717-07	NWP_PSG05-03242021	1.00	C21041211.D	
0005717-08	NWP_PSG06-03242021	1.00	C21041212.D	
0005717-09	NWP_PSG07-03242021	1.00	C21041213.D	
0005717-10	NWP_PSG08-03242021	1.00	C21041214.D	
0005717-11	NWP_PSG09-03252021	1.00	C21041215.D	
0005717-12	NWP_PSG10-03252021	1.00	C21041216.D	
0005717-13	NWP_PSG11-03242021	1.00	C21041217.D	
0005717-14	NWP_PSG12-03242021	1.00	C21041218.D	
0005717-15	NWP_PSG13-03242021	1.00	C21041219.D	
0005717-16	NWP_PSG14-03242021	1.00	C21041220.D	
0005717-17	NWP_PSG15-03242021	1.00	C21041221.D	
0005717-18	NWP_PSG16-03242021	1.00	C21041222.D	
0005717-19	NWP_PSG17-03242021	1.00	C21041223.D	
0005717-20	NWP_PSG18-03242021	1.00	C21041224.D	
0005717-21	NWP_PSG19-03242021	1.00	C21041225.D	
0005717-22	NWP_PSG20-03252021	1.00	C21041226.D	
0005717-23	NWP_PSG21-03242021	1.00	C21041227.D	
0005717-24	NWP_PSG22-03252021	1.00	C21041228.D	
0005717-25	NWP_PSG23-03252021	1.00	C21041229.D	
0005717-26	NWP_PSG24-03252021	1.00	C21041230.D	
0005717-27	NWP_PSG25-03252021	1.00	C21041231.D	
0005717-28	NWP_PSG26-03252021	1.00	C21041232.D	
0005717-29	NWP_PSG27-03252021	1.00	C21041233.D	
0005717-30	NWP_PSG28-03252021	1.00	C21041234.D	
0005717-31	NWP_PSG29-03252021	1.00	C21041235.D	
0005717-32	NWP_PSG30-03242021	1.00	C21041236.D	
0005717-33	NWP_PSG31-03252021	1.00	C21041237.D	
0005717-34	NWP_PSG32-03252021	1.00	C21041238.D	
0005717-35	NWP_PSG33-03262021	1.00	C21041239.D	
0005717-36	NWP_PSG34-03252021	1.00	C21041240.D	
0005717-37	NWP_PSG35-03252021	1.00	C21041241.D	
0005717-38	NWP_PSG36-03262021	1.00	C21041242.D	

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Form 1

Volatile Analysis Data Package Sequence Summary

Method: EPA 8260C

Sequence: B21D035 **Instrument:** C System

Lab Sample ID	Client Sample ID	DF	File ID	QC Description
0005717-39	NWP_PSG37-03262021	1.00	C21041243.D	

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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Form 1

Volatile Analysis Data Package Sequence Summary

Method: EPA 8260C

Sequence: B21D042 **Instrument:** C System

Lab Sample ID	Client Sample ID	DF	File ID	QC Description
B21D042-TUN1	MS Tune	1.00	C21041301.D	MS Tune
21D0038-BS1	LCS	1.00	C21041302.D	LCS, Calibration Source Verification
21D0038-BLK1	Blank	1.00	C21041303.D	Method Blank
B21D042-ICV1	Initial Cal Check	1.00	C21041304.D	LCSD, Second Source Verification/ICV
0005717-40	NWP_PSG01-03262021-Dup	1.00	C21041355.D	
0005717-41	NWP_PSG16-03242021-Dup	1.00	C21041356.D	

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 2 - Form II A VOA
Volatile Deuterated Monitoring Compound Recovery Summary

Method: EPA 8260C
Sequence: B21D035

Instrument: C System
QC Limits: 70 - 130%

+ values are outside method/contract required QC limits

			% Recovery		
Lab Number	**Client Sample Name**	**File ID**	**Toluene-d8**	**BFB**	**1,2-DCA-d4**
21D0032-BS1	LCS, Primary Calibration Source	C21041202.D	96	86	109
21D0032-BLK1	Method Blank	C21041203.D	96	82	105
B21D035-ICV1	LCSD, Second Source	C21041204.D	96	85	104
0005717-01	Trip-1	C21041205.D	91	81	107
0005717-02	Trip-2	C21041206.D	92	81	107
0005717-03	NWP_PSG01-03262021	C21041207.D	86	86	107
0005717-04	NWP_PSG02-03262021	C21041208.D	88	87	102
0005717-05	NWP_PSG03-03242021	C21041209.D	89	85	104
0005717-06	NWP_PSG04-03242021	C21041210.D	89	86	96
0005717-07	NWP_PSG05-03242021	C21041211.D	92	88	89
0005717-08	NWP_PSG06-03242021	C21041212.D	91	86	100
0005717-09	NWP_PSG07-03242021	C21041213.D	88	86	89
0005717-10	NWP_PSG08-03242021	C21041214.D	92	83	98
0005717-11	NWP_PSG09-03252021	C21041215.D	88	86	105
0005717-12	NWP_PSG10-03252021	C21041216.D	88	86	104
0005717-13	NWP_PSG11-03242021	C21041217.D	88	87	96
0005717-14	NWP_PSG12-03242021	C21041218.D	87	84	98
0005717-15	NWP_PSG13-03242021	C21041219.D	90	86	94
0005717-16	NWP_PSG14-03242021	C21041220.D	86	90	86
0005717-17	NWP_PSG15-03242021	C21041221.D	89	89	89
0005717-18	NWP_PSG16-03242021	C21041222.D	90	88	92
0005717-19	NWP_PSG17-03242021	C21041223.D	86	89	101
0005717-20	NWP_PSG18-03242021	C21041224.D	89	86	98
0005717-21	NWP_PSG19-03242021	C21041225.D	87	83	97
0005717-22	NWP_PSG20-03252021	C21041226.D	88	84	105
0005717-23	NWP_PSG21-03242021	C21041227.D	86	89	95
0005717-24	NWP_PSG22-03252021	C21041228.D	88	86	95

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 2 - Form II A VOA
Volatile Deuterated Monitoring Compound Recovery Summary

Method: EPA 8260C
Sequence: B21D035

Instrument: C System
QC Limits: 70 - 130%

+ values are outside method/contract required QC limits

			% Recovery		
Lab Number	**Client Sample Name**	**File ID**	**Toluene-d8**	**BFB**	**1,2-DCA-d4**
0005717-25	NWP_PSG23-03252021	C21041229.D	87	86	98
0005717-26	NWP_PSG24-03252021	C21041230.D	89	88	88
0005717-27	NWP_PSG25-03252021	C21041231.D	85	90	82
0005717-28	NWP_PSG26-03252021	C21041232.D	87	89	65+
0005717-29	NWP_PSG27-03252021	C21041233.D	88	88	56+
0005717-30	NWP_PSG28-03252021	C21041234.D	89	88	90
0005717-31	NWP_PSG29-03252021	C21041235.D	88	88	89
0005717-32	NWP_PSG30-03242021	C21041236.D	86	87	90
0005717-33	NWP_PSG31-03252021	C21041237.D	90	83	82
0005717-34	NWP_PSG32-03252021	C21041238.D	89	86	94
0005717-35	NWP_PSG33-03262021	C21041239.D	86	87	103
0005717-36	NWP_PSG34-03252021	C21041240.D	98	88	66+
0005717-37	NWP_PSG35-03252021	C21041241.D	118	85	82
0005717-38	NWP_PSG36-03262021	C21041242.D	88	90	67+
0005717-39	NWP_PSG37-03262021	C21041243.D	88	86	81

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 2 - Form II A VOA
Volatile Deuterated Monitoring Compound Recovery Summary

Method: EPA 8260C
Sequence: B21D042

Instrument: C System
QC Limits: 70 - 130%

+ values are outside method/contract required QC limits

			% Recovery		
Lab Number	**Client Sample Name**	**File ID**	**Toluene-d8**	**BFB**	**1,2-DCA-d4**
21D0038-BS1	LCS, Primary Calibration Source	C21041302.D	96	89	109
21D0038-BLK1	Method Blank	C21041303.D	97	82	109
B21D042-ICV1	LCSD, Second Source	C21041304.D	95	85	109
0005717-40	NWP_PSG01-03262021-Dup	C21041355.D	88	86	107
0005717-41	NWP_PSG16-03242021-Dup	C21041356.D	89	89	100

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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 3 - Form III B VOA
Volatile Laboratory Control Sample Recoveries

Lab Sample No.: 21D0032-BS1 **QC Description:** LCS

Instrument: C System **Sequence:** B21D035

Method: EPA 8260C **File ID:** C21041202.D

+ values are outside method/contract required QC limits

Compound	Spike Added (ng)	Spike Result (ng)	% Recovery	Q	QC Limits	Notes
Vinyl Chloride	50.0	42.9	85.7		80 - 120	
cis-1,2-Dichloroethene	50.0	53.6	107.2		80 - 120	
Trichloroethene	50.0	49.7	99.4		80 - 120	
Tetrachloroethene	50.0	51.7	103.5		80 - 120	

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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 3 - Form III B VOA
Volatile Laboratory Control Sample Recoveries

Lab Sample No.: 21D0038-BS1 **QC Description:** LCS

Instrument: C System **Sequence:** B21D042

Method: EPA 8260C **File ID:** C21041302.D

+ values are outside method/contract required QC limits

Compound	Spike Added (ng)	Spike Result (ng)	% Recovery	Q	QC Limits	Notes
Vinyl Chloride	50.0	47.7	95.4		80 - 120	
cis-1,2-Dichloroethene	50.0	51.4	102.8		80 - 120	
Trichloroethene	50.0	51.2	102.4		80 - 120	
Tetrachloroethene	50.0	51.3	102.6		80 - 120	

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Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 3 - Form III B VOA
Volatile LCS/LCSD Recovery/RPD

Lab Sample No.: B21D035-ICV1
QC Description: LCSD, Second Source Standard
Method: EPA 8260C
Sequence: B21D035
Batch: B21D035
Instrument: C System
LCSD FileID: C21041204.D
LCS FileID: C21041202.D

+ values are outside method/contract required QC limits

Compound	Spike Added (ng)	LCS Result (ng)	LCSD Result (ng)	LCSD Recovery (%)	LCSD RPD (%)	RPD Limit (%)	LCSD Recovery Limits (%)
Vinyl Chloride	50	42.85	44.05	88.10	2.76	30	80 - 120
cis-1,2-Dichloroethene	50	53.61	49.31	98.60	8.36	30	80 - 120
Trichloroethene	50	49.68	50.42	101.00	1.48	30	80 - 120
Tetrachloroethene	50	51.74	51.36	103.00	0.74	30	80 - 120

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 3 - Form III B VOA
Volatile LCS/LCSD Recovery/RPD

Lab Sample No.: B21D042-ICV1
QC Description: LCSD, Second Source Standard
Method: EPA 8260C
Sequence: B21D042
Batch: B21D042
Instrument: C System
LCSD FileID: C21041304.D
LCS FileID: C21041302.D

+ values are outside method/contract required QC limits

Compound	Spike Added (ng)	LCS Result (ng)	LCSD Result (ng)	LCSD Recovery (%)	LCSD RPD (%)	RPD Limit (%)	LCSD Recovery Limits (%)
Vinyl Chloride	50	47.68	56.75	114.00	17.37	30	80 - 120
cis-1,2-Dichloroethene	50	51.40	52.2	104.00	1.54	30	80 - 120
Trichloroethene	50	51.21	49.83	99.70	2.73	30	80 - 120
Tetrachloroethene	50	51.28	52.72	105.00	2.77	30	80 - 120

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 3 - Form III C VOA

Volatile Laboratory Sample Duplicate Data Sheet

+ values are outside method/contract required QC limits

	Field Duplicate	Initial Sample			
Lab Number:	0005717-40	0005717-03			
Sample Name:	NWP_PSG01-03262021-Dup	NWP_PSG01-03262021			
Analyte	**Result (ng)**	**Result (ng)**	**RPD**	**RPD Limit**	**Q**
Vinyl Chloride	<10	<10		100	
cis-1,2-Dichloroethene	<10	<10		100	
Trichloroethene	170	446	89.6	87	+
Tetrachloroethene	9,950	10,900	9.1	86	

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 3 - Form III C VOA

Volatile Laboratory Sample Duplicate Data Sheet

+ values are outside method/contract required QC limits

	Field Duplicate	Initial Sample			
Lab Number:	0005717-41	0005717-18			
Sample Name:	NWP_PSG16-03242021-Dup	NWP_PSG16-03242021			
Analyte	**Result (ng)**	**Result (ng)**	**RPD**	**RPD Limit**	**Q**
Vinyl Chloride	<10	<10		100	
cis-1,2-Dichloroethene	<10	<10		100	
Trichloroethene	<10	<10		87	
Tetrachloroethene	17.0	<10		86	

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 4 - Form IV VOA

Volatile Method Blank Summary

Sequence: B21D004 **Batch:** B21D004 **Matrix:** **Analysis:**

EPA Sample No.: B21D004-ICB1 **Instrument:** C System **Date Analyzed:** 04/01/2021

Sample Name	Lab Sample Number	Lab File ID	Time Analyzed
MS Tune	B21D004-TUN1	21040101.D	10:11:00
Cal Standard	B21D004-CAL1	21040103.D	10:59:00
Cal Standard	B21D004-CAL2	21040104.D	11:23:00
Cal Standard	B21D004-CAL3	21040105.D	11:48:00
Cal Standard	B21D004-CAL4	21040106.D	12:12:00
Cal Standard	B21D004-CAL5	21040107.D	12:36:00
Cal Standard	B21D004-CAL6	21040108.D	13:00:00
Cal Standard	B21D004-CAL7	21040109.D	13:25:00
Cal Standard	B21D004-CAL8	21040110.D	13:49:00
Cal Standard	B21D004-CAL9	21040111.D	14:14:00
Cal Standard	B21D004-CALA	21040112.D	14:38:00
Cal Standard	B21D004-CALB	21040113.D	15:02:00
LCSD/Second Source Verification/CALV	B21D004-ICV1	21040116.D	16:15:00
Lab Blank/Initial Calibration Blank	B21D004-ICB1	21040117.D	16:39:00

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 4 - Form IV VOA

Volatile Method Blank Summary

Sequence: B21D035 **Batch:** B21D035 **Matrix:** Air **Analysis:** EPA 8260C

EPA Sample No.: 21D0032-BLK1 **Instrument:** C System **Date Analyzed:** 04/12/2021

Sample Name	Lab Sample Number	Lab File ID	Time Analyzed
MS Tune	B21D035-TUN1	BC21041202.D	13:57:00
LCS, Calibration Source Verification	21D0032-BS1	C21041202.D	13:57:00
Lab Blank	21D0032-BLK1	C21041203.D	14:21:00
LCSD/Second Source Verification/CALV	B21D035-ICV1	C21041204.D	14:45:00
Trip-1	0005717-01	C21041205.D	15:10:00
Trip-2	0005717-02	C21041206.D	15:34:00
NWP_PSG01-03262021	0005717-03	C21041207.D	15:58:00
NWP_PSG02-03262021	0005717-04	C21041208.D	16:22:00
NWP_PSG03-03242021	0005717-05	C21041209.D	16:46:00
NWP_PSG04-03242021	0005717-06	C21041210.D	17:10:00
NWP_PSG05-03242021	0005717-07	C21041211.D	17:33:00
NWP_PSG06-03242021	0005717-08	C21041212.D	17:57:00
NWP_PSG07-03242021	0005717-09	C21041213.D	18:21:00
NWP_PSG08-03242021	0005717-10	C21041214.D	18:45:00
NWP_PSG09-03252021	0005717-11	C21041215.D	19:10:00
NWP_PSG10-03252021	0005717-12	C21041216.D	19:34:00
NWP_PSG11-03242021	0005717-13	C21041217.D	19:59:00
NWP_PSG12-03242021	0005717-14	C21041218.D	20:23:00
NWP_PSG13-03242021	0005717-15	C21041219.D	20:47:00
NWP_PSG14-03242021	0005717-16	C21041220.D	21:11:00
NWP_PSG15-03242021	0005717-17	C21041221.D	21:34:00
NWP_PSG16-03242021	0005717-18	C21041222.D	21:58:00
NWP_PSG17-03242021	0005717-19	C21041223.D	22:22:00
NWP_PSG18-03242021	0005717-20	C21041224.D	22:46:00
NWP_PSG19-03242021	0005717-21	C21041225.D	23:11:00
NWP_PSG20-03252021	0005717-22	C21041226.D	23:35:00
NWP_PSG21-03242021	0005717-23	C21041227.D	23:59:00
NWP_PSG22-03252021	0005717-24	C21041228.D	0:23:00
NWP_PSG23-03252021	0005717-25	C21041229.D	0:47:00

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 4 - Form IV VOA

Volatile Method Blank Summary

Sequence: B21D035 **Batch:** 21D0032 **Matrix:** Air **Analysis:** EPA 8260C

EPA Sample No.: 21D0032-BLK1 **Instrument:** C System **Date Analyzed:** 04/13/2021

Sample Name	Lab Sample Number	Lab File ID	Time Analyzed
NWP_PSG24-03252021	0005717-26	C21041230.D	1:11:00
NWP_PSG25-03252021	0005717-27	C21041231.D	1:35:00
NWP_PSG26-03252021	0005717-28	C21041232.D	1:59:00
NWP_PSG27-03252021	0005717-29	C21041233.D	2:23:00
NWP_PSG28-03252021	0005717-30	C21041234.D	2:47:00
NWP_PSG29-03252021	0005717-31	C21041235.D	3:12:00
NWP_PSG30-03242021	0005717-32	C21041236.D	3:36:00
NWP_PSG31-03252021	0005717-33	C21041237.D	4:00:00
NWP_PSG32-03252021	0005717-34	C21041238.D	4:24:00
NWP_PSG33-03262021	0005717-35	C21041239.D	4:48:00
NWP_PSG34-03252021	0005717-36	C21041240.D	5:12:00
NWP_PSG35-03252021	0005717-37	C21041241.D	5:36:00
NWP_PSG36-03262021	0005717-38	C21041242.D	6:00:00
NWP_PSG37-03262021	0005717-39	C21041243.D	6:24:00

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 4 - Form IV VOA

Volatile Method Blank Summary

Sequence: B21D042 **Batch:** B21D042 **Matrix:** Soil Gas **Analysis:** EPA 8260C

EPA Sample No.: 21D0038-BLK1 **Instrument:** C System **Date Analyzed**: 04/13/2021

Sample Name	Lab Sample Number	Lab File ID	Time Analyzed
MS Tune	B21D042-TUN1	C21041301.D	12:39:00
LCS, Calibration Source Verification	21D0038-BS1	C21041302.D	13:03:00
Lab Blank	21D0038-BLK1	C21041303.D	13:27:00
LCSD/Second Source Verification/CALV	B21D042-ICV1	C21041304.D	13:51:00
NWP_PSG01-03262021-Dup	0005717-40	C21041355.D	10:43:00
NWP_PSG16-03242021-Dup	0005717-41	C21041356.D	11:07:00

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 5 - Form V VOA

Volatile Organic Instrument Performance Check (BFB)

EPA 8260C

Laboratory:	Beacon Environmental	SDG:	
Client:	Jacobs_Portland	Project Site:	Portland, OR
Lab File ID:	21040101.D	Injection Date:	04/01/21
Instrument ID:	C System	Injection Time:	10:11
Sequence:	B21D004	Lab Sample ID:	B21D004-TUN1

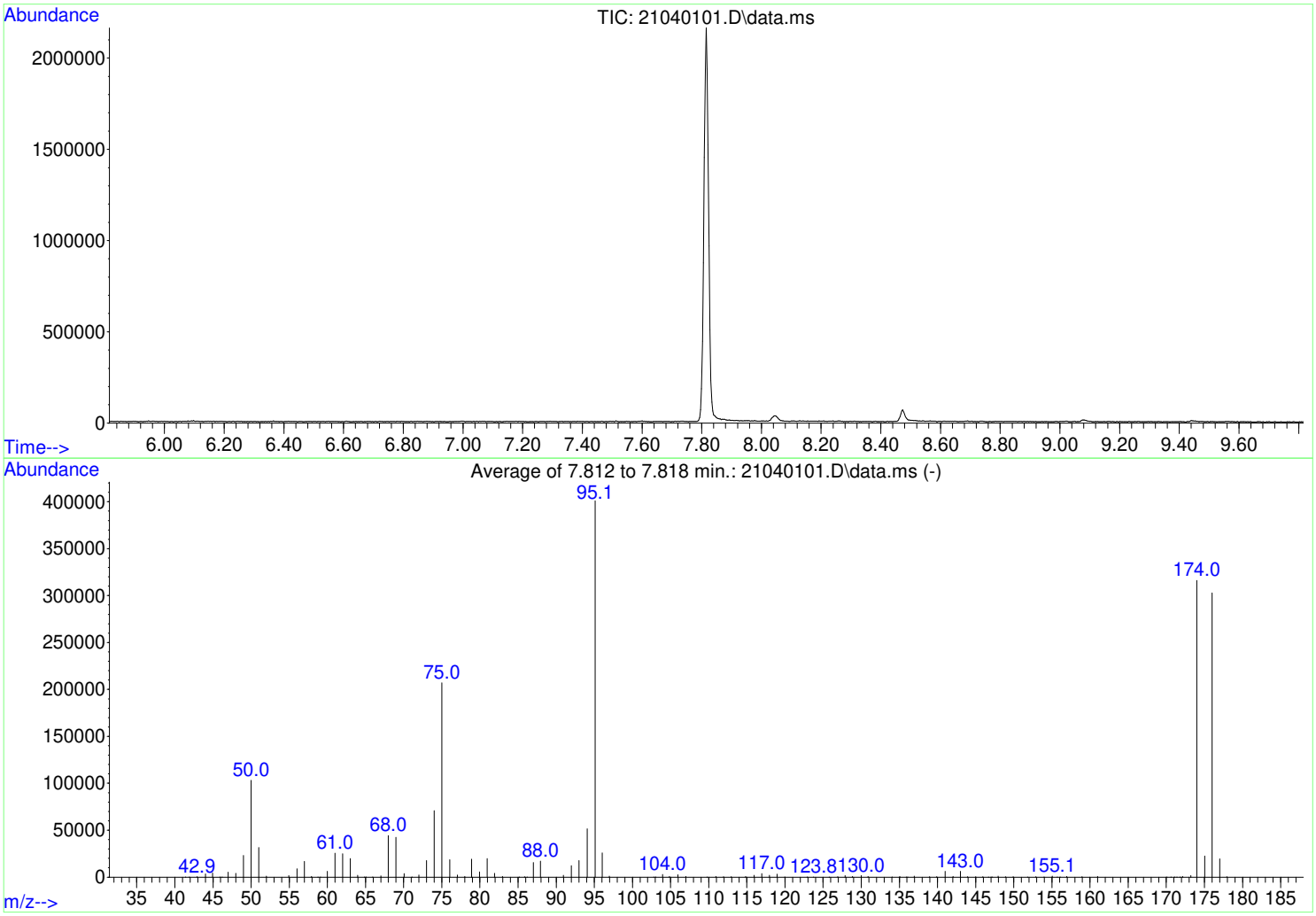
m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	25.7	PASS
75	30 - 60% of 95	51.6	PASS
95	Base peak, 100% relative abundance	100.0	PASS
96	5 - 9% of 95	6.4	PASS
173	Less than 2% of 174	0.5	PASS
174	50 - 200% of 95	78.9	PASS
175	5 - 9% of 174	7.1	PASS
176	95 - 101% of 174	95.8	PASS
177	5 - 9% of 176	6.4	PASS

BFB

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040101.D
Acq On : 01 Apr 2021 10:11 am
Operator : KAI
Sample : bfb
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: ALI9.P

Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Title : SOURCE AREA VOA ANALYSIS
Last Update : Tue Apr 06 12:09:06 2021



AutoFind: Scans 2465, 2466, 2467; Background Corrected with Scan 2455

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	25.7	103075	PASS
75	95	30	60	51.6	207040	PASS
95	95	100	100	100.0	401045	PASS
96	95	5	9	6.4	25859	PASS
173	174	0.00	2	0.5	1525	PASS
174	95	50	200	78.9	316224	PASS
175	174	5	9	7.1	22421	PASS
176	174	95	101	95.8	302955	PASS
177	176	5	9	6.4	19499	PASS

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 5 - Form V VOA
Volatile Organic Instrument Performance Check (BFB)
EPA 8260C

Laboratory:	Beacon Environmental	SDG:	
Client:	Jacobs_Portland	Project Site:	Portland, OR
Lab File ID:	BC21041202.D	Injection Date:	04/12/21
Instrument ID:	C System	Injection Time:	13:57
Sequence:	B21D035	Lab Sample ID:	B21D035-TUN1

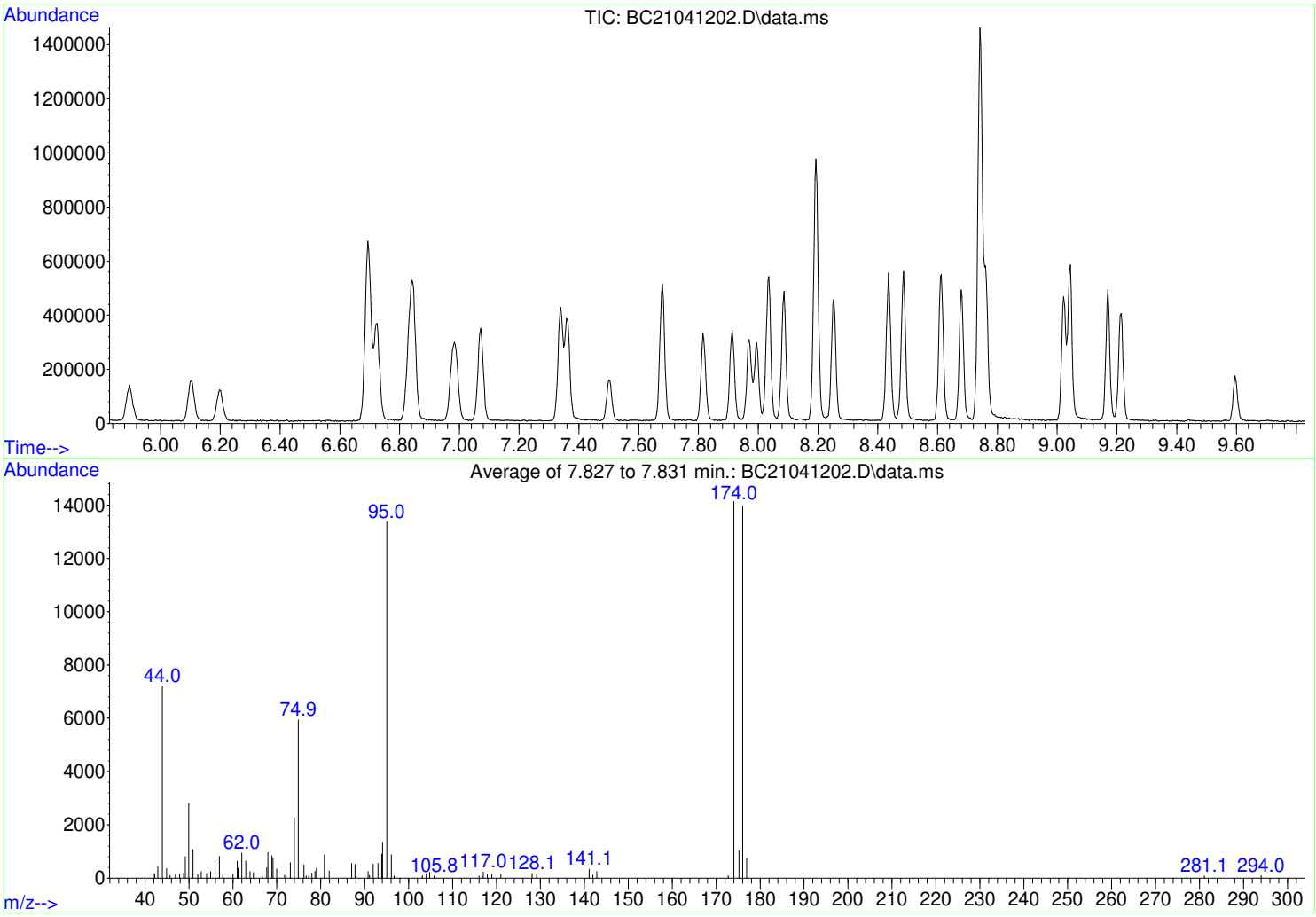
m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	20.9	PASS
75	30 - 60% of 95	44.4	PASS
95	Base peak, 100% relative abundance	100.0	PASS
96	5 - 9% of 95	6.6	PASS
173	Less than 2% of 174	0.6	PASS
174	50 - 200% of 95	105.7	PASS
175	5 - 9% of 174	7.3	PASS
176	95 - 101% of 174	98.7	PASS
177	5 - 9% of 176	5.3	PASS

BFB

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : BC21041202.D
Acq On : 12 Apr 2021 01:57 pm
Operator : KAI
Sample : B21D035-TUN1
Misc : BFB
ALS Vial : 2 Sample Multiplier: 1

Integration File: ALI9.P

Method : Z:\msdchem\S_system\5975s_210329_STD LIST_8260C.M
Title : SOURCE AREA VOA ANALYSIS
Last Update : Tue Mar 30 16:23:05 2021



Spectrum Information: Average of 7.827 to 7.831 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	20.9	2803	PASS
75	95	30	60	44.4	5942	PASS
95	95	100	100	100.0	13379	PASS
96	95	5	9	6.6	879	PASS
173	174	0.00	2	0.6	88	PASS
174	95	50	200	105.7	14145	PASS
175	174	5	9	7.3	1030	PASS
176	174	95	102	98.7	13959	PASS
177	176	5	9	5.3	746	PASS

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 5 - Form V VOA

Volatile Organic Instrument Performance Check (BFB)

EPA 8260C

Laboratory:	Beacon Environmental	SDG:	
Client:	Jacobs_Portland	Project Site:	Portland, OR
Lab File ID:	C21041301.D	Injection Date:	04/13/21
Instrument ID:	C System	Injection Time:	12:39
Sequence:	B21D042	Lab Sample ID:	B21D042-TUN1

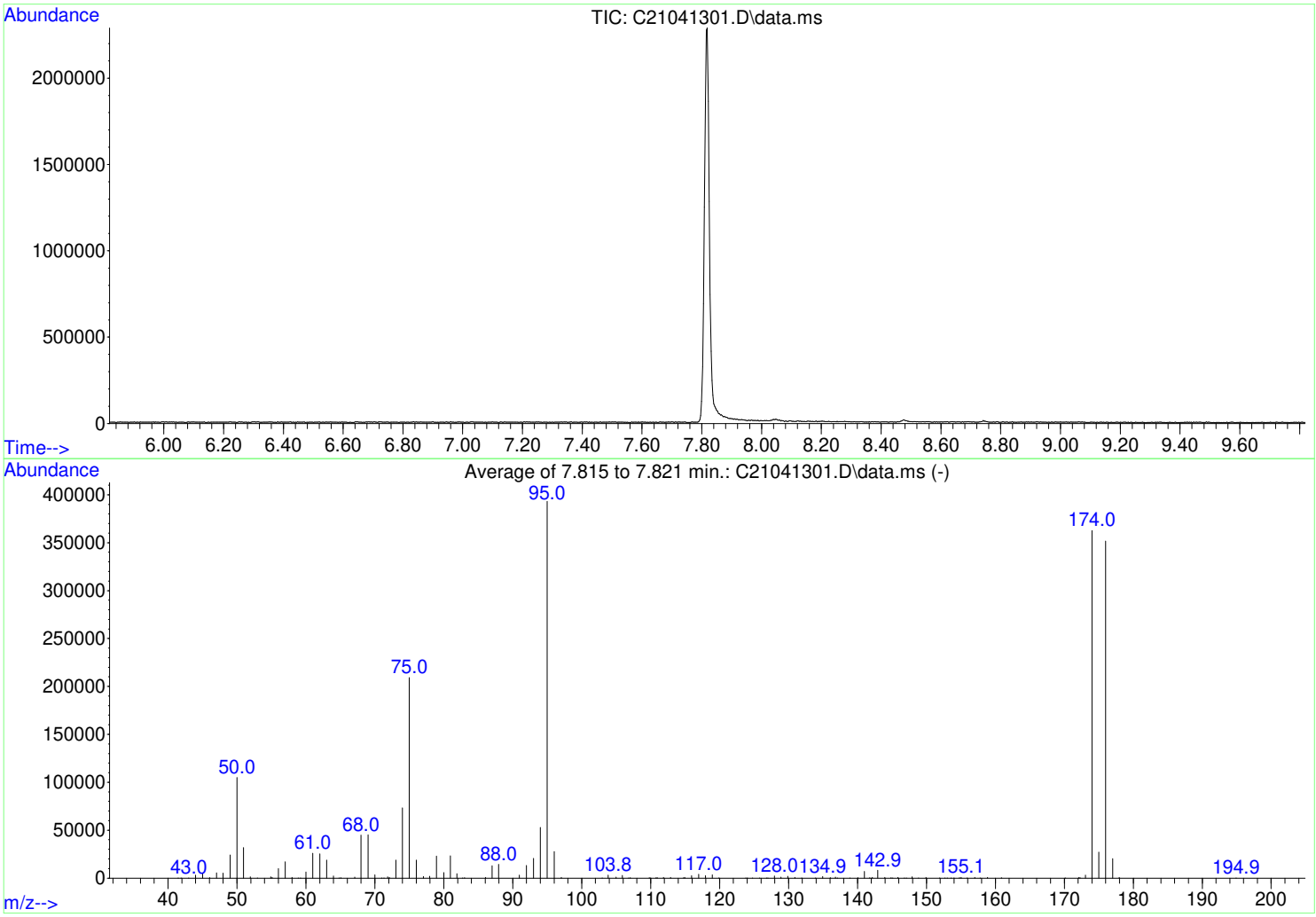
m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	26.7	PASS
75	30 - 60% of 95	53.2	PASS
95	Base peak, 100% relative abundance	100.0	PASS
96	5 - 9% of 95	7.0	PASS
173	Less than 2% of 174	0.9	PASS
174	50 - 200% of 95	92.2	PASS
175	5 - 9% of 174	7.5	PASS
176	95 - 101% of 174	97.0	PASS
177	5 - 9% of 176	5.8	PASS

BFB

Data Path : Z:\GCMS\data\21\04\C210413\
Data File : C21041301.D
Acq On : 13 Apr 2021 12:39 pm
Operator : KAI
Sample : B21D037-TUN1
Misc : BFB
ALS Vial : 1 Sample Multiplier: 1

Integration File: ALI9.P

Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Title : SOURCE AREA VOA ANALYSIS
Last Update : Tue Apr 06 12:09:06 2021



Spectrum Information: Average of 7.815 to 7.821 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	26.7	104983	PASS
75	95	30	60	53.2	209195	PASS
95	95	100	100	100.0	393173	PASS
96	95	5	9	7.0	27696	PASS
173	174	0.00	2	0.9	3203	PASS
174	95	50	200	92.2	362517	PASS
175	174	5	9	7.5	27099	PASS
176	174	95	101	97.0	351787	PASS
177	176	5	9	5.8	20317	PASS

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 5 - Form IV VOA
Volatile Organic Instrument Performance Check (BFB) Sequence Summary

Sequence: B21D004 **Batch:** B21D004 **Matrix:** Air

EPA Sample No.: B21D004-TUN1 **Instrument:** C System **Date Analyzed**: 04/01/2021

+ values are outside method/contract required QC limits

	Lab Sample Number	Lab File ID	Time Analyzed	Tune to Analysis (hr)	Q
B21D004-TUN1	B21D004-TUN1	21040101.D	10:11:00	0.00	
B21D004-CAL1	B21D004-CAL1	21040103.D	10:59:00	0.80	
B21D004-CAL2	B21D004-CAL2	21040104.D	11:23:00	1.20	
B21D004-CAL3	B21D004-CAL3	21040105.D	11:48:00	1.62	
B21D004-CAL4	B21D004-CAL4	21040106.D	12:12:00	2.02	
B21D004-CAL5	B21D004-CAL5	21040107.D	12:36:00	2.42	
B21D004-CAL6	B21D004-CAL6	21040108.D	13:00:00	2.82	
B21D004-CAL7	B21D004-CAL7	21040109.D	13:25:00	3.23	
B21D004-CAL8	B21D004-CAL8	21040110.D	13:49:00	3.63	
B21D004-CAL9	B21D004-CAL9	21040111.D	14:14:00	4.05	
B21D004-CALA	B21D004-CALA	21040112.D	14:38:00	4.45	
B21D004-CALB	B21D004-CALB	21040113.D	15:02:00	4.85	
LCSD, Calibration Verification, Second Source	B21D004-ICV1	21040116.D	16:15:00	6.07	
Lab Blank	B21D004-ICB1	21040117.D	16:39:00	6.47	

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 5 - Form IV VOA
Volatile Organic Instrument Performance Check (BFB) Sequence Summary

Sequence: B21D035 **Batch:** B21D035 **Matrix:** Air

EPA Sample No.: B21D035-TUN1 **Instrument:** C System **Date Analyzed**: 04/12/2021

+ values are outside method/contract required QC limits

	Lab Sample Number	Lab File ID	Time Analyzed	Tune to Analysis (hr)	Q
B21D035-TUN1	B21D035-TUN1	BC21041202.D	13:57:00	0.00	
LCS, Primary Calibration Source	21D0032-BS1	C21041202.D	13:57:00	0.00	
Method Blank	21D0032-BLK1	C21041203.D	14:21:00	0.40	
LCSD, Calibration Verification, Second Source	B21D035-ICV1	C21041204.D	14:45:00	0.80	
0005717-01	0005717-01	C21041205.D	15:10:00	1.22	
0005717-02	0005717-02	C21041206.D	15:34:00	1.62	
0005717-03	0005717-03	C21041207.D	15:58:00	2.02	
0005717-04	0005717-04	C21041208.D	16:22:00	2.42	
0005717-05	0005717-05	C21041209.D	16:46:00	2.82	
0005717-06	0005717-06	C21041210.D	17:10:00	3.22	
0005717-07	0005717-07	C21041211.D	17:33:00	3.60	
0005717-08	0005717-08	C21041212.D	17:57:00	4.00	
0005717-09	0005717-09	C21041213.D	18:21:00	4.40	
0005717-10	0005717-10	C21041214.D	18:45:00	4.80	
0005717-11	0005717-11	C21041215.D	19:10:00	5.22	
0005717-12	0005717-12	C21041216.D	19:34:00	5.62	
0005717-13	0005717-13	C21041217.D	19:59:00	6.03	
0005717-14	0005717-14	C21041218.D	20:23:00	6.43	
0005717-15	0005717-15	C21041219.D	20:47:00	6.83	
0005717-16	0005717-16	C21041220.D	21:11:00	7.23	
0005717-17	0005717-17	C21041221.D	21:34:00	7.62	
0005717-18	0005717-18	C21041222.D	21:58:00	8.02	
0005717-19	0005717-19	C21041223.D	22:22:00	8.42	
0005717-20	0005717-20	C21041224.D	22:46:00	8.82	
0005717-21	0005717-21	C21041225.D	23:11:00	9.23	
0005717-22	0005717-22	C21041226.D	23:35:00	9.63	
0005717-23	0005717-23	C21041227.D	23:59:00	10.03	
0005717-24	0005717-24	C21041228.D	0:23:00	10.43	
0005717-25	0005717-25	C21041229.D	0:47:00	10.83	
0005717-26	0005717-26	C21041230.D	1:11:00	11.23	
0005717-27	0005717-27	C21041231.D	1:35:00	11.63	

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 5 - Form IV VOA
Volatile Organic Instrument Performance Check (BFB) Sequence Summary

Sequence: B21D035 **Batch:** 21D0032 **Matrix:** Air

EPA Sample No.: B21D035-TUN1 **Instrument:** C System **Date Analyzed**: 04/13/2021

+ values are outside method/contract required QC limits

	Lab Sample Number	Lab File ID	Time Analyzed	Tune to Analysis (hr)	Q
0005717-28	0005717-28	C21041232.D	1:59:00	12.03	
0005717-29	0005717-29	C21041233.D	2:23:00	12.43	
0005717-30	0005717-30	C21041234.D	2:47:00	12.83	
0005717-31	0005717-31	C21041235.D	3:12:00	13.25	
0005717-32	0005717-32	C21041236.D	3:36:00	13.65	
0005717-33	0005717-33	C21041237.D	4:00:00	14.05	
0005717-34	0005717-34	C21041238.D	4:24:00	14.45	
0005717-35	0005717-35	C21041239.D	4:48:00	14.85	
0005717-36	0005717-36	C21041240.D	5:12:00	15.25	
0005717-37	0005717-37	C21041241.D	5:36:00	15.65	
0005717-38	0005717-38	C21041242.D	6:00:00	16.05	
0005717-39	0005717-39	C21041243.D	6:24:00	16.45	

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 5 - Form IV VOA
Volatile Organic Instrument Performance Check (BFB) Sequence Summary

Sequence: B21D042 **Batch:** B21D042 **Matrix:** Air

EPA Sample No.: B21D042-TUN1 **Instrument:** C System **Date Analyzed**: 04/13/2021

+ values are outside method/contract required QC limits

	Lab Sample Number	Lab File ID	Time Analyzed	Tune to Analysis (hr)	Q
B21D042-TUN1	B21D042-TUN1	C21041301.D	12:39:00	0.00	
LCS, Primary Calibration Source	21D0038-BS1	C21041302.D	13:03:00	0.40	
Method Blank	21D0038-BLK1	C21041303.D	13:27:00	0.80	
LCSD, Calibration Verification, Second Source	B21D042-ICV1	C21041304.D	13:51:00	1.20	
0005717-40	0005717-40	C21041355.D	10:43:00	22.07	
0005717-41	0005717-41	C21041356.D	11:07:00	22.47	

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 6 - Form VI A VOA
Volatile Organics Initial Calibration Data

Calibration: **BD10002**
Instrument: C System

Calibration Start: 4/1/2021 10:59:00AM
Calibration End: 4/1/2021 3:02:00PM

Lab File ID:	21040103.D	21040104.D	21040105.D	21040106.D	21040107.D	21040108.D	21040109.D
	Response Factors/Responses						
Analyte	**2.5 ng**	**5 ng**	**10 ng**	**25 ng**	**50 ng**	**100 ng**	**200 ng**
Vinyl Chloride	0.29	0.26	0.26	0.23	0.23	0.24	0.29
cis-1,2-Dichloroethene	0.32	0.30	0.31	0.29	0.30	0.30	0.31
1,2-DCA-d4	0.36	0.42	0.40	0.40	0.37	0.39	0.39
Trichloroethene	0.41	0.39	0.33	0.32	0.32	0.32	0.33
Toluene-d8	1.92	1.24	1.19	1.21	1.22	1.25	1.27
Tetrachloroethene	0.38	0.34	0.32	0.33	0.33	0.33	0.33
Bromofluorobenzene	0.74	0.53	0.46	0.44	0.44	0.48	0.47

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 6 - Form VI A VOA
Volatile Organics Initial Calibration Data

Calibration: BD10002 **Calibration Start:** 4/1/2021 10:59:00AM

Instrument: C System **Calibration End:** 4/1/2021 3:02:00PM

+ values are outside method/contract required QC limits

Lab File ID:	21040110.D	21040111.D	21040112.D	21040113.D		Acceptance Limits	
	Response Factors/Responses					≤ 20	≥ 0.99
Analyte	**400 ng**	**600 ng**	**800 ng**	**1000 ng**		**RSD**	**R^2**
Vinyl Chloride	0.22	0.22	0.28	0.26		10.21	
cis-1,2-Dichloroethene	0.29	0.29	0.29	0.30		2.99	
1,2-DCA-d4	0.38	0.38	0.37	0.37		4.36	
Trichloroethene	0.33	0.31	0.31	0.31		9.74	
Toluene-d8	1.27	1.17	1.13	1.12		17.32	
Tetrachloroethene	0.32	0.31	0.30	0.31		6.65	
Bromofluorobenzene	0.43	0.46	0.45	0.44		18.43	

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 7 - Form VII A VOA

Volatile Organics Continuing Calibration Data: Calibration Mid-Point

Sample No.: 50ng Cal Std (B21D004-CAL5) **Calibration:** BD10002 **Calibration Start Date:** 4/1/2021 10:59:00AM

Sequence: B21D004 **Instrument:** C System **Lab File ID:** C21041213.D **Calibration End Date:** 4/1/2021 3:02:00PM

+ values are outside method/contract required QC limits

Compound	Mean RRF	RRF	Minimum RF	%D	%D Limit
Vinyl Chloride	0.25	0.23	0.1	-9.5	20
cis-1,2-Dichloroethene	0.30	0.30	0.1	-1.3	20
1,2-DCA-d4	0.39	0.37	0.1	-3.6	20
Trichloroethene	0.34	0.32	0.2	-3.6	20
Toluene-d8	1.27	1.22	0.4	-3.9	20
Tetrachloroethene	0.33	0.33	0.2	2.1	20
Bromofluorobenzene	0.49	0.45	0.1	-8.6	20

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 7 - Form VII A VOA

Volatile Organics Continuing Calibration Data

Sample No.: B21D004-ICV1 **Sample Name:** LCSD/Second Source Verification/CALV

Analysis: EPA 8260C **Calibration:** BD10002 **Calibration Start Date:** 4/1/2021 10:59:00AM

Sequence: B21D004 **Instrument:** C System **Lab File ID:** 21040116.D **Calibration End Date:** 4/1/2021 3:02:00PM

+ values are outside method/contract required QC limits

Compound	Mean RRF	RRF	Min_RF	%D	Max %D
Vinyl Chloride	0.25	0.31	0.1	23.0	30
cis-1,2-Dichloroethene	0.30	0.30	0.1	0.2	30
1,2-DCA-d4	0.39	0.40	0.1	3.8	30
Trichloroethene	0.34	0.32	0.2	4.6	30
Toluene-d8	1.27	1.30	0.4	2.4	30
Tetrachloroethene	0.33	0.34	0.2	4.2	30
Bromofluorobenzene	0.49	0.47	0.1	3.5	30

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 7 - Form VII A VOA

Volatile Organics Continuing Calibration Data

Sample No.: 21D0032-BS1 **Sample Name:** LCS, Calibration Source Verification

Analysis: EPA 8260C **Calibration:** BD10002 **Calibration Start Date:** 4/1/2021 10:59:00AM

Sequence: B21D035 **Instrument:** C System **Lab File ID:** C21041202.D **Calibration End Date:** 4/1/2021 3:02:00PM

+ values are outside method/contract required QC limits

Compound	Mean RRF	RRF	Min_RF	%D	Max %D
Vinyl Chloride	0.25	0.22	0.1	12.7	20
cis-1,2-Dichloroethene	0.30	0.32	0.1	6.5	20
1,2-DCA-d4	0.39	0.42	0.1	9.0	20
Trichloroethene	0.34	0.33	0.2	1.6	20
Toluene-d8	1.27	1.22	0.4	3.9	20
Tetrachloroethene	0.33	0.34	0.2	4.2	20
Bromofluorobenzene	0.49	0.42	0.1	13.8	20

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 7 - Form VII A VOA

Volatile Organics Continuing Calibration Data

Sample No.: B21D035-ICV1 **Sample Name:** LCSD/Second Source Verification/CALV

Analysis: EPA 8260C **Calibration:** BD10002 **Calibration Start Date:** 4/1/2021 10:59:00AM

Sequence: B21D035 **Instrument:** C System **Lab File ID:** C21041204.D **Calibration End Date:** 4/1/2021 3:02:00PM

+ values are outside method/contract required QC limits

Compound	Mean RRF	RRF	Min_RF	%D	Max %D
Vinyl Chloride	0.25	0.22	0.1	12.7	30
cis-1,2-Dichloroethene	0.30	0.30	0.1	0.2	30
1,2-DCA-d4	0.39	0.40	0.1	3.8	30
Trichloroethene	0.34	0.34	0.2	1.4	30
Toluene-d8	1.27	1.21	0.4	4.7	30
Tetrachloroethene	0.33	0.34	0.2	4.2	30
Bromofluorobenzene	0.49	0.41	0.1	15.8	30

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 7 - Form VII A VOA

Volatile Organics Continuing Calibration Data

Sample No.: 21D0038-BS1 **Sample Name:** LCS, Calibration Source Verification

Analysis: EPA 8260C **Calibration:** BD10002 **Calibration Start Date:** 4/1/2021 10:59:00AM

Sequence: B21D042 **Instrument:** C System **Lab File ID:** C21041302.D **Calibration End Date:** 4/1/2021 3:02:00PM

+ values are outside method/contract required QC limits

Compound	Mean RRF	RRF	Min_RF	%D	Max %D
Vinyl Chloride	0.25	0.24	0.1	4.7	20
cis-1,2-Dichloroethene	0.30	0.31	0.1	3.1	20
1,2-DCA-d4	0.39	0.42	0.1	9.0	20
Trichloroethene	0.34	0.34	0.2	1.4	20
Toluene-d8	1.27	1.22	0.4	3.9	20
Tetrachloroethene	0.33	0.33	0.2	1.2	20
Bromofluorobenzene	0.49	0.43	0.1	11.7	20

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 7 - Form VII A VOA

Volatile Organics Continuing Calibration Data

Sample No.: B21D042-ICV1 **Sample Name:** LCSD/Second Source Verification/CALV

Analysis: EPA 8260C **Calibration:** BD10002 **Calibration Start Date:** 4/1/2021 10:59:00AM

Sequence: B21D042 **Instrument:** C System **Lab File ID:** C21041304.D **Calibration End Date:** 4/1/2021 3:02:00PM

+ values are outside method/contract required QC limits

Compound	Mean RRF	RRF	Min_RF	%D	Max %D
Vinyl Chloride	0.25	0.29	0.1	15.1	30
cis-1,2-Dichloroethene	0.30	0.31	0.1	3.1	30
1,2-DCA-d4	0.39	0.42	0.1	9.0	30
Trichloroethene	0.34	0.33	0.2	1.6	30
Toluene-d8	1.27	1.20	0.4	5.5	30
Tetrachloroethene	0.33	0.34	0.2	4.2	30
Bromofluorobenzene	0.49	0.41	0.1	15.8	30

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 8 - Form VIII A VOA

Volatile Internal Standard Area and Retention Time Summary

Sequence: B21D004 **Instrument:** C System **Calibration:** BD10002

Matrix: Air **Calibration Date:** 04/01/2021

+ values are outside method/contract required QC limits

Initial Calibration Reference Values

Reference Value (RV) File ID: 21040107.D	**Fluorobenzene**		**Chlorobenzene-d5**		**1,4-Dichlorobenzene-d4**	
	Response	**RT**	**Response**	**RT**	**Response**	**RT**
Reference Value	385568	3.825	285496	6.70	137059	8.75
Upper Limit	771136	3.95	570992	6.82	274118	8.87
Lower Limit	192784	3.71	142748	6.58	68530	8.63

			Fluorobenzene		**Chlorobenzene-d5**		**1,4-Dichlorobenzene-d4**	
LabNumber	**RV**	**FileID**	**Response**	**RT**	**Response**	**RT**	**Response**	**RT**
B21D004-CAL1		21040103.D	381167	3.83	283968	6.70	131938	8.75
B21D004-CAL2		21040104.D	386949	3.83	291553	6.70	138538	8.75
B21D004-CAL3		21040105.D	380864	3.83	287949	6.70	136848	8.75
B21D004-CAL4		21040106.D	377214	3.83	282871	6.70	141954	8.74
B21D004-CAL5	RV	21040107.D	385568	3.83	285496	6.70	137059	8.75
B21D004-CAL6		21040108.D	372672	3.83	280405	6.70	145406	8.75
B21D004-CAL7		21040109.D	377730	3.83	278939	6.70	139490	8.75
B21D004-CAL8		21040110.D	380561	3.83	269239	6.70	119883	8.75
B21D004-CAL9		21040111.D	386448	3.82	291410	6.70	144709	8.75
B21D004-CALA		21040112.D	356889	3.83	274538	6.70	140267	8.74
B21D004-CALB		21040113.D	362407	3.83	274772	6.70	137702	8.75
B21D004-ICV1		21040116.D	371984	3.83	277883	6.70	136626	8.75
B21D004-ICB1		21040117.D	352463	3.83	271339	6.70	125325	8.75

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 8 - Form VIII A VOA

Volatile Internal Standard Area and Retention Time Summary

Sequence: B21D035 **Instrument:** C System **Calibration:** BD10002

Matrix: Air **Calibration Date:** 04/01/2021

+ values are outside method/contract required QC limits

Initial Calibration Reference Values						
Reference Value (RV) File ID: 21040107.D	**Fluorobenzene**		**Chlorobenzene-d5**		**1,4-Dichlorobenzene-d4**	
	Response	**RT**	**Response**	**RT**	**Response**	**RT**
Reference Value	385568	3.825	285496	6.70	137059	8.75
Upper Limit	771136	3.95	570992	6.82	274118	8.87
Lower Limit	192784	3.71	142748	6.58	68530	8.63

			Fluorobenzene		**Chlorobenzene-d5**		**1,4-Dichlorobenzene-d4**	
LabNumber	**RV**	**FileID**	**Response**	**RT**	**Response**	**RT**	**Response**	**RT**
21D0032-BS1		C21041202.D	395231	3.83	297851	6.69	155320	8.75
21D0032-BLK1		C21041203.D	369387	3.82	278382	6.69	125080	8.75
B21D035-ICV1		C21041204.D	403719	3.82	307271	6.70	161098	8.74
0005717-01		C21041205.D	331549	3.83	272001	6.69	125323	8.74
0005717-02		C21041206.D	346397	3.83	276526	6.69	124824	8.75
0005717-03		C21041207.D	324059	3.83	284787	6.70	143499	8.74
0005717-04		C21041208.D	322638	3.83	278560	6.70	144569	8.75
0005717-05		C21041209.D	342349	3.83	287282	6.70	142764	8.75
0005717-06		C21041210.D	329793	3.82	275594	6.70	145077	8.75
0005717-07		C21041211.D	342982	3.83	281342	6.70	144264	8.74
0005717-08		C21041212.D	339885	3.83	278279	6.69	141578	8.75
0005717-09		C21041213.D	310296	3.82	268146	6.69	134209	8.75
0005717-10		C21041214.D	319078	3.83	266593	6.69	131930	8.75
0005717-11		C21041215.D	314511	3.83	268897	6.69	134650	8.75
0005717-12		C21041216.D	314160	3.82	267311	6.69	141228	8.75
0005717-13		C21041217.D	298383	3.83	256520	6.69	128283	8.74
0005717-14		C21041218.D	315587	3.83	270957	6.69	134092	8.75
0005717-15		C21041219.D	329458	3.82	270234	6.70	132511	8.75
0005717-16		C21041220.D	267706	3.83	239528	6.70	131582	8.75
0005717-17		C21041221.D	314489	3.83	265895	6.70	139909	8.74
0005717-18		C21041222.D	319254	3.83	263646	6.69	140818	8.75
0005717-19		C21041223.D	278354	3.83	253665	6.69	130737	8.75
0005717-20		C21041224.D	298483	3.83	257179	6.69	130272	8.75
0005717-21		C21041225.D	304556	3.83	264800	6.70	130238	8.75
0005717-22		C21041226.D	300984	3.83	265967	6.69	130112	8.75
0005717-23		C21041227.D	302036	3.82	265462	6.70	147383	8.75
0005717-24		C21041228.D	311381	3.83	268761	6.70	130806	8.75
0005717-25		C21041229.D	279550	3.83	249097	6.70	128788	8.75

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 8 - Form VIII A VOA

Volatile Internal Standard Area and Retention Time Summary

Sequence: B21D035 **Instrument:** C System **Calibration:** BD10002

Matrix: Air **Calibration Date:** 04/01/2021

+ values are outside method/contract required QC limits

Initial Calibration Reference Values

Reference Value (RV) File ID: 21040107.D	**Fluorobenzene**		**Chlorobenzene-d5**		**1,4-Dichlorobenzene-d4**	
	Response	**RT**	**Response**	**RT**	**Response**	**RT**
Reference Value	385568	3.825	285496	6.70	137059	8.75
Upper Limit	771136	3.95	570992	6.82	274118	8.87
Lower Limit	192784	3.71	142748	6.58	68530	8.63

			Fluorobenzene		**Chlorobenzene-d5**		**1,4-Dichlorobenzene-d4**	
LabNumber	**RV**	**FileID**	**Response**	**RT**	**Response**	**RT**	**Response**	**RT**
0005717-26		C21041230.D	303322	3.83	260702	6.69	133830	8.75
0005717-27		C21041231.D	301897	3.83	276780	6.69	150387	8.75
0005717-28		C21041232.D	306298	3.82	271607	6.69	142009	8.75
0005717-29		C21041233.D	310094	3.82	267224	6.69	145393	8.75
0005717-30		C21041234.D	318543	3.82	267765	6.69	152048	8.75
0005717-31		C21041235.D	302076	3.83	261051	6.70	136532	8.75
0005717-32		C21041236.D	300063	3.83	266999	6.70	143508	8.74
0005717-33		C21041237.D	317597	3.83	266450	6.70	133272	8.75
0005717-34		C21041238.D	316857	3.83	268842	6.70	138326	8.74
0005717-35		C21041239.D	270628	3.83	262644	6.69	143642	8.75
0005717-36		C21041240.D	301789	3.83	277033	6.70	155234	8.75
0005717-37		C21041241.D	327207	3.83	285837	6.70	162554	8.75
0005717-38		C21041242.D	313841	3.83	280467	6.70	153512	8.75
0005717-39		C21041243.D	339648	3.82	294812	6.69	149051	8.75

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Table 8 - Form VIII A VOA

Volatile Internal Standard Area and Retention Time Summary

Sequence: B21D042 **Instrument:** C System **Calibration:** BD10002

Matrix: Air **Calibration Date:** 04/01/2021

+ values are outside method/contract required QC limits

Initial Calibration Reference Values						
Reference Value (RV) File ID: 21040107.D	**Fluorobenzene**		**Chlorobenzene-d5**		**1,4-Dichlorobenzene-d4**	
	Response	**RT**	**Response**	**RT**	**Response**	**RT**
Reference Value	385568	3.825	285496	6.70	137059	8.75
Upper Limit	771136	3.95	570992	6.82	274118	8.87
Lower Limit	192784	3.71	142748	6.58	68530	8.63

			Fluorobenzene		**Chlorobenzene-d5**		**1,4-Dichlorobenzene-d4**	
LabNumber	**RV**	**FileID**	**Response**	**RT**	**Response**	**RT**	**Response**	**RT**
21D0038-BS1		C21041302.D	364777	3.83	276019	6.70	149280	8.75
21D0038-BLK1		C21041303.D	337362	3.83	251684	6.70	114919	8.74
B21D042-ICV1		C21041304.D	365498	3.83	282056	6.70	151604	8.75
0005717-40		C21041355.D	321978	3.82	276509	6.69	136115	8.74
0005717-41		C21041356.D	319848	3.82	272815	6.69	141814	8.75

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Additional QC Information

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

EPA 8260C Holding Time Report

Analysis: EPA 8260C- Mass

SampleName	Sampled	Received	Prepared	Days to Prep	Analyzed	Days to Analysis	Expiration Date	Qualifier
Trip-1	04/07/2021 12:00	04/08/2021 16:26	04/12/2021 15:10	5.13	04/12/2021 15:10	5.13	05/08/2021	
Trip-2	04/07/2021 12:00	04/08/2021 16:26	04/12/2021 15:34	5.15	04/12/2021 15:34	5.15	05/08/2021	
NWP_PSG01-03262021	04/07/2021 12:04	04/08/2021 16:26	04/12/2021 15:58	5.16	04/12/2021 15:58	5.16	05/08/2021	
NWP_PSG02-03262021	04/07/2021 11:55	04/08/2021 16:26	04/12/2021 16:22	5.19	04/12/2021 16:22	5.19	05/08/2021	
NWP_PSG03-03242021	04/07/2021 09:04	04/08/2021 16:26	04/12/2021 16:46	5.32	04/12/2021 16:46	5.32	05/08/2021	
NWP_PSG04-03242021	04/07/2021 09:02	04/08/2021 16:26	04/12/2021 17:10	5.34	04/12/2021 17:10	5.34	05/08/2021	
NWP_PSG05-03242021	04/07/2021 08:59	04/08/2021 16:26	04/12/2021 17:33	5.36	04/12/2021 17:33	5.36	05/08/2021	
NWP_PSG06-03242021	04/07/2021 08:55	04/08/2021 16:26	04/12/2021 17:57	5.38	04/12/2021 17:57	5.38	05/08/2021	
NWP_PSG07-03242021	04/07/2021 08:51	04/08/2021 16:26	04/12/2021 18:21	5.40	04/12/2021 18:21	5.40	05/08/2021	
NWP_PSG08-03242021	04/07/2021 08:47	04/08/2021 16:26	04/12/2021 18:45	5.42	04/12/2021 18:45	5.42	05/08/2021	
NWP_PSG09-03252021	04/07/2021 09:48	04/08/2021 16:26	04/12/2021 19:10	5.39	04/12/2021 19:10	5.39	05/08/2021	
NWP_PSG10-03252021	04/07/2021 09:45	04/08/2021 16:26	04/12/2021 19:34	5.41	04/12/2021 19:34	5.41	05/08/2021	
NWP_PSG11-03242021	04/07/2021 09:42	04/08/2021 16:26	04/12/2021 19:59	5.43	04/12/2021 19:59	5.43	05/08/2021	
NWP_PSG12-03242021	04/07/2021 09:12	04/08/2021 16:26	04/12/2021 20:23	5.47	04/12/2021 20:23	5.47	05/08/2021	
NWP_PSG13-03242021	04/07/2021 09:14	04/08/2021 16:26	04/12/2021 20:47	5.48	04/12/2021 20:47	5.48	05/08/2021	
NWP_PSG14-03242021	04/07/2021 09:16	04/08/2021 16:26	04/12/2021 21:11	5.50	04/12/2021 21:11	5.50	05/08/2021	
NWP_PSG15-03242021	04/07/2021 09:18	04/08/2021 16:26	04/12/2021 21:34	5.51	04/12/2021 21:34	5.51	05/08/2021	
NWP_PSG16-03242021	04/07/2021 09:20	04/08/2021 16:26	04/12/2021 21:58	5.53	04/12/2021 21:58	5.53	05/08/2021	

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

EPA 8260C Holding Time Report

Analysis: EPA 8260C- Mass

SampleName	Sampled	Received	Prepared	Days to Prep	Analyzed	Days to Analysis	Expiration Date	Qualifier
NWP_PSG17-03242021	04/07/2021 09:22	04/08/2021 16:26	04/12/2021 22:22	5.54	04/12/2021 22:22	5.54	05/08/2021	
NWP_PSG18-03242021	04/07/2021 09:26	04/08/2021 16:26	04/12/2021 22:46	5.56	04/12/2021 22:46	5.56	05/08/2021	
NWP_PSG19-03242021	04/07/2021 09:29	04/08/2021 16:26	04/12/2021 23:11	5.57	04/12/2021 23:11	5.57	05/08/2021	
NWP_PSG20-03252021	04/07/2021 09:54	04/08/2021 16:26	04/12/2021 23:35	5.57	04/12/2021 23:35	5.57	05/08/2021	
NWP_PSG21-03242021	04/07/2021 09:34	04/08/2021 16:26	04/12/2021 23:59	5.60	04/12/2021 23:59	5.60	05/08/2021	
NWP_PSG22-03252021	04/07/2021 10:15	04/08/2021 16:26	04/13/2021 00:23	5.59	04/13/2021 00:23	5.59	05/08/2021	
NWP_PSG23-03252021	04/07/2021 10:13	04/08/2021 16:26	04/13/2021 00:47	5.61	04/13/2021 00:47	5.61	05/08/2021	
NWP_PSG24-03252021	04/07/2021 10:11	04/08/2021 16:26	04/13/2021 01:11	5.63	04/13/2021 01:11	5.63	05/08/2021	
NWP_PSG25-03252021	04/07/2021 10:07	04/08/2021 16:26	04/13/2021 01:35	5.64	04/13/2021 01:35	5.64	05/08/2021	
NWP_PSG26-03252021	04/07/2021 10:05	04/08/2021 16:26	04/13/2021 01:59	5.66	04/13/2021 01:59	5.66	05/08/2021	
NWP_PSG27-03252021	04/07/2021 10:02	04/08/2021 16:26	04/13/2021 02:23	5.68	04/13/2021 02:23	5.68	05/08/2021	
NWP_PSG28-03252021	04/07/2021 10:00	04/08/2021 16:26	04/13/2021 02:47	5.70	04/13/2021 02:47	5.70	05/08/2021	
NWP_PSG29-03252021	04/07/2021 09:57	04/08/2021 16:26	04/13/2021 03:12	5.72	04/13/2021 03:12	5.72	05/08/2021	
NWP_PSG30-03242021	04/07/2021 11:37	04/08/2021 16:26	04/13/2021 03:36	5.67	04/13/2021 03:36	5.67	05/08/2021	
NWP_PSG31-03252021	04/07/2021 10:41	04/08/2021 16:26	04/13/2021 04:00	5.72	04/13/2021 04:00	5.72	05/08/2021	
NWP_PSG32-03252021	04/07/2021 10:43	04/08/2021 16:26	04/13/2021 04:24	5.74	04/13/2021 04:24	5.74	05/08/2021	
NWP_PSG33-03262021	04/07/2021 10:45	04/08/2021 16:26	04/13/2021 04:48	5.75	04/13/2021 04:48	5.75	05/08/2021	
NWP_PSG34-03252021	04/07/2021 10:52	04/08/2021 16:26	04/13/2021 05:12	5.76	04/13/2021 05:12	5.76	05/08/2021	
NWP_PSG35-03252021	04/07/2021 10:57	04/08/2021 16:26	04/13/2021 05:36	5.78	04/13/2021 05:36	5.78	05/08/2021	

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
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1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

EPA 8260C Holding Time Report

Analysis: EPA 8260C- Mass

SampleName	Sampled	Received	Prepared	Days to Prep	Analyzed	Days to Analysis	Expiration Date	Qualifier
NWP_PSG36-03262021	04/07/2021 11:02	04/08/2021 16:26	04/13/2021 06:00	5.79	04/13/2021 06:00	5.79	05/08/2021	
NWP_PSG37-03262021	04/07/2021 11:09	04/08/2021 16:26	04/13/2021 06:24	5.80	04/13/2021 06:24	5.80	05/08/2021	
NWP_PSG01-03262021-Dup	04/07/2021 12:04	04/08/2021 16:26	04/14/2021 10:43	6.94	04/14/2021 10:43	6.94	05/08/2021	
NWP_PSG16-03242021-Dup	04/07/2021 09:20	04/08/2021 16:26	04/14/2021 11:07	7.07	04/14/2021 11:07	7.07	05/08/2021	

H = Sample analysis exceeded holding time.

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Preparation and Analysis Summary Table

Batch	Sequence	Instrument	FileID	Analyzed Date/Time	Dilution	Analysis
Lab ID: 0005717-01	**Method:** EPA 8260C		**Sample:** Trip-1			**Matrix:** Air
21D0032	B21D035	C System	C21041205.D	4/12/21 15:10	1.00	A_8260C (ng)
Lab ID: 0005717-02	**Method:** EPA 8260C		**Sample:** Trip-2			**Matrix:** Air
21D0032	B21D035	C System	C21041206.D	4/12/21 15:34	1.00	A_8260C (ng)
Lab ID: 0005717-03	**Method:** EPA 8260C		**Sample:** NWP_PSG01-03262021			**Matrix:** Air
21D0032	B21D035	C System	C21041207.D	4/12/21 15:58	1.00	A_8260C (ng)
Lab ID: 0005717-04	**Method:** EPA 8260C		**Sample:** NWP_PSG02-03262021			**Matrix:** Air
21D0032	B21D035	C System	C21041208.D	4/12/21 16:22	1.00	A_8260C (ng)
Lab ID: 0005717-05	**Method:** EPA 8260C		**Sample:** NWP_PSG03-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041209.D	4/12/21 16:46	1.00	A_8260C (ng)
Lab ID: 0005717-06	**Method:** EPA 8260C		**Sample:** NWP_PSG04-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041210.D	4/12/21 17:10	1.00	A_8260C (ng)
Lab ID: 0005717-07	**Method:** EPA 8260C		**Sample:** NWP_PSG05-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041211.D	4/12/21 17:33	1.00	A_8260C (ng)
Lab ID: 0005717-08	**Method:** EPA 8260C		**Sample:** NWP_PSG06-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041212.D	4/12/21 17:57	1.00	A_8260C (ng)
Lab ID: 0005717-09	**Method:** EPA 8260C		**Sample:** NWP_PSG07-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041213.D	4/12/21 18:21	1.00	A_8260C (ng)
Lab ID: 0005717-10	**Method:** EPA 8260C		**Sample:** NWP_PSG08-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041214.D	4/12/21 18:45	1.00	A_8260C (ng)
Lab ID: 0005717-11	**Method:** EPA 8260C		**Sample:** NWP_PSG09-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041215.D	4/12/21 19:10	1.00	A_8260C (ng)
Lab ID: 0005717-12	**Method:** EPA 8260C		**Sample:** NWP_PSG10-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041216.D	4/12/21 19:34	1.00	A_8260C (ng)
Lab ID: 0005717-13	**Method:** EPA 8260C		**Sample:** NWP_PSG11-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041217.D	4/12/21 19:59	1.00	A_8260C (ng)

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Preparation and Analysis Summary Table

Batch	Sequence	Instrument	FileID	Analyzed Date/Time	Dilution	Analysis
Lab ID: 0005717-14	**Method:** EPA 8260C		**Sample:** NWP_PSG12-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041218.D	4/12/21 20:23	1.00	A_8260C (ng)
Lab ID: 0005717-15	**Method:** EPA 8260C		**Sample:** NWP_PSG13-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041219.D	4/12/21 20:47	1.00	A_8260C (ng)
Lab ID: 0005717-16	**Method:** EPA 8260C		**Sample:** NWP_PSG14-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041220.D	4/12/21 21:11	1.00	A_8260C (ng)
Lab ID: 0005717-17	**Method:** EPA 8260C		**Sample:** NWP_PSG15-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041221.D	4/12/21 21:34	1.00	A_8260C (ng)
Lab ID: 0005717-18	**Method:** EPA 8260C		**Sample:** NWP_PSG16-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041222.D	4/12/21 21:58	1.00	A_8260C (ng)
Lab ID: 0005717-19	**Method:** EPA 8260C		**Sample:** NWP_PSG17-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041223.D	4/12/21 22:22	1.00	A_8260C (ng)
Lab ID: 0005717-20	**Method:** EPA 8260C		**Sample:** NWP_PSG18-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041224.D	4/12/21 22:46	1.00	A_8260C (ng)
Lab ID: 0005717-21	**Method:** EPA 8260C		**Sample:** NWP_PSG19-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041225.D	4/12/21 23:11	1.00	A_8260C (ng)
Lab ID: 0005717-22	**Method:** EPA 8260C		**Sample:** NWP_PSG20-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041226.D	4/12/21 23:35	1.00	A_8260C (ng)
Lab ID: 0005717-23	**Method:** EPA 8260C		**Sample:** NWP_PSG21-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041227.D	4/12/21 23:59	1.00	A_8260C (ng)
Lab ID: 0005717-24	**Method:** EPA 8260C		**Sample:** NWP_PSG22-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041228.D	4/13/21 0:23	1.00	A_8260C (ng)
Lab ID: 0005717-25	**Method:** EPA 8260C		**Sample:** NWP_PSG23-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041229.D	4/13/21 0:47	1.00	A_8260C (ng)
Lab ID: 0005717-26	**Method:** EPA 8260C		**Sample:** NWP_PSG24-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041230.D	4/13/21 1:11	1.00	A_8260C (ng)

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Preparation and Analysis Summary Table

Batch	Sequence	Instrument	FileID	Analyzed Date/Time	Dilution	Analysis
Lab ID: 0005717-27	**Method:** EPA 8260C		**Sample:** NWP_PSG25-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041231.D	4/13/21 1:35	1.00	A_8260C (ng)
Lab ID: 0005717-28	**Method:** EPA 8260C		**Sample:** NWP_PSG26-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041232.D	4/13/21 1:59	1.00	A_8260C (ng)
Lab ID: 0005717-29	**Method:** EPA 8260C		**Sample:** NWP_PSG27-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041233.D	4/13/21 2:23	1.00	A_8260C (ng)
Lab ID: 0005717-30	**Method:** EPA 8260C		**Sample:** NWP_PSG28-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041234.D	4/13/21 2:47	1.00	A_8260C (ng)
Lab ID: 0005717-31	**Method:** EPA 8260C		**Sample:** NWP_PSG29-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041235.D	4/13/21 3:12	1.00	A_8260C (ng)
Lab ID: 0005717-32	**Method:** EPA 8260C		**Sample:** NWP_PSG30-03242021			**Matrix:** Air
21D0032	B21D035	C System	C21041236.D	4/13/21 3:36	1.00	A_8260C (ng)
Lab ID: 0005717-33	**Method:** EPA 8260C		**Sample:** NWP_PSG31-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041237.D	4/13/21 4:00	1.00	A_8260C (ng)
Lab ID: 0005717-34	**Method:** EPA 8260C		**Sample:** NWP_PSG32-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041238.D	4/13/21 4:24	1.00	A_8260C (ng)
Lab ID: 0005717-35	**Method:** EPA 8260C		**Sample:** NWP_PSG33-03262021			**Matrix:** Air
21D0032	B21D035	C System	C21041239.D	4/13/21 4:48	1.00	A_8260C (ng)
Lab ID: 0005717-36	**Method:** EPA 8260C		**Sample:** NWP_PSG34-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041240.D	4/13/21 5:12	1.00	A_8260C (ng)
Lab ID: 0005717-37	**Method:** EPA 8260C		**Sample:** NWP_PSG35-03252021			**Matrix:** Air
21D0032	B21D035	C System	C21041241.D	4/13/21 5:36	1.00	A_8260C (ng)
Lab ID: 0005717-38	**Method:** EPA 8260C		**Sample:** NWP_PSG36-03262021			**Matrix:** Air
21D0032	B21D035	C System	C21041242.D	4/13/21 6:00	1.00	A_8260C (ng)
Lab ID: 0005717-39	**Method:** EPA 8260C		**Sample:** NWP_PSG37-03262021			**Matrix:** Air
21D0032	B21D035	C System	C21041243.D	4/13/21 6:24	1.00	A_8260C (ng)

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Preparation and Analysis Summary Table

Batch	Sequence	Instrument	FileID	Analyzed Date/Time	Dilution	Analysis
Lab ID: 0005717-40	**Method:** EPA 8260C		**Sample:** NWP_PSG01-03262021-Dup			**Matrix:** Air
21D0038	B21D042	C System	C21041355.D	4/14/21 10:43	1.00	A_8260C (ng)
Lab ID: 0005717-41	**Method:** EPA 8260C		**Sample:** NWP_PSG16-03242021-Dup			**Matrix:** Air
21D0038	B21D042	C System	C21041356.D	4/14/21 11:07	1.00	A_8260C (ng)

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Laboratory Certification List

Certification ID	Certification No.	Description	Expires	Project Required
Alaska CS-LAP	19-002	Alaska Department of Environmental Conservation	01/31/2023	
DoD-ELAP	L20-532	United States Department of Defense Environmental Laboratory Accreditation	12/31/2022	
ISO/IEC 17025:2017	L20-532	General Requirements for the competence of Testing and Calibration Laboratories	12/31/2022	
NY-NELAC	12097	New York Department of Health	04/01/2022	
Utah-NELAC	MD01091	Utah Department of Health	12/31/2021	

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Jacobs		**Site Name:**	Northwest Pipe	**Beacon Proposal:**	201009R01
2020 SW Fourth Avenue, Suite 300		**Site Location:**	Portland, OR	**Lab Work Order:**	0005717
Portland, OR 97201-4973		**Project Manager:**	Kris Ivarson	**Reported:**	04/26/2021

Qualifiers/Notes and Definitions

General Definitions:

DF	Dilution Factor
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
NA	Not Applicable
Q	Qualifier
RPD	Relative Percent Difference
RT	Retention Times in Minutes
RRT	Evaluation of Relative Retention Times in RRT Units (qualified if outside $\pm$0.06 control limits)
3σ	Uncertainty
∉	Compound not on scope of accreditation
+	values are outside method/contract required QC limits
∅	Compound not on scope of accreditation and analyzed with a one-point calibration

Sample/Sample Receipt Qualifiers and Notes:

S4	Matrix interference caused surrogate recovery outside control limits.

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Standard Traceability

2203A Commerce Road, Suite 1
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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Stock Standard Certificates of Analysis

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 1800015

Lot No.: 080117

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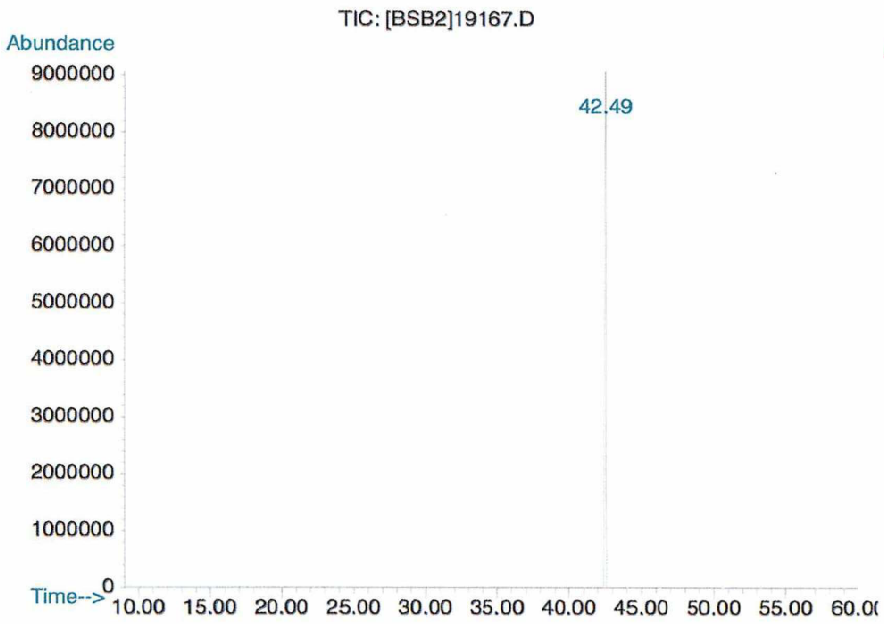
CERTIFIED WEIGHT REPORT

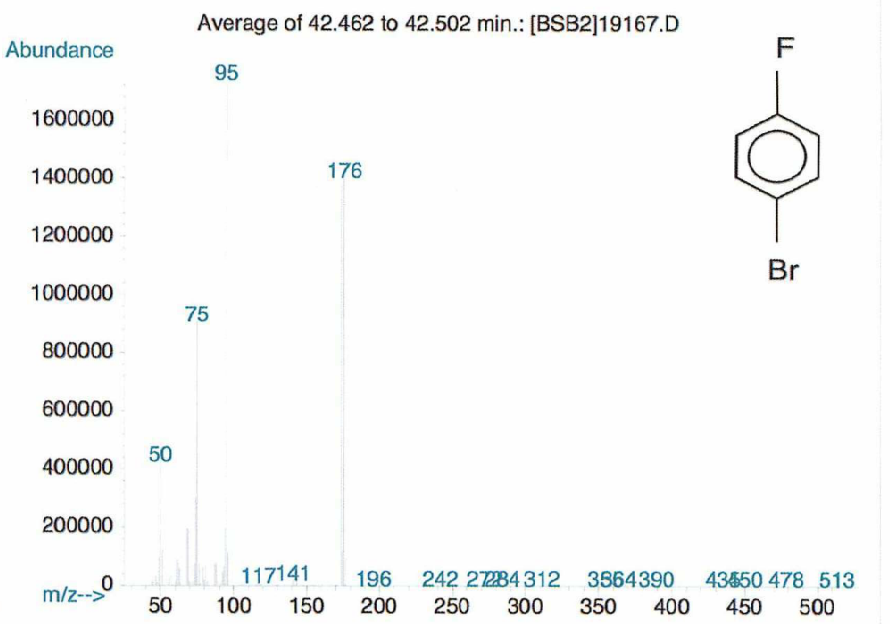
Part Number:	**19167**	**Solvent(s):**	**Lot#**
Lot Number:	112514	Methanol	DK793
Description:	CLP - Instrument Performance Check Solution		
	p-Bromofluorobenzene		
Expiration Date:	112520		
Recommended Storage:	Refrigerate (4 °C)		
Nominal Concentration (µg/mL):	2500		
NIST Test ID#:	732/245790	5E-05 Balance Uncertainty	
Weight(s) shown below were combined and diluted to (mL):	100.0	0.006 Flask Uncertainty	

Paul Barron		112514
Formulated By:	Paul Barron	DATE
Pedro Rentas		112514
Reviewed By:	Pedro L. Rentas	DATE

Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. p-Bromofluorobenzene	48	01127COV	2500	99	0.2	0.25254	0.25282	2502.8	10.2	460-00-4	N/A	orl-rat 2700mg/kg

Method GC6MSD-1: Column: Vocol (60m X 0.25mm ID X 1.5µm film thickness).Temp. 1=35°C (10min.), Temp. 2=200°C (8.75 min.), Rate=4°C/min., Injector Temp.=200°C, Detector Temp.=220°C. Solvent vent time = 6 min. Analysis performed by Candice Warren.





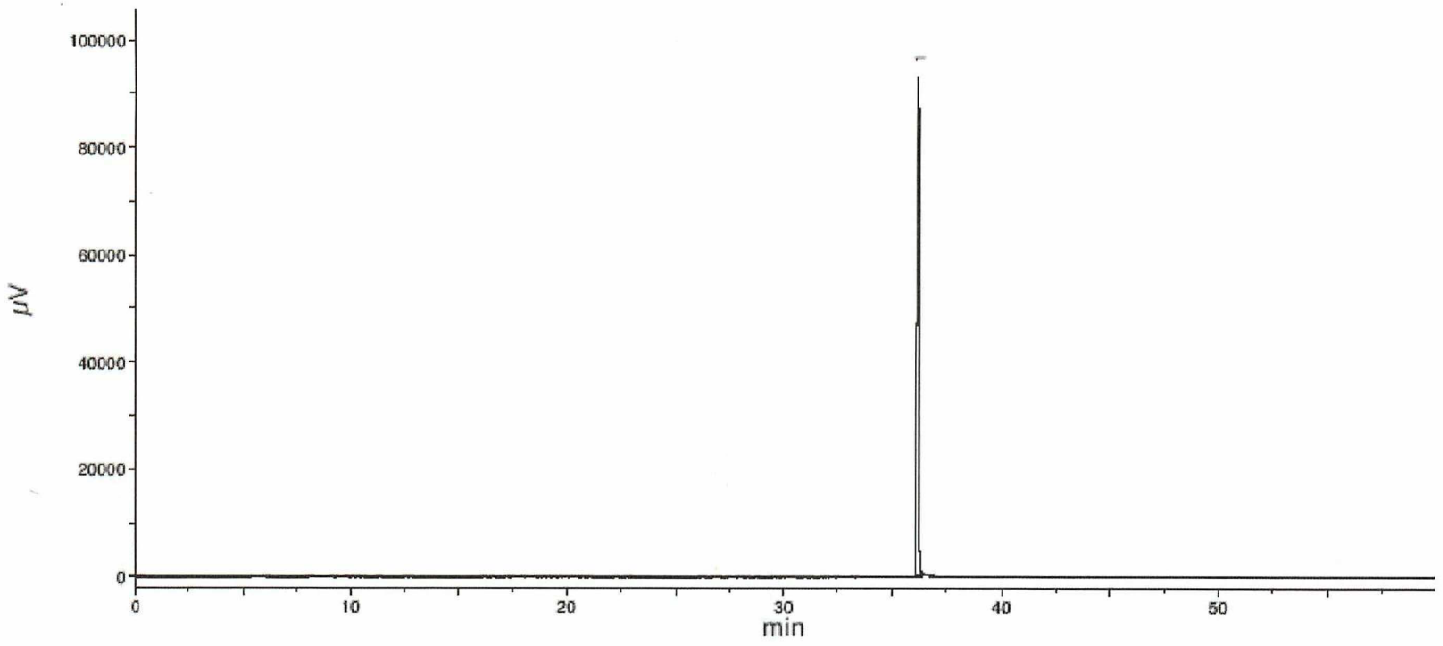
- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

Run 30, "P19167 L112514 [2500µg/mL in MeOH]"

Run Length: 59.99 min, 35996 points at 10 points/second.
Created: Wed, Nov 26, 2014 at 3:27:40 PM.
Sampled: Sequence "112514-GC1", Method "GC1-M7".
Analyzed using Method "GC1-M7".

Comments
GC1-M7 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow = 150mL/min., Helium (carrier) = 10mL/min.,
Helium (make-up) = 40mL/min., Hydogen (make-up) = 100mL/min.,
Oven Profile: Temp. 1 = 35°C (Time 1 = 10 min.), Temp 2 = 200°C (Time 2 = 8.75 min.),
Rate = 4°C/min., Total run time = 60 min. Injector temp. = 200°C. PID Temp. = 200°C.
ELCD Signal = Edaq Channel 1 PID Signal = Edaq Channel 2
Standard injection = 0.5µL, Range=4 Purge Valve = 8 min

Name	PID RT (min.)
p-Bromofluorobenzene	36.19



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Forest Hill, MD 21050 USA
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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 1900018

Lot No.: 112916

CERTIFIED WEIGHT REPORT

Part Number: 97270
Lot Number: 112916
Description: 8260 VOC 2nd Source Calibration Check
84 components
Expiration Date: 112921 **Solvent(s):** Methanol **Lot#** DP303Q9
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 100
NIST Test ID#: 822-275872-11 5E-05 Balance Uncertainty

Volume(s) shown below were combined and diluted to (mL): 100.0 0.001 Flask Uncertainty

Formulated By:	Paul Barron	112916 DATE
Reviewed By:	Pedro L. Rentas	112916 DATE

	Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Bromodichloromethane	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	75-27-4	N/A	orl-rat 916mg/kg
2.	Dibromochloromethane	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	124-48-1	N/A	orl-rat 848mg/kg
3.	cis-1,2-Dichloroethene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.5	156-59-2	N/A	N/A
4.	trans-1,2-Dichloroethene	93538	112116	0.05	5.00	0.025	2000.9	100.0	1.5	156-60-5	N/A	orl-rat 1235mg/kg
5.	Methylene chloride	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	75-09-2	500 ppm	orl-rat 2136mg/kg
6.	1,1-Dichloroethene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.1	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7.	Bromochloromethane	93538	112116	0.05	5.00	0.025	2000.5	100.0	1.5	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8.	Bromoform	93538	112116	0.05	5.00	0.025	2001.2	100.0	1.5	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9.	Carbon tetrachloride	93538	112116	0.05	5.00	0.025	2000.7	100.0	1.5	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10.	Chloroform	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11.	Dibromomethane	93538	112116	0.05	5.00	0.025	2000.9	100.0	1.5	74-95-3	N/A	orl-rat 108mg/kg
12.	1,1-Dichloroethane	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.5	75-34-3	100 ppm	orl-rat 725mg/kg
13.	2,2-Dichloropropane	93538	112116	0.05	5.00	0.025	2000.9	100.0	1.5	594-20-7	N/A	N/A
14.	Tetrachloroethene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.5	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15.	1,1,1-Trichloroethane	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.5	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16.	1,2-Dibromo-3-chloropropane	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.5	96-12-8	0.001 ppm	orl-rat 170mg/kg
17.	1,2-Dibromoethane	93538	112116	0.05	5.00	0.025	1999.9	100.0	1.5	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18.	1,2-Dichloroethane	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19.	1,2-Dichloropropane	93538	112116	0.05	5.00	0.025	1999.9	100.0	1.5	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20.	1,3-Dichloropropane	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	142-28-9	N/A	unr-mus 3600mg/kg
21.	1,1-Dichloropropene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	563-58-6	N/A	N/A
22.	cis-1,3-Dichloropropene	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.5	10061-01-5	N/A	N/A
23.	trans-1,3-Dichloropropene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	10061-02-6	N/A	N/A
24.	Hexachloro-1,3-butadiene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25.	1,1,1,2-Tetrachloroethane	93538	112116	0.05	5.00	0.025	2000.4	100.0	1.5	630-20-6	N/A	orl-rat 670mg/kg
26.	1,1,2,2-Tetrachloroethane	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.5	79-34-5	5 ppm (35mg/m3/8H)(skin)	orl-rat 800mg/kg
27.	1,1,2-Trichloroethane	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	79-01-6	50 ppm (270mg/m3/8H)	ori-mus 2402mg/kg
29.	1,2,3-Trichloropropane	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	96-18-4	10 ppm (60mg/m3/8H)	ori-rat 149.6mg/kg
30.	Benzene	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.1	71-43-2	1 ppm	ori-rat 4894mg/kg
31.	Bromobenzene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.1	108-86-1	N/A	ori-rat 2699mg/kg
32.	n-Butyl benzene	93538	112116	0.05	5.00	0.025	2000.9	100.0	1.1	104-51-8	N/A	N/A
33.	Ethyl benzene	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.1	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34.	p-Isopropyl toluene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.1	99-87-6	N/A	orl-rat 4750mg/kg
35.	Naphthalene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.1	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36.	Toluene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.1	108-88-3	200 ppm	orl-rat 5000mg/kg
37.	1,2,3-Trichlorobenzene	93538	112116	0.05	5.00	0.025	2001.1	100.0	1.1	87-61-6	N/A	ipr-mus 1390mg/kg
38.	1,2,4-Trichlorobenzene	93538	112116	0.05	5.00	0.025	2000.7	100.0	1.1	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39.	1,2,4-Trimethylbenzene	93538	112116	0.05	5.00	0.025	2000.6	100.0	1.1	95-63-6	N/A	orl-rat 5g/kg
40.	1,3,5-Trimethylbenzene	93538	112116	0.05	5.00	0.025	2000.4	100.0	1.1	108-67-8	N/A	N/A
41.	Styrene	93538	112116	0.05	5.00	0.025	2001.4	100.1	1.1	100-42-5	100 ppm	orl-rat 5000mg/kg
42.	tert-Butyl benzene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.1	98-06-6	N/A	N/A
43.	sec-Butyl benzene	93538	112116	0.05	5.00	0.025	2000.4	100.0	1.1	135-98-8	N/A	orl-rat 2240mg/kg
44.	Chlorobenzene	93538	112116	0.05	5.00	0.025	2000.6	100.0	1.1	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45.	2-Chlorotoluene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.1	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46.	4-Chlorotoluene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.1	106-43-4	N/A	orl-rat 2100mg/kg
47.	1,2-Dichlorobenzene	93538	112116	0.05	5.00	0.025	2000.6	100.0	1.1	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48.	1,3-Dichlorobenzene	93538	112116	0.05	5.00	0.025	2000.5	100.0	1.1	541-73-1	N/A	ipr-mus 1062mg/kg
49.	1,4-Dichlorobenzene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.1	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50.	Isopropylbenzene	93538	112116	0.05	5.00	0.025	2000.6	100.0	1.1	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51.	n-Propylbenzene	93538	112116	0.05	5.00	0.025	2000.4	100.0	1.1	103-65-1	N/A	orl-rat 6040mg/kg
52.	o-Xylene	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.1	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53.	m-Xylene	93538	112116	0.05	5.00	0.025	1000.1	**50.0**	0.7	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54.	p-Xylene	93538	112116	0.05	5.00	0.025	1001.1	**50.1**	0.7	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55.	Carbon disulphide	97269	102412	0.005	0.50	0.002	20013.3	100.1	1.0	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56.	1,4-Dioxane	97269	102412	0.005	0.50	0.002	20006.8	100.0	1.0	123-91-1	25 ppm (90mg/m3/8H)(skin)	ori-mus 5700mg/kg
	xachloroethane	97269	102412	0.005	0.50	0.002	20003.5	100.0	1.0	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
	thyl tert-butyl ether (MTBE)	97269	102412	0.005	0.50	0.002	20022.8	100.1	1.0	1634-04-4	N/A	orl-rat 4g/kg
	Methylnaphthalene	97269	102412	0.005	0.50	0.002	20001.6	100.0	1.0	91-57-6	N/A	orl-rat 1630mg/kg
	,2-Trichloro-1,2,2-trifluoroethane	97269	102412	0.005	0.50	0.002	20025.7	100.1	1.0	76-13-1	1000 ppm (7600mg/m3/8H)	ori-rat 43g/kg
	Pentane	97235	120114	0.05	5.00	0.025	2002.6	100.1	1.1	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
	Hexane	97235	120114	0.05	5.00	0.025	2002.6	100.1	1.1	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
	Heptane	97235	120114	0.05	5.00	0.025	2003.1	100.1	1.1	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
	Octane	97235	120114	0.05	5.00	0.025	2001.6	100.1	1.1	111-65-9	300 ppm(1450mg/m3/8H)	N/A
	Nonane	97235	120114	0.05	5.00	0.025	2000.7	100.0	1.1	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
	Decane	97235	120114	0.05	5.00	0.025	2001.8	100.1	1.1	124-18-5	N/A	N/A

67.	n-Undecane	97235	120114	0.05	5.00	0.025	2003.6	100.2	1.1	1120-21-4	N/A	ivn-mus 517mg/kg
68.	n-Dodecane	97235	120114	0.05	5.00	0.025	2000.6	100.0	1.1	112-40-3	N/A	N/A
69.	n-Tridecane	97235	120114	0.05	5.00	0.025	2000.2	100.0	1.1	629-50-5	N/A	ivn-mus 1161mg/kg
70.	n-Tetradecane	97235	120114	0.05	5.00	0.025	2001.5	100.1	1.1	629-59-4	N/A	N/A
71.	n-Pentadecane	97235	120114	0.05	5.00	0.025	2001.3	100.1	1.1	629-62-9	N/A	ivn-mus 3494mg/kg
72.	Bromomethane	30058	103116	0.05	5.00	0.025	2004.4	100.2	1.1	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73.	Chloroethane	30058	103116	0.05	5.00	0.025	2003.4	100.2	1.1	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74.	Chloromethane	30058	103116	0.05	5.00	0.025	2003.4	100.2	1.1	74-87-3	100 ppm	orl-rat 1800mg/kg
75.	Dichlorodifluoromethane	30058	103116	0.05	5.00	0.025	2000.7	100.0	1.1	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76.	Trichlorofluoromethane	30058	103116	0.05	5.00	0.025	2001.7	100.1	1.1	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77.	Vinyl chloride	30058	103116	0.05	5.00	0.025	2010.4	100.5	1.1	75-01-4	N/A	N/A
78.	4-Methyl-2-pentanone (MIBK)	82442	112816	0.00	0.50	0.002	20003.5	100.0	1.0	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79.	p-Bromofluorobenzene	20002	112816	0.05	5.00	0.025	2000.5	100.0	1.1	460-00-4	N/A	orl-rat 2700mg/kg
80.	1,2-Dichloroethane-d4	20002	112816	0.05	5.00	0.025	2001.8	100.1	1.1	17060-07-0	N/A	orl-mus 625mg/kg
81.	Toluene-d8	20002	112816	0.05	5.00	0.025	2002.1	100.1	1.1	2037-26-5	200 ppm	orl-rat 5000mg/kg
82.	Chlorobenzene-d5	22013	112816	0.10	10.00	0.006	2001.9	**200.2**	0.8	3114-55-4	N/A	orl-rat 1110mg/kg
83.	1,4-Dichlorobenzene-d4	22013	112816	0.10	10.00	0.006	2002.1	**200.2**	0.9	3855-82-1	N/A	orl-rat 500mg/kg
84.	Fluorobenzene	22013	112816	0.10	10.00	0.006	2000.5	**200.0**	0.9	462-06-6	N/A	orl-rat 4399mg/kg

- **The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.**
- **Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).**
- **Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.**
- **All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.**
- **Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).**

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 1900019

Lot No.: 041218

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Analytical Reference Material ARM

ISO 9001 QS Registered
ISO 17025-34-35-43 Accredited
Scopes: http://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT

Part Number: 92026
Lot Number: 041218
Description: EPA Method 8260B Internal & Surrogate Standard
7 components
Expiration Date: 041223
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 2000
NIST Test ID#: 2506734D

Solvent(s):	Lot#
Methanol	DS435

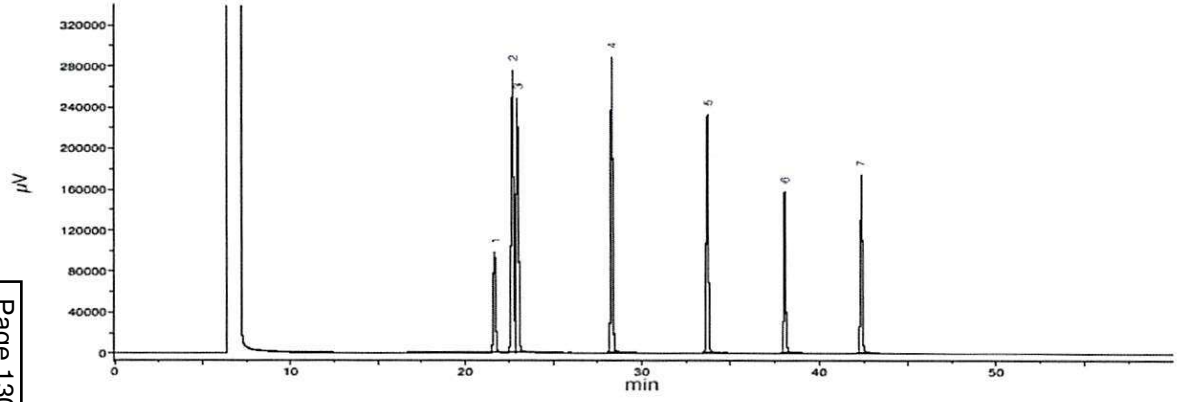
5E-05 Balance Uncertainty
Weight(s) shown below were combined and diluted to (mL): 100.0 0.001 Flask Uncertainty

	041218	
Formulated By:	Jason Criscio	DATE
	041218	
Reviewed By:	Pedro L. Rentas	DATE

	Compound	RM#	Lot Number	Nominal Conc (µg/mL)	Purity (%)	Uncertainty Purity	Target Weight(g)	Actual Weight(g)	Actual Conc (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Chlorobenzene-d5	69	PR-23926/062912CB1	2000	99.7	0.2	0.20062	0.20085	2002.3	8.1	3114-55-4	N/A	orl-rat 1110mg/kg
2.	1,4-Dichlorobenzene-d4	118	PR-18488/07267CB1	2000	98	0.2	0.20410	0.20429	2001.8	8.2	3855-82-1	N/A	orl-rat 500mg/kg
3.	Fluorobenzene	186	16006LH	2000	99	0.2	0.20204	0.20220	2001.6	8.1	462-06-6	N/A	orl-rat 4399mg/kg
4.	p-Bromofluorobenzene	48	01127COV	2000	99	0.2	0.20204	0.20221	2001.7	8.1	460-00-4	N/A	orl-rat 2700mg/kg
5.	1,4-Difluorobenzene	155	13105AO	2000	99	0.2	0.20204	0.20224	2002.0	8.1	540-36-3	N/A	N/A
6.	1,2-Dichloroethane-d4	137	V288P25	2000	99.6	0.2	0.20083	0.20095	2001.2	8.1	17060-07-0	N/A	orl-mus 625mg/kg
7.	Toluene-d8	282	PR-27981/120116TL1	2000	99.5	0.2	0.20103	0.20120	2001.7	8.1	2037-26-5	200 ppm	orl-rat 5000mg/kg

- **The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.**
- **Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).**
- **Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.**
- **All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.**
- **Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).**

Comments
GC5-M1 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min.,
Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min.
Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.),
Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C.
FID Signal = Edaq Channel 1
Standard injection = 0.5µL, Range=3



Name	FID (min.)
1,2-Dichloroethane-d4	21.67
Fluorobenzene	22.70
1,4-Difluorobenzene	22.98
Toluene-d8	28.30
Chlorobenzene-d5	33.69
p-Bromofluorobenzene	38.06
1,4-Dichlorobenzene-d4	42.36

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lot No.: 112916

Lab Standard No.: 1900037

CERTIFIED WEIGHT REPORT

Part Number: 97270
Lot Number: 112916
Description: 8260 VOC 2nd Source Calibration Check
84 components
Expiration Date: 112921 **Solvent(s):** Methanol **Lot#** DP303Q9
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 100
NIST Test ID#: 822-275872-11 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 100.0 0.001 Flask Uncertainty

Formulated By:	Paul Barron	112916 DATE
Reviewed By:	Pedro L. Rentas	112916 DATE

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. Bromodichloromethane	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	75-27-4	N/A	orl-rat 916mg/kg
2. Dibromochloromethane	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	124-48-1	N/A	orl-rat 848mg/kg
3. cis-1,2-Dichloroethene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.5	156-59-2	N/A	N/A
4. trans-1,2-Dichloroethene	93538	112116	0.05	5.00	0.025	2000.9	100.0	1.5	156-60-5	N/A	orl-rat 1235mg/kg
5. Methylene chloride	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	75-09-2	500 ppm	orl-rat 2136mg/kg
6. 1,1-Dichloroethene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.1	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7. Bromochloromethane	93538	112116	0.05	5.00	0.025	2000.5	100.0	1.5	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8. Bromoform	93538	112116	0.05	5.00	0.025	2001.2	100.0	1.5	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9. Carbon tetrachloride	93538	112116	0.05	5.00	0.025	2000.7	100.0	1.5	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10. Chloroform	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11. Dibromomethane	93538	112116	0.05	5.00	0.025	2000.9	100.0	1.5	74-95-3	N/A	orl-rat 108mg/kg
12. 1,1-Dichloroethane	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.5	75-34-3	100 ppm	orl-rat 725mg/kg
13. 2,2-Dichloropropane	93538	112116	0.05	5.00	0.025	2000.9	100.0	1.5	594-20-7	N/A	N/A
14. Tetrachloroethene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.5	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15. 1,1,1-Trichloroethane	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.5	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16. 1,2-Dibromo-3-chloropropane	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.5	96-12-8	0.001 ppm	orl-rat 170mg/kg
17. 1,2-Dibromoethane	93538	112116	0.05	5.00	0.025	1999.9	100.0	1.5	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18. 1,2-Dichloroethane	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19. 1,2-Dichloropropane	93538	112116	0.05	5.00	0.025	1999.9	100.0	1.5	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20. 1,3-Dichloropropane	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	142-28-9	N/A	unr-mus 3600mg/kg
21. 1,1-Dichloropropene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	563-58-6	N/A	N/A
22. cis-1,3-Dichloropropene	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.5	10061-01-5	N/A	N/A
23. trans-1,3-Dichloropropene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	10061-02-6	N/A	N/A
24. Hexachloro-1,3-butadiene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25. 1,1,1,2-Tetrachloroethane	93538	112116	0.05	5.00	0.025	2000.4	100.0	1.5	630-20-6	N/A	orl-rat 670mg/kg
26. 1,1,2,2-Tetrachloroethane	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.5	79-34-5	5 ppm (35mg/m3/9H)(skin)	orl-rat 800mg/kg
27. 1,1,2-Trichloroethane	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28. Trichloroethene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.5	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29. 1,2,3-Trichloropropane	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.5	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30. Benzene	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.1	71-43-2	1 ppm	orl-rat 4894mg/kg
31. Bromobenzene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.1	108-86-1	N/A	orl-rat 2699mg/kg
32. n-Butyl benzene	93538	112116	0.05	5.00	0.025	2000.9	100.0	1.1	104-51-8	N/A	N/A
33. Ethyl benzene	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.1	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34. p-Isopropyl toluene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.1	99-87-6	N/A	orl-rat 4750mg/kg
35. Naphthalene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.1	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36. Toluene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.1	108-88-3	200 ppm	orl-rat 5000mg/kg
37. 1,2,3-Trichlorobenzene	93538	112116	0.05	5.00	0.025	2001.1	100.0	1.1	87-61-6	N/A	ipr-mus 1390mg/kg
38. 1,2,4-Trichlorobenzene	93538	112116	0.05	5.00	0.025	2000.7	100.0	1.1	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39. 1,2,4-Trimethylbenzene	93538	112116	0.05	5.00	0.025	2000.6	100.0	1.1	95-63-6	N/A	orl-rat 5g/kg
40. 1,3,5-Trimethylbenzene	93538	112116	0.05	5.00	0.025	2000.4	100.0	1.1	108-67-8	N/A	N/A
41. Styrene	93538	112116	0.05	5.00	0.025	2001.4	100.1	1.1	100-42-5	100 ppm	orl-rat 5000mg/kg
42. tert-Butyl benzene	93538	112116	0.05	5.00	0.025	2000.2	100.0	1.1	98-06-6	N/A	N/A
43. sec-Butyl benzene	93538	112116	0.05	5.00	0.025	2000.4	100.0	1.1	135-98-8	N/A	orl-rat 2240mg/kg
44. Chlorobenzene	93538	112116	0.05	5.00	0.025	2000.6	100.0	1.1	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45. 2-Chlorotoluene	93538	112116	0.05	5.00	0.025	2000.1	100.0	1.1	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46. 4-Chlorotoluene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.1	106-43-4	N/A	orl-rat 2100mg/kg
47. 1,2-Dichlorobenzene	93538	112116	0.05	5.00	0.025	2000.6	100.0	1.1	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48. 1,3-Dichlorobenzene	93538	112116	0.05	5.00	0.025	2000.5	100.0	1.1	541-73-1	N/A	ipr-mus 1062mg/kg
49. 1,4-Dichlorobenzene	93538	112116	0.05	5.00	0.025	2000.3	100.0	1.1	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50. Isopropylbenzene	93538	112116	0.05	5.00	0.025	2000.6	100.0	1.1	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51. n-Propylbenzene	93538	112116	0.05	5.00	0.025	2000.4	100.0	1.1	103-65-1	N/A	orl-rat 6040mg/kg
52. o-Xylene	93538	112116	0.05	5.00	0.025	2000.0	100.0	1.1	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53. m-Xylene	93538	112116	0.05	5.00	0.025	1000.1	**50.0**	0.7	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54. p-Xylene	93538	112116	0.05	5.00	0.025	1001.1	**50.1**	0.7	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55. Carbon disulphide	97269	102412	0.005	0.50	0.002	20013.3	100.1	1.0	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56. 1,4-Dioxane	97269	102412	0.005	0.50	0.002	20006.8	100.0	1.0	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
xachloroethane	97269	102412	0.005	0.50	0.002	20003.5	100.0	1.0	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
thyl tert-butyl ether (MTBE)	97269	102412	0.005	0.50	0.002	20022.8	100.1	1.0	1634-04-4	N/A	orl-rat 4g/kg
Methylnaphthalene	97269	102412	0.005	0.50	0.002	20001.6	100.0	1.0	91-57-6	N/A	orl-rat 1630mg/kg
,2-Trichloro-1,2,2-trifluoroethane	97269	102412	0.005	0.50	0.002	20025.7	100.1	1.0	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
Pentane	97235	120114	0.05	5.00	0.025	2002.6	100.1	1.1	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
Hexane	97235	120114	0.05	5.00	0.025	2002.6	100.1	1.1	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
Heptane	97235	120114	0.05	5.00	0.025	2003.1	100.1	1.1	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
Octane	97235	120114	0.05	5.00	0.025	2001.6	100.1	1.1	111-65-9	300 ppm(1450mg/m3/8H)	N/A
Nonane	97235	120114	0.05	5.00	0.025	2000.7	100.0	1.1	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
Decane	97235	120114	0.05	5.00	0.025	2001.8	100.1	1.1	124-18-5	N/A	N/A

67.	n-Undecane	97235	120114	0.05	5.00	0.025	2003.6	100.2	1.1	1120-21-4	N/A	ivn-mus 517mg/kg
68.	n-Dodecane	97235	120114	0.05	5.00	0.025	2000.6	100.0	1.1	112-40-3	N/A	N/A
69.	n-Tridecane	97235	120114	0.05	5.00	0.025	2000.2	100.0	1.1	629-50-5	N/A	ivn-mus 1161mg/kg
70.	n-Tetradecane	97235	120114	0.05	5.00	0.025	2001.5	100.1	1.1	629-59-4	N/A	N/A
71.	n-Pentadecane	97235	120114	0.05	5.00	0.025	2001.3	100.1	1.1	629-62-9	N/A	ivn-mus 3494mg/kg
72.	Bromomethane	30058	103116	0.05	5.00	0.025	2004.4	100.2	1.1	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73.	Chloroethane	30058	103116	0.05	5.00	0.025	2003.4	100.2	1.1	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74.	Chloromethane	30058	103116	0.05	5.00	0.025	2003.4	100.2	1.1	74-87-3	100 ppm	orl-rat 1800mg/kg
75.	Dichlorodifluoromethane	30058	103116	0.05	5.00	0.025	2000.7	100.0	1.1	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76.	Trichlorofluoromethane	30058	103116	0.05	5.00	0.025	2001.7	100.1	1.1	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77.	Vinyl chloride	30058	103116	0.05	5.00	0.025	2010.4	100.5	1.1	75-01-4	N/A	N/A
78.	4-Methyl-2-pentanone (MIBK)	82442	112816	0.00	0.50	0.002	20003.5	100.0	1.0	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79.	p-Bromofluorobenzene	20002	112816	0.05	5.00	0.025	2000.5	100.0	1.1	460-00-4	N/A	orl-rat 2700mg/kg
80.	1,2-Dichloroethane-d4	20002	112816	0.05	5.00	0.025	2001.8	100.1	1.1	17060-07-0	N/A	orl-mus 625mg/kg
81.	Toluene-d8	20002	112816	0.05	5.00	0.025	2002.1	100.1	1.1	2037-26-5	200 ppm	orl-rat 5000mg/kg
82.	Chlorobenzene-d5	22013	112816	0.10	10.00	0.006	2001.9	**200.2**	0.8	3114-55-4	N/A	orl-rat 1110mg/kg
83.	1,4-Dichlorobenzene-d4	22013	112816	0.10	10.00	0.006	2002.1	**200.2**	0.9	3855-82-1	N/A	orl-rat 500mg/kg
84.	Fluorobenzene	22013	112816	0.10	10.00	0.006	2000.5	**200.0**	0.9	462-06-6	N/A	orl-rat 4399mg/kg

- **The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.**
- **Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).**
- **Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.**
- **All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.**
- **Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).**

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.
Lot No.: 061019

Lab Standard No.: 1900054

CERTIFIED WEIGHT REPORT

Part Number: 64090
Lot Number: 061019
Description: VOC Calibration Level 1 (800 ug/mL)
42 components
Expiration Date: 061022 **Solvent:** Methanol **Lot#** DU230-USQ10
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): Varied
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 20.0 0.002 Flask Uncertainty
RED = Surrogate; BLUE = Internal

Formulated By:	Gabriel Helland	061019 DATE
Reviewed By:	Pedro L. Rentas	061019 DATE

	Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(µg/mL)	Final Conc.(µg/mL)	Expanded Uncertainty (+/-) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Benzene	64088	060719	0.200	4.00	0.017	4001.1	800.8	7.5	71-43-2	1 ppm	orl-rat 4894mg/kg
2.	Carbon tetrachloride	64088	060719	0.200	4.00	0.017	4000.8	800.7	7.5	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
3.	Chlorobenzene	64088	060719	0.200	4.00	0.017	4000.7	800.7	7.5	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
4.	Chloroform	64088	060719	0.200	4.00	0.017	4000.7	800.7	7.5	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
5.	1,2-Dibromoethane	64088	060719	0.200	4.00	0.017	4000.8	800.7	7.5	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
6.	1,2-Dichlorobenzene	64088	060719	0.200	4.00	0.017	4001.3	800.8	7.5	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
7.	1,3-Dichlorobenzene	64088	060719	0.200	4.00	0.017	4001.3	800.8	7.6	541-73-1	N/A	ipr-mus 1062mg/kg
8.	1,4-Dichlorobenzene	64088	060719	0.200	4.00	0.017	4000.6	800.7	7.5	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
9.	1,1-Dichloroethane	64088	060719	0.200	4.00	0.017	4001.0	800.8	7.5	75-34-3	100 ppm	orl-rat 725mg/kg
10.	1,2-Dichloroethane	64088	060719	0.200	4.00	0.017	4001.0	800.8	7.5	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
11.	1,1-Dichloroethene	64088	060719	0.200	4.00	0.017	4001.3	800.8	7.5	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
12.	cis-1,2-Dichloroethene	64088	060719	0.200	4.00	0.017	4001.3	800.8	7.5	156-59-2	N/A	N/A
13.	trans-1,2-Dichloroethene	64088	060719	0.200	4.00	0.017	4001.3	800.8	7.6	156-60-5	N/A	orl-rat 1235mg/kg
14.	1,4-Dioxane	64088	060719	0.200	4.00	0.017	4000.3	800.6	7.5	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
15.	Ethyl benzene	64088	060719	0.200	4.00	0.017	4001.4	800.9	7.5	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
16.	Isopropylbenzene	64088	060719	0.200	4.00	0.017	4001.3	800.8	7.5	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
17.	Methyl tert-butyl ether (MTBE)	64088	060719	0.200	4.00	0.017	4000.4	800.7	7.5	1634-04-4	N/A	orl-rat 4g/kg
18.	2-Methylnaphthalene	64088	060719	0.200	4.00	0.017	4000.4	800.7	7.6	91-57-6	N/A	orl-rat 1630mg/kg
19.	Naphthalene	64088	060719	0.200	4.00	0.017	4000.3	800.6	7.5	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
20.	1,1,1,2-Tetrachloroethane	64088	060719	0.200	4.00	0.017	4000.5	800.7	7.5	630-20-6	N/A	orl-rat 670mg/kg
21.	1,1,2,2-Tetrachloroethane	64088	060719	0.200	4.00	0.017	4000.5	800.7	7.5	79-34-5	5 ppm (35mg/m3/9H)(skin)	orl-rat 800mg/kg
22.	Tetrachloroethene	64088	060719	0.200	4.00	0.017	4000.8	800.7	7.5	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
23.	Toluene	64088	060719	0.200	4.00	0.017	4001.4	800.9	7.5	108-88-3	200 ppm	orl-rat 5000mg/kg
24.	1,2,3-Trichlorobenzene	64088	060719	0.200	4.00	0.017	4000.4	800.7	7.5	87-61-6	N/A	ipr-mus 1390mg/kg
25.	1,2,4-Trichlorobenzene	64088	060719	0.200	4.00	0.017	4000.7	800.7	7.5	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
26.	1,1,1-Trichloroethane	64088	060719	0.200	4.00	0.017	4000.8	800.7	7.5	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
27.	1,1,2-Trichloroethane	64088	060719	0.200	4.00	0.017	4001.2	800.8	7.6	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	64088	060719	0.200	4.00	0.017	4000.8	800.7	7.5	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	64088	060719	0.200	4.00	0.017	4000.3	800.6	7.5	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	1,1,2-Trichlorotrifluoroethane	64088	060719	0.200	4.00	0.017	4001.3	800.8	7.5	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
31.	1,2,4-Trimethylbenzene	64088	060719	0.200	4.00	0.017	4000.3	800.7	7.6	95-63-6	N/A	orl-rat 5g/kg
32.	1,3,5-Trimethylbenzene	64088	060719	0.200	4.00	0.017	4000.3	800.7	7.6	108-67-8	N/A	orl-rat 5000mg/kg
33.	o-Xylene	64088	060719	0.200	4.00	0.017	4000.6	800.7	7.5	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
34.	m-Xylene	64088	060719	0.200	4.00	0.017	2000.4	400.4	3.8	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
35.	p-Xylene	64088	060719	0.200	4.00	0.017	2001.2	400.5	3.8	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
36.	Vinyl chloride	33591	052119	0.040	0.80	0.004	20030.1	801.8	8.7	75-01-4	N/A	N/A
37.	p-Bromofluorobenzene	64088	060719	0.200	4.00	0.017	4001.3	800.8	7.5	460-00-4	N/A	orl-rat 2700mg/kg
38.	1,2-Dichloroethane-d4	64088	060719	0.200	4.00	0.017	4000.7	800.7	7.5	17060-07-0	N/A	orl-mus 625mg/kg
39.	Toluene-d8	64088	060719	0.200	4.00	0.017	4000.6	800.7	7.5	2037-26-5	200 ppm	orl-rat 5000mg/kg
40.	Chlorobenzene-d5	22013	022818	0.100	2.00	0.017	2000.6	200.2	3.5	3114-55-4	N/A	orl-rat 1110mg/kg
41.	1,4-Dichlorobenzene-d4	22013	022818	0.100	2.00	0.017	2000.7	200.2	3.5	3855-82-1	N/A	orl-rat 500mg/kg
42.	Fluorobenzene	22013	022818	0.100	2.00	0.017	2001.0	200.2	3.5	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.
Lot No.: 061019

Lab Standard No.: 1900055

CERTIFIED WEIGHT REPORT

Part Number: 64091
Lot Number: 061019
Description: VOC Calibration Level 2 (1200 ug/mL)
42 components
Expiration Date: 061022 **Solvent:** Methanol **Lot#** DU230-USQ10
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): Varied
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 20.0 0.002 Flask Uncertainty
RED = Surrogate; BLUE = Internal

Formulated By:	Gabriel Helland	061019 DATE
Reviewed By:	Pedro L. Rentas	061019 DATE

	Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(µg/mL)	Final Conc.(µg/mL)	Expanded Uncertainty (+/-) µg/mL	CAS#	SDS Information (Solvent Safety Info. On Attached pg.) OSHA PEL (TWA)	LD50
1.	Benzene	64088	060719	0.300	6.00	0.042	4001.1	1201.2	17.6	71-43-2	1 ppm	orl-rat 4894mg/kg
2.	Carbon tetrachloride	64088	060719	0.300	6.00	0.042	4000.8	1201.1	17.6	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
3.	Chlorobenzene	64088	060719	0.300	6.00	0.042	4000.7	1201.1	17.6	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
4.	Chloroform	64088	060719	0.300	6.00	0.042	4000.7	1201.1	17.6	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
5.	1,2-Dibromoethane	64088	060719	0.300	6.00	0.042	4000.8	1201.1	17.6	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
6.	1,2-Dichlorobenzene	64088	060719	0.300	6.00	0.042	4001.3	1201.3	17.6	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
7.	1,3-Dichlorobenzene	64088	060719	0.300	6.00	0.042	4001.3	1201.3	17.6	541-73-1	N/A	ipr-mus 1062mg/kg
8.	1,4-Dichlorobenzene	64088	060719	0.300	6.00	0.042	4000.6	1201.1	17.6	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
9.	1,1-Dichloroethane	64088	060719	0.300	6.00	0.042	4001.0	1201.2	17.6	75-34-3	100 ppm	orl-rat 725mg/kg
10.	1,2-Dichloroethane	64088	060719	0.300	6.00	0.042	4001.0	1201.2	17.6	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
11.	1,1-Dichloroethene	64088	060719	0.300	6.00	0.042	4001.3	1201.3	17.6	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
12.	cis-1,2-Dichloroethene	64088	060719	0.300	6.00	0.042	4001.3	1201.3	17.6	156-59-2	N/A	N/A
13.	trans-1,2-Dichloroethene	64088	060719	0.300	6.00	0.042	4001.3	1201.3	17.6	156-60-5	N/A	orl-rat 1235mg/kg
14.	1,4-Dioxane	64088	060719	0.300	6.00	0.042	4000.3	1201.0	17.6	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
15.	Ethyl benzene	64088	060719	0.300	6.00	0.042	4001.4	1201.3	17.6	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
16.	Isopropylbenzene	64088	060719	0.300	6.00	0.042	4001.3	1201.3	17.6	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
17.	Methyl tert-butyl ether (MTBE)	64088	060719	0.300	6.00	0.042	4000.4	1201.0	17.6	1634-04-4	N/A	orl-rat 4g/kg
18.	2-Methylnaphthalene	64088	060719	0.300	6.00	0.042	4000.4	1201.0	17.6	91-57-6	N/A	orl-rat 1630mg/kg
19.	Naphthalene	64088	060719	0.300	6.00	0.042	4000.3	1201.0	17.6	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
20.	1,1,1,2-Tetrachloroethane	64088	060719	0.300	6.00	0.042	4000.5	1201.0	17.6	630-20-6	N/A	orl-rat 670mg/kg
21.	1,1,2,2-Tetrachloroethane	64088	060719	0.300	6.00	0.042	4000.5	1201.0	17.6	79-34-5	5 ppm (35mg/m3/9H)(skin)	orl-rat 800mg/kg
22.	Tetrachloroethene	64088	060719	0.300	6.00	0.042	4000.8	1201.1	17.6	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
23.	Toluene	64088	060719	0.300	6.00	0.042	4001.4	1201.3	17.6	108-88-3	200 ppm	orl-rat 5000mg/kg
24.	1,2,3-Trichlorobenzene	64088	060719	0.300	6.00	0.042	4000.4	1201.0	17.6	87-61-6	N/A	ipr-mus 1390mg/kg
25.	1,2,4-Trichlorobenzene	64088	060719	0.300	6.00	0.042	4000.7	1201.1	17.6	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
26.	1,1,1-Trichloroethane	64088	060719	0.300	6.00	0.042	4000.8	1201.1	17.6	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
27.	1,1,2-Trichloroethane	64088	060719	0.300	6.00	0.042	4001.2	1201.2	17.6	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	64088	060719	0.300	6.00	0.042	4000.8	1201.1	17.6	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	64088	060719	0.300	6.00	0.042	4000.3	1201.0	17.6	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	1,1,2-Trichlorotrifluoroethane	64088	060719	0.300	6.00	0.042	4001.3	1201.3	17.6	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
31.	1,2,4-Trimethylbenzene	64088	060719	0.300	6.00	0.042	4000.3	1201.0	17.6	95-63-6	N/A	orl-rat 5g/kg
32.	1,3,5-Trimethylbenzene	64088	060719	0.300	6.00	0.042	4000.3	1201.0	17.6	108-67-8	N/A	orl-rat 5000mg/kg
33.	o-Xylene	64088	060719	0.300	6.00	0.042	4000.6	1201.1	17.6	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
34.	m-Xylene	64088	060719	0.300	6.00	0.042	2000.4	**600.6**	8.8	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
35.	p-Xylene	64088	060719	0.300	6.00	0.042	2001.2	**600.8**	8.8	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
36.	Vinyl chloride	33591	052119	0.060	1.20	0.017	20030.1	1202.7	34.4	75-01-4	N/A	N/A
37.	p-Bromofluorobenzene	64088	060719	0.300	6.00	0.042	4001.3	1201.3	17.6	460-00-4	N/A	orl-rat 2700mg/kg
38.	1,2-Dichloroethane-d4	64088	060719	0.300	6.00	0.042	4000.7	1201.1	17.6	17060-07-0	N/A	orl-mus 625mg/kg
39.	Toluene-d8	64088	060719	0.300	6.00	0.042	4000.6	1201.0	17.6	2037-26-5	200 ppm	orl-rat 5000mg/kg
40.	Chlorobenzene-d5	22013	022818	0.100	2.00	0.017	2000.6	200.2	3.5	3114-55-4	N/A	orl-rat 1110mg/kg
41.	1,4-Dichlorobenzene-d4	22013	022818	0.100	2.00	0.017	2000.7	200.2	3.5	3855-82-1	N/A	orl-rat 500mg/kg
42.	Fluorobenzene	22013	022818	0.100	2.00	0.017	2001.0	200.2	3.5	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.
Lot No.: 061019

Lab Standard No.: 1900056

CERTIFIED WEIGHT REPORT

Part Number: 64092
Lot Number: 061019
Description: VOC Calibration Level 3 (1600 ug/mL)
42 components
Expiration Date: 061022 **Solvent:** Methanol **Lot#** DU230-USQ10
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): Varied
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 20.0 0.002 Flask Uncertainty
RED = Surrogate; BLUE = Internal

Formulated By:	Gabriel Helland	061019 DATE
Reviewed By:	Pedro L. Rentas	061019 DATE

	Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(µg/mL)	Final Conc.(µg/mL)	Expanded Uncertainty (+/-) µg/mL	CAS#	SDS Information (Solvent Safety Info. On Attached pg.) OSHA PEL (TWA)	LD50
1.	Benzene	64088	060719	0.400	8.00	0.042	4001.1	1601.6	18.1	71-43-2	1 ppm	orl-rat 4894mg/kg
2.	Carbon tetrachloride	64088	060719	0.400	8.00	0.042	4000.8	1601.5	18.1	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
3.	Chlorobenzene	64088	060719	0.400	8.00	0.042	4000.7	1601.4	18.1	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
4.	Chloroform	64088	060719	0.400	8.00	0.042	4000.7	1601.4	18.1	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
5.	1,2-Dibromoethane	64088	060719	0.400	8.00	0.042	4000.8	1601.5	18.1	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
6.	1,2-Dichlorobenzene	64088	060719	0.400	8.00	0.042	4001.3	1601.7	18.1	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
7.	1,3-Dichlorobenzene	64088	060719	0.400	8.00	0.042	4001.3	1601.7	18.1	541-73-1	N/A	ipr-mus 1062mg/kg
8.	1,4-Dichlorobenzene	64088	060719	0.400	8.00	0.042	4000.6	1601.4	18.1	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
9.	1,1-Dichloroethane	64088	060719	0.400	8.00	0.042	4001.0	1601.6	18.1	75-34-3	100 ppm	orl-rat 725mg/kg
10.	1,2-Dichloroethane	64088	060719	0.400	8.00	0.042	4001.0	1601.6	18.1	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
11.	1,1-Dichloroethene	64088	060719	0.400	8.00	0.042	4001.3	1601.7	18.1	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
12.	cis-1,2-Dichloroethene	64088	060719	0.400	8.00	0.042	4001.3	1601.7	18.1	156-59-2	N/A	N/A
13.	trans-1,2-Dichloroethene	64088	060719	0.400	8.00	0.042	4001.3	1601.7	18.1	156-60-5	N/A	orl-rat 1235mg/kg
14.	1,4-Dioxane	64088	060719	0.400	8.00	0.042	4000.3	1601.3	18.1	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
15.	Ethyl benzene	64088	060719	0.400	8.00	0.042	4001.4	1601.7	18.1	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
16.	Isopropylbenzene	64088	060719	0.400	8.00	0.042	4001.3	1601.7	18.1	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
17.	Methyl tert-butyl ether (MTBE)	64088	060719	0.400	8.00	0.042	4000.4	1601.3	18.1	1634-04-4	N/A	orl-rat 4g/kg
18.	2-Methylnaphthalene	64088	060719	0.400	8.00	0.042	4000.4	1601.4	18.1	91-57-6	N/A	orl-rat 1630mg/kg
19.	Naphthalene	64088	060719	0.400	8.00	0.042	4000.3	1601.3	18.1	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
20.	1,1,1,2-Tetrachloroethane	64088	060719	0.400	8.00	0.042	4000.5	1601.4	18.1	630-20-6	N/A	orl-rat 670mg/kg
21.	1,1,2,2-Tetrachloroethane	64088	060719	0.400	8.00	0.042	4000.5	1601.4	18.1	79-34-5	5 ppm (35mg/m3/9H)(skin)	orl-rat 800mg/kg
22.	Tetrachloroethene	64088	060719	0.400	8.00	0.042	4000.8	1601.5	18.1	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
23.	Toluene	64088	060719	0.400	8.00	0.042	4001.4	1601.7	18.1	108-88-3	200 ppm	orl-rat 5000mg/kg
24.	1,2,3-Trichlorobenzene	64088	060719	0.400	8.00	0.042	4000.4	1601.3	18.1	87-61-6	N/A	ipr-mus 1390mg/kg
25.	1,2,4-Trichlorobenzene	64088	060719	0.400	8.00	0.042	4000.7	1601.4	18.1	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
26.	1,1,1-Trichloroethane	64088	060719	0.400	8.00	0.042	4000.8	1601.5	18.1	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
27.	1,1,2-Trichloroethane	64088	060719	0.400	8.00	0.042	4001.2	1601.6	18.1	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	64088	060719	0.400	8.00	0.042	4000.8	1601.5	18.1	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	64088	060719	0.400	8.00	0.042	4000.3	1601.3	18.1	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	1,1,2-Trichlorotrifluoroethane	64088	060719	0.400	8.00	0.042	4001.3	1601.7	18.1	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
31.	1,2,4-Trimethylbenzene	64088	060719	0.400	8.00	0.042	4000.3	1601.3	18.1	95-63-6	N/A	orl-rat 5g/kg
32.	1,3,5-Trimethylbenzene	64088	060719	0.400	8.00	0.042	4000.3	1601.3	18.1	108-67-8	N/A	orl-rat 5000mg/kg
33.	o-Xylene	64088	060719	0.400	8.00	0.042	4000.6	1601.4	18.1	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
34.	m-Xylene	64088	060719	0.400	8.00	0.042	2000.4	**800.8**	9.0	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
35.	p-Xylene	64088	060719	0.400	8.00	0.042	2001.2	**801.1**	9.1	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
36.	Vinyl chloride	33591	052119	0.080	1.60	0.017	20030.1	1603.6	34.7	75-01-4	N/A	N/A
37.	p-Bromofluorobenzene	64088	060719	0.400	8.00	0.042	4001.3	1601.7	18.1	460-00-4	N/A	orl-rat 2700mg/kg
38.	1,2-Dichloroethane-d4	64088	060719	0.400	8.00	0.042	4000.7	1601.4	18.1	17060-07-0	N/A	orl-mus 625mg/kg
39.	Toluene-d8	64088	060719	0.400	8.00	0.042	4000.6	1601.4	18.1	2037-26-5	200 ppm	orl-rat 5000mg/kg
40.	Chlorobenzene-d5	22013	022818	0.100	2.00	0.017	2000.6	200.2	3.5	3114-55-4	N/A	orl-rat 1110mg/kg
41.	1,4-Dichlorobenzene-d4	22013	022818	0.100	2.00	0.017	2000.7	200.2	3.5	3855-82-1	N/A	orl-rat 500mg/kg
42.	Fluorobenzene	22013	022818	0.100	2.00	0.017	2001.0	200.2	3.5	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.
Lot No.: 061019

Lab Standard No.: 1900057

CERTIFIED WEIGHT REPORT

Part Number: 64093
Lot Number: 061019
Description: VOC Calibration Level 4 (2000 ug/mL)
42 components
Expiration Date: 061022 **Solvent:** Methanol **Lot#** DU230-USQ10
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): Varied
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 20.0 0.002 Flask Uncertainty

Gabriel Helland		061019
Formulated By:	Gabriel Helland	DATE
Pedro Rentas		061019
Reviewed By:	Pedro L. Rentas	DATE

RED = Surrogate; BLUE = Internal

	Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(µg/mL)	Final Conc.(µg/mL)	Expanded Uncertainty (+/-) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Benzene	64088	060719	0.500	10.00	0.042	4001.1	2002.0	18.7	71-43-2	1 ppm	orl-rat 4894mg/kg
2.	Carbon tetrachloride	64088	060719	0.500	10.00	0.042	4000.8	2001.9	18.7	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
3.	Chlorobenzene	64088	060719	0.500	10.00	0.042	4000.7	2001.8	18.7	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
4.	Chloroform	64088	060719	0.500	10.00	0.042	4000.7	2001.8	18.7	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
5.	1,2-Dibromoethane	64088	060719	0.500	10.00	0.042	4000.8	2001.8	18.7	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
6.	1,2-Dichlorobenzene	64088	060719	0.500	10.00	0.042	4001.3	2002.1	18.7	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
7.	1,3-Dichlorobenzene	64088	060719	0.500	10.00	0.042	4001.3	2002.1	18.8	541-73-1	N/A	ipr-mus 1062mg/kg
8.	1,4-Dichlorobenzene	64088	060719	0.500	10.00	0.042	4000.6	2001.8	18.7	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
9.	1,1-Dichloroethane	64088	060719	0.500	10.00	0.042	4001.0	2002.0	18.7	75-34-3	100 ppm	orl-rat 725mg/kg
10.	1,2-Dichloroethane	64088	060719	0.500	10.00	0.042	4001.0	2002.0	18.7	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
11.	1,1-Dichloroethene	64088	060719	0.500	10.00	0.042	4001.3	2002.1	18.7	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
12.	cis-1,2-Dichloroethene	64088	060719	0.500	10.00	0.042	4001.3	2002.1	18.7	156-59-2	N/A	N/A
13.	trans-1,2-Dichloroethene	64088	060719	0.500	10.00	0.042	4001.3	2002.1	18.8	156-60-5	N/A	orl-rat 1235mg/kg
14.	1,4-Dioxane	64088	060719	0.500	10.00	0.042	4000.3	2001.6	18.7	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
15.	Ethyl benzene	64088	060719	0.500	10.00	0.042	4001.4	2002.2	18.7	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
16.	Isopropylbenzene	64088	060719	0.500	10.00	0.042	4001.3	2002.1	18.7	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
17.	Methyl tert-butyl ether (MTBE)	64088	060719	0.500	10.00	0.042	4000.4	2001.7	18.7	1634-04-4	N/A	orl-rat 4g/kg
18.	2-Methylnaphthalene	64088	060719	0.500	10.00	0.042	4000.4	2001.7	18.8	91-57-6	N/A	orl-rat 1630mg/kg
19.	Naphthalene	64088	060719	0.500	10.00	0.042	4000.3	2001.6	18.7	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
20.	1,1,1,2-Tetrachloroethane	64088	060719	0.500	10.00	0.042	4000.5	2001.7	18.7	630-20-6	N/A	orl-rat 670mg/kg
21.	1,1,2,2-Tetrachloroethane	64088	060719	0.500	10.00	0.042	4000.5	2001.7	18.7	79-34-5	5 ppm (35mg/m3/9H)(skin)	orl-rat 800mg/kg
22.	Tetrachloroethene	64088	060719	0.500	10.00	0.042	4000.8	2001.8	18.7	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
23.	Toluene	64088	060719	0.500	10.00	0.042	4001.4	2002.2	18.7	108-88-3	200 ppm	orl-rat 5000mg/kg
24.	1,2,3-Trichlorobenzene	64088	060719	0.500	10.00	0.042	4000.4	2001.7	18.7	87-61-6	N/A	ipr-mus 1390mg/kg
25.	1,2,4-Trichlorobenzene	64088	060719	0.500	10.00	0.042	4000.7	2001.8	18.7	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
26.	1,1,1-Trichloroethane	64088	060719	0.500	10.00	0.042	4000.8	2001.8	18.7	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
27.	1,1,2-Trichloroethane	64088	060719	0.500	10.00	0.042	4001.2	2002.0	18.8	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	64088	060719	0.500	10.00	0.042	4000.8	2001.9	18.7	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	64088	060719	0.500	10.00	0.042	4000.3	2001.6	18.7	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	1,1,2-Trichlorotrifluoroethane	64088	060719	0.500	10.00	0.042	4001.3	2002.1	18.7	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
31.	1,2,4-Trimethylbenzene	64088	060719	0.500	10.00	0.042	4000.3	2001.6	18.8	95-63-6	N/A	orl-rat 5g/kg
32.	1,3,5-Trimethylbenzene	64088	060719	0.500	10.00	0.042	4000.3	2001.6	18.8	108-67-8	N/A	orl-rat 5000mg/kg
33.	o-Xylene	64088	060719	0.500	10.00	0.042	4000.6	2001.8	18.7	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
34.	m-Xylene	64088	060719	0.500	10.00	0.042	2000.4	**1000.9**	9.4	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
35.	p-Xylene	64088	060719	0.500	10.00	0.042	2001.2	**1001.3**	9.4	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
36.	Vinyl chloride	33591	052119	0.100	2.00	0.017	20030.1	2004.5	35.0	75-01-4	N/A	N/A
37.	p-Bromofluorobenzene	64088	060719	0.500	10.00	0.042	4001.3	2002.1	18.7	460-00-4	N/A	orl-rat 2700mg/kg
38.	1,2-Dichloroethane-d4	64088	060719	0.500	10.00	0.042	4000.7	2001.8	18.7	17060-07-0	N/A	orl-mus 625mg/kg
39.	Toluene-d8	64088	060719	0.500	10.00	0.042	4000.6	2001.7	18.7	2037-26-5	200 ppm	orl-rat 5000mg/kg
40.	Chlorobenzene-d5	22013	022818	0.100	2.00	0.017	2000.6	200.2	3.5	3114-55-4	N/A	orl-rat 1110mg/kg
41.	1,4-Dichlorobenzene-d4	22013	022818	0.100	2.00	0.017	2000.7	200.2	3.5	3855-82-1	N/A	orl-rat 500mg/kg
42.	Fluorobenzene	22013	022818	0.100	2.00	0.017	2001.0	200.2	3.5	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.
Lot No.: 021820

Lab Standard No.: 2000089

CERTIFIED WEIGHT REPORT

Part Number: 99080
Lot Number: 021820
Description: 8260 VOC Primary Calibration Level 0.5
84 components
Expiration Date: 021823 **Solvent(s):** Methanol **Lot#** DV162-USQ12
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 5
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 200.0 0.056 Flask Uncertainty

Gabriel Helland 021820
Formulated By: Gabriel Helland DATE

Pedro Rentas 021820
Reviewed By: Pedro L. Rentas DATE

	Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Bromodichloromethane	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	75-27-4	N/A	orl-rat 916mg/kg
2.	Dibromochloromethane	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	124-48-1	N/A	orl-rat 848mg/kg
3.	cis-1,2-Dichloroethene	93538	043019	0.0025	0.50	0.004	1999.9	5.0	1.2	156-59-2	N/A	N/A
4.	trans-1,2-Dichloroethene	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	156-60-5	N/A	orl-rat 1235mg/kg
5.	Methylene chloride	93538	043019	0.0025	0.50	0.004	1999.9	5.0	1.2	75-09-2	500 ppm	orl-rat 820mg/kg
6.	1,1-Dichloroethene	93538	043019	0.0025	0.50	0.004	2000.3	5.0	1.2	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7.	Bromochloromethane	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8.	Bromoform	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9.	Carbon tetrachloride	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10.	Chloroform	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11.	Dibromomethane	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	74-95-3	N/A	orl-rat 108mg/kg
12.	1,1-Dichloroethane	93538	043019	0.0025	0.50	0.004	1999.9	5.0	1.2	75-34-3	100 ppm	orl-rat 725mg/kg
13.	2,2-Dichloropropane	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	594-20-7	N/A	N/A
14.	Tetrachloroethene	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15.	1,1,1-Trichloroethane	93538	043019	0.0025	0.50	0.004	1999.9	5.0	1.2	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16.	1,2-Dibromo-3-chloropropane	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	96-12-8	0.001 ppm	orl-rat 170mg/kg
17.	1,2-Dibromoethane	93538	043019	0.0025	0.50	0.004	1999.9	5.0	1.2	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18.	1,2-Dichloroethane	93538	043019	0.0025	0.50	0.004	1999.9	5.0	1.2	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19.	1,2-Dichloropropane	93538	043019	0.0025	0.50	0.004	1999.9	5.0	1.2	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20.	1,3-Dichloropropene	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	142-28-9	N/A	unr-mus 3600mg/kg
21.	1,1-Dichloropropene	93538	043019	0.0025	0.50	0.004	1981.8	5.0	1.2	563-58-6	N/A	N/A
22.	cis-1,3-Dichloropropene	93538	043019	0.0025	0.50	0.004	1998.8	5.0	1.2	10061-01-5	N/A	N/A
23.	trans-1,3-Dichloropropene	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	10061-02-6	N/A	N/A
24.	Hexachloro-1,3-butadiene	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25.	1,1,1,2-Tetrachloroethane	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	630-20-6	N/A	orl-rat 670mg/kg
26.	1,1,2,2-Tetrachloroethane	93538	043019	0.0025	0.50	0.004	1999.9	5.0	1.2	79-34-5	5 ppm (35mg/m3/8H)(skin)	orl-rat 600mg/kg
27.	1,1,2-Trichloroethane	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	93538	043019	0.0025	0.50	0.004	1999.8	5.0	1.2	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.8mg/kg
30.	Benzene	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	71-43-2	1 ppm	orl-rat 4894mg/kg
31.	Bromobenzene	93538	043019	0.0025	0.50	0.004	2000.2	5.0	1.2	108-86-1	N/A	orl-rat 2699mg/kg
32.	n-Butyl benzene	93538	043019	0.0025	0.50	0.004	2000.9	5.0	1.2	104-51-8	N/A	N/A
33.	Ethyl benzene	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34.	p-Isopropyl toluene	93538	043019	0.0025	0.50	0.004	2000.3	5.0	1.2	99-87-6	N/A	orl-rat 4750mg/kg
35.	Naphthalene	93538	043019	0.0025	0.50	0.004	2000.1	5.0	1.2	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36.	Toluene	93538	043019	0.0025	0.50	0.004	2000.1	5.0	1.2	108-88-3	200 ppm	orl-rat 5000mg/kg
37.	1,2,3-Trichlorobenzene	93538	043019	0.0025	0.50	0.004	2001.1	5.0	1.2	87-61-6	N/A	ipr-mus 1390mg/kg
38.	1,2,4-Trichlorobenzene	93538	043019	0.0025	0.50	0.004	2000.7	5.0	1.2	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39.	1,2,4-Trimethylbenzene	93538	043019	0.0025	0.50	0.004	2000.6	5.0	1.2	95-63-6	N/A	orl-rat 5g/kg
40.	1,3,5-Trimethylbenzene	93538	043019	0.0025	0.50	0.004	2000.4	5.0	1.2	108-67-8	N/A	N/A
41.	Styrene	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	100-42-5	100 ppm	orl-rat 5000mg/kg
42.	tert-Butyl benzene	93538	043019	0.0025	0.50	0.004	2000.2	5.0	1.2	98-06-6	N/A	N/A
43.	sec-Butyl benzene	93538	043019	0.0025	0.50	0.004	2000.4	5.0	1.2	135-98-8	N/A	orl-rat 2240mg/kg
44.	Chlorobenzene	93538	043019	0.0025	0.50	0.004	2000.8	5.0	1.2	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45.	2-Chlorotoluene	93538	043019	0.0025	0.50	0.004	2000.1	5.0	1.2	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46.	4-Chlorotoluene	93538	043019	0.0025	0.50	0.004	2000.3	5.0	1.2	106-43-4	N/A	orl-rat 2100mg/kg
47.	1,2-Dichlorobenzene	93538	043019	0.0025	0.50	0.004	2000.6	5.0	1.2	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48.	1,3-Dichlorobenzene	93538	043019	0.0025	0.50	0.004	2000.5	5.0	1.2	541-73-1	N/A	ipr-mus 1052mg/kg
49.	1,4-Dichlorobenzene	93538	043019	0.0025	0.50	0.004	2000.3	5.0	1.2	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50.	Isopropylbenzene	93538	043019	0.0025	0.50	0.004	2000.6	5.0	1.2	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51.	n-Propylbenzene	93538	043019	0.0025	0.50	0.004	2000.4	5.0	1.2	103-65-1	N/A	orl-rat 6040mg/kg
52.	o-Xylene	93538	043019	0.0025	0.50	0.004	2000.0	5.0	1.2	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53.	m-Xylene	93538	043019	0.0025	0.50	0.004	1000.0	2.5	0.6	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54.	p-Xylene	93538	043019	0.0025	0.50	0.004	999.9	2.5	0.6	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55.	Carbon disulphide	97233	021720	0.0025	0.50	0.004	2000.6	5.0	1.2	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56.	1,4-Dioxane	97233	021720	0.0025	0.50	0.004	2000.8	5.0	1.2	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
57.	Hexachloroethane	97233	021720	0.0025	0.50	0.004	2000.7	5.0	1.2	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
58.	Methyl tert-butyl ether (MTBE)	97233	021720	0.0025	0.50	0.004	2000.7	5.0	1.2	1634-04-4	N/A	orl-rat 4g/kg
59.	2-Methylnaphthalene	97233	021720	0.0025	0.50	0.004	2000.4	5.0	1.2	91-57-6	N/A	orl-rat 1630mg/kg
60.	1,1,2-Trichlorotrifluoroethane	97233	021720	0.0025	0.50	0.004	2000.9	5.0	1.2	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
61.	n-Pentane	97235	120114	0.0025	0.50	0.004	2002.6	5.0	1.2	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
62.	n-Hexane	97235	120114	0.0025	0.50	0.004	2002.8	5.0	1.2	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
63.	n-Heptane	97235	120114	0.0025	0.50	0.004	2003.1	5.0	1.2	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
64.	n-Octane	97235	120114	0.0025	0.50	0.004	2001.8	5.0	1.2	111-65-9	300 ppm(1450mg/m3/8H)	N/A
65.	n-Nonane	97235	120114	0.0025	0.50	0.004	2000.7	5.0	1.2	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
66.	n-Decane	97235	120114	0.0025	0.50	0.004	2001.8	5.0	1.2	124-18-5	N/A	N/A
67.	n-Undecane	97235	120114	0.0025	0.50	0.004	2003.6	5.0	1.2	1120-21-4	N/A	ivn-mus 517mg/kg
68.	n-Dodecane	97235	120114	0.0025	0.50	0.004	2000.6	5.0	1.2	112-40-3	N/A	N/A
69.	n-Tridecane	97235	120114	0.0025	0.50	0.004	2000.2	5.0	1.2	629-50-5	N/A	ivn-mus 1161mg/kg
70.	n-Tetradecane	97235	120114	0.0025	0.50	0.004	2001.5	5.0	1.2	629-59-4	N/A	N/A
71.	n-Pentadecane	97235	120114	0.0025	0.50	0.004	2001.3	5.0	1.2	629-62-9	N/A	ivn-mus 3494mg/kg
72.	Bromomethane	30058	123019	0.0025	0.50	0.004	2004.8	5.0	1.2	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73.	Chloroethane	30058	123019	0.0025	0.50	0.004	2002.5	5.0	1.2	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74.	Chloromethane	30058	123019	0.0025	0.50	0.004	2003.0	5.0	1.2	74-87-3	100 ppm	orl-rat 1800mg/kg
75.	Dichlorodifluoromethane	30058	123019	0.0025	0.50	0.004	2034.9	5.1	1.2	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76.	Trichlorofluoromethane	30058	123019	0.0025	0.50	0.004	2009.6	5.0	1.2	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77.	Vinyl chloride	30058	123019	0.0025	0.50	0.004	2001.2	5.0	1.2	75-01-4	N/A	N/A
78.	4-Methyl-2-pentanone	97259	112816	0.0025	0.50	0.004	2000.1	5.0	1.2	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79.	p-Bromofluorobenzene	20002	020419	0.0025	0.50	0.004	2000.7	5.0	1.2	460-00-4	N/A	orl-rat 2700mg/kg
80.	1,2-Dichloroethane-d4	20002	020419	0.0025	0.50	0.004	2000.8	5.0	1.2	17060-07-0	N/A	orl-mus 625mg/kg
81.	Toluene-d8	20002	020419	0.0025	0.50	0.004	2000.4	5.0	1.2	2037-26-5	200 ppm	orl-rat 5000mg/kg
82.	Chlorobenzene-d5	22013	021720	0.10	20.00	0.003	2001.8	200.2	1.4	3114-55-4	N/A	orl-rat 1110mg/kg
83.	1,4-Dichlorobenzene-d4	22013	021720	0.10	20.00	0.003	2002.0	200.2	1.4	3855-82-1	N/A	orl-rat 500mg/kg
84.	Fluorobenzene	22013	021720	0.10	20.00	0.003	2002.1	200.2	1.4	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 2000090

Lot No.: 021820

CERTIFIED WEIGHT REPORT

Part Number: 97253
Lot Number: 021820
Description: 8260 VOC Primary Calibration Level 1
84 components
Expiration Date: 021823 **Solvent(s):** Methanol **Lot#** DV182-USQ12
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 10
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 100.0 0.012 Flask Uncertainty

Gabriel Helland 021820
Formulated By: Gabriel Helland DATE

Pedro Rentas 021820
Reviewed By: Pedro L. Rentas DATE

	Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Bromodichloromethane	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	75-27-4	N/A	orl-rat 916mg/kg
2.	Dibromochloromethane	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	124-48-1	N/A	orl-rat 848mg/kg
3.	cis-1,2-Dichloroethene	93538	043019	0.005	0.50	0.004	1999.9	10.0	0.5	156-59-2	N/A	N/A
4.	trans-1,2-Dichloroethene	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	156-60-5	N/A	orl-rat 1235mg/kg
5.	Methylene chloride	93538	043019	0.005	0.50	0.004	1999.9	10.0	0.5	75-09-2	500 ppm	orl-rat 820mg/kg
6.	1,1-Dichloroethene	93538	043019	0.005	0.50	0.004	2000.3	10.0	0.5	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7.	Bromochloromethane	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8.	Bromoform	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9.	Carbon tetrachloride	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10.	Chloroform	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11.	Dibromomethane	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	74-95-3	N/A	orl-rat 108mg/kg
12.	1,1-Dichloroethane	93538	043019	0.005	0.50	0.004	1999.9	10.0	0.5	75-34-3	100 ppm	orl-rat 725mg/kg
13.	2,2-Dichloropropane	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	594-20-7	N/A	N/A
14.	Tetrachloroethene	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15.	1,1,1-Trichloroethane	93538	043019	0.005	0.50	0.004	1999.9	10.0	0.5	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16.	1,2-Dibromo-3-chloropropane	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	96-12-8	0.001 ppm	orl-rat 170mg/kg
17.	1,2-Dibromoethane	93538	043019	0.005	0.50	0.004	1999.9	10.0	0.5	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18.	1,2-Dichloroethane	93538	043019	0.005	0.50	0.004	1999.9	10.0	0.5	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19.	1,2-Dichloropropane	93538	043019	0.005	0.50	0.004	1999.9	10.0	0.5	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20.	1,3-Dichloropropane	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	142-28-9	N/A	unr-mus 3600mg/kg
21.	1,1-Dichloropropene	93538	043019	0.005	0.50	0.004	1981.8	9.9	0.5	563-58-6	N/A	N/A
22.	cis-1,3-Dichloropropene	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	10061-01-5	N/A	N/A
23.	trans-1,3-Dichloropropene	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	10061-02-6	N/A	N/A
24.	Hexachloro-1,3-butadiene	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25.	1,1,1,2-Tetrachloroethane	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	630-20-6	N/A	orl-rat 670mg/kg
26.	1,1,2,2-Tetrachloroethane	93538	043019	0.005	0.50	0.004	1999.9	10.0	0.5	79-34-5	5 ppm (35mg/m3/8H)(skin)	orl-rat 800mg/kg
27.	1,1,2-Trichloroethane	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	93538	043019	0.005	0.50	0.004	1999.8	10.0	0.5	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	Benzene	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	71-43-2	1 ppm	orl-rat 4894mg/kg
31.	Bromobenzene	93538	043019	0.005	0.50	0.004	2000.2	10.0	0.5	108-86-1	N/A	orl-rat 2699mg/kg
32.	n-Butyl benzene	93538	043019	0.005	0.50	0.004	2000.9	10.0	0.5	104-51-8	N/A	N/A
33.	Ethyl benzene	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34.	p-Isopropyl toluene	93538	043019	0.005	0.50	0.004	2000.3	10.0	0.5	99-87-6	N/A	orl-rat 4750mg/kg
35.	Naphthalene	93538	043019	0.005	0.50	0.004	2000.1	10.0	0.5	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36.	Toluene	93538	043019	0.005	0.50	0.004	2000.1	10.0	0.5	108-88-3	200 ppm	orl-rat 5000mg/kg
37.	1,2,3-Trichlorobenzene	93538	043019	0.005	0.50	0.004	2001.1	10.0	0.5	87-61-6	N/A	ipr-mus 1390mg/kg
38.	1,2,4-Trichlorobenzene	93538	043019	0.005	0.50	0.004	2000.7	10.0	0.5	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39.	1,2,4-Trimethylbenzene	93538	043019	0.005	0.50	0.004	2000.6	10.0	0.5	95-63-6	N/A	orl-rat 5g/kg
40.	1,3,5-Trimethylbenzene	93538	043019	0.005	0.50	0.004	2000.4	10.0	0.5	108-67-8	N/A	N/A
41.	Styrene	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	100-42-5	100 ppm	orl-rat 5000mg/kg
42.	tert-Butyl benzene	93538	043019	0.005	0.50	0.004	2000.2	10.0	0.5	98-06-6	N/A	N/A
43.	sec-Butyl benzene	93538	043019	0.005	0.50	0.004	2000.4	10.0	0.5	135-98-8	N/A	orl-rat 2240mg/kg
44.	Chlorobenzene	93538	043019	0.005	0.50	0.004	2000.6	10.0	0.5	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45.	2-Chlorotoluene	93538	043019	0.005	0.50	0.004	2000.1	10.0	0.5	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46.	4-Chlorotoluene	93538	043019	0.005	0.50	0.004	2000.3	10.0	0.5	106-43-4	N/A	orl-rat 2100mg/kg
47.	1,2-Dichlorobenzene	93538	043019	0.005	0.50	0.004	2000.6	10.0	0.5	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48.	1,3-Dichlorobenzene	93538	043019	0.005	0.50	0.004	2000.5	10.0	0.5	541-73-1	N/A	ipr-mus 1062mg/kg
49.	1,4-Dichlorobenzene	93538	043019	0.005	0.50	0.004	2000.3	10.0	0.5	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50.	Isopropylbenzene	93538	043019	0.005	0.50	0.004	2000.6	10.0	0.5	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51.	n-Propylbenzene	93538	043019	0.005	0.50	0.004	2000.4	10.0	0.5	103-65-1	N/A	orl-rat 6040mg/kg
52.	o-Xylene	93538	043019	0.005	0.50	0.004	2000.0	10.0	0.5	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53.	m-Xylene	93538	043019	0.005	0.50	0.004	1000.0	**5.0**	0.3	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54.	p-Xylene	93538	043019	0.005	0.50	0.004	999.9	**5.0**	0.3	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55.	Carbon disulphide	97233	021720	0.005	0.50	0.004	2000.6	10.0	0.5	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56.	1,4-Dioxane	97233	021720	0.005	0.50	0.004	2000.8	10.0	0.5	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
57.	Hexachloroethane	97233	021720	0.005	0.50	0.004	2000.7	10.0	0.5	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
58.	Methyl tert-butyl ether (MTBE)	97233	021720	0.005	0.50	0.004	2000.7	10.0	0.5	1634-04-4	N/A	orl-rat 4g/kg
59.	2-Methylnaphthalene	97233	021720	0.005	0.50	0.004	2000.4	10.0	0.5	91-57-6	N/A	orl-rat 1630mg/kg
60.	1,1,2-Trichlorotrifluoroethane	97233	021720	0.005	0.50	0.004	2000.9	10.0	0.5	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
61.	n-Pentane	97235	120114	0.005	0.50	0.004	2002.6	10.0	0.5	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
62.	n-Hexane	97235	120114	0.005	0.50	0.004	2002.6	10.0	0.5	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
63.	n-Heptane	97235	120114	0.005	0.50	0.004	2003.1	10.0	0.5	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
64.	n-Octane	97235	120114	0.005	0.50	0.004	2001.6	10.0	0.5	111-65-9	300 ppm(1450mg/m3/8H)	N/A
65.	n-Nonane	97235	120114	0.005	0.50	0.004	2000.7	10.0	0.5	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
66.	n-Decane	97235	120114	0.005	0.50	0.004	2001.8	10.0	0.5	124-18-5	N/A	N/A
67.	n-Undecane	97235	120114	0.005	0.50	0.004	2003.6	10.0	0.5	1120-21-4	N/A	ivn-mus 517mg/kg
68.	n-Dodecane	97235	120114	0.005	0.50	0.004	2000.6	10.0	0.5	112-40-3	N/A	N/A
69.	n-Tridecane	97235	120114	0.005	0.50	0.004	2000.2	10.0	0.5	629-50-5	N/A	ivn-mus 1161mg/kg
70.	n-Tetradecane	97235	120114	0.005	0.50	0.004	2001.5	10.0	0.5	629-59-4	N/A	N/A
71.	n-Pentadecane	97235	120114	0.005	0.50	0.004	2001.3	10.0	0.5	629-62-9	N/A	ivn-mus 3494mg/kg
72.	Bromomethane	30058	123019	0.005	0.50	0.004	2004.8	10.0	0.5	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73.	Chloroethane	30058	123019	0.005	0.50	0.004	2002.5	10.0	0.5	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74.	Chloromethane	30058	123019	0.005	0.50	0.004	2003.0	10.0	0.5	74-87-3	100 ppm	orl-rat 1800mg/kg
75.	Dichlorodifluoromethane	30058	123019	0.005	0.50	0.004	2034.9	10.2	0.5	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76.	Trichlorofluoromethane	30058	123019	0.005	0.50	0.004	2009.6	10.0	0.5	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77.	Vinyl chloride	30058	123019	0.005	0.50	0.004	2001.2	10.0	0.5	75-01-4	N/A	N/A
78.	4-Methyl-2-pentanone	97259	112816	0.005	0.50	0.004	2000.1	10.0	0.5	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79.	p-Bromofluorobenzene	20002	020419	0.005	0.50	0.004	2000.7	10.0	0.5	460-00-4	N/A	orl-rat 2700mg/kg
80.	1,2-Dichloroethane-d4	20002	020419	0.005	0.50	0.004	2000.6	10.0	0.5	17060-07-0	N/A	orl-mus 625mg/kg
81.	Toluene-d8	20002	020419	0.005	0.50	0.004	2000.4	10.0	0.5	2037-26-5	200 ppm	orl-rat 5000mg/kg
82.	Chlorobenzene-d5	22013	021720	0.10	10.00	0.042	2001.6	**200.1**	1.9	3114-55-4	N/A	orl-rat 1110mg/kg
83.	1,4-Dichlorobenzene-d4	22013	021720	0.10	10.00	0.042	2002.0	**200.2**	1.9	3855-82-1	N/A	orl-rat 500mg/kg
84.	Fluorobenzene	22013	021720	0.10	10.00	0.042	2002.1	**200.2**	1.9	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 2000091

Lot No.: 021823

CERTIFIED WEIGHT REPORT

Part Number: 97254
Lot Number: 021820
Description: 8260 VOC Primary Calibration Level 2
84 components
Expiration Date: 021823
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 20
NIST Test ID#: 6UTB

Solvent(s):	Lot#
Methanol	DV182-USQ12

Formulated By:	Gabriel Helland	021820 DATE
Reviewed By:	Pedro L. Rentas	021820 DATE

5E-05	Balance Uncertainty	
Volume(s) shown below were combined and diluted to (mL):	100.0	0.012 Flask Uncertainty

	Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Bromodichloromethane	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	75-27-4	N/A	orl-rat 916mg/kg
2.	Dibromochloromethane	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	124-48-1	N/A	orl-rat 848mg/kg
3.	cis-1,2-Dichloroethene	93538	043019	0.010	1.00	0.004	1999.9	20.0	0.5	156-59-2	N/A	N/A
4.	trans-1,2-Dichloroethene	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	156-60-5	N/A	orl-rat 1235mg/kg
5.	Methylene chloride	93538	043019	0.010	1.00	0.004	1999.9	20.0	0.5	75-09-2	500 ppm	orl-rat 820mg/kg
6.	1,1-Dichloroethene	93538	043019	0.010	1.00	0.004	2000.3	20.0	0.5	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7.	Bromochloromethane	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8.	Bromoform	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9.	Carbon tetrachloride	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10.	Chloroform	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11.	Dibromomethane	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	74-95-3	N/A	orl-rat 108mg/kg
12.	1,1-Dichloroethane	93538	043019	0.010	1.00	0.004	1999.9	20.0	0.5	75-34-3	100 ppm	orl-rat 725mg/kg
13.	2,2-Dichloropropane	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	594-20-7	N/A	N/A
14.	Tetrachloroethene	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15.	1,1,1-Trichloroethane	93538	043019	0.010	1.00	0.004	1999.9	20.0	0.5	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16.	1,2-Dibromo-3-chloropropane	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	96-12-8	0.001 ppm	orl-rat 170mg/kg
17.	1,2-Dibromoethane	93538	043019	0.010	1.00	0.004	1999.9	20.0	0.5	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18.	1,2-Dichloroethane	93538	043019	0.010	1.00	0.004	1999.9	20.0	0.5	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19.	1,2-Dichloropropane	93538	043019	0.010	1.00	0.004	1999.9	20.0	0.5	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20.	1,3-Dichloropropane	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	142-28-9	N/A	unr-mus 3600mg/kg
21.	1,1-Dichloropropene	93538	043019	0.010	1.00	0.004	1981.8	19.8	0.5	563-58-6	N/A	N/A
22.	cis-1,3-Dichloropropene	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	10061-01-5	N/A	N/A
23.	trans-1,3-Dichloropropene	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	10061-02-6	N/A	N/A
24.	Hexachloro-1,3-butadiene	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25.	1,1,1,2-Tetrachloroethane	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	630-20-6	N/A	orl-rat 670mg/kg
26.	1,1,2,2-Tetrachloroethane	93538	043019	0.010	1.00	0.004	1999.9	20.0	0.5	79-34-5	5 ppm (35mg/m3/8H)(skin)	orl-rat 800mg/kg
27.	1,1,2-Trichloroethane	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	93538	043019	0.010	1.00	0.004	1999.8	20.0	0.5	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	Benzene	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	71-43-2	1 ppm	orl-rat 4894mg/kg
31.	Bromobenzene	93538	043019	0.010	1.00	0.004	2000.2	20.0	0.5	108-86-1	N/A	orl-rat 2699mg/kg
32.	n-Butyl benzene	93538	043019	0.010	1.00	0.004	2000.9	20.0	0.5	104-51-8	N/A	N/A
33.	Ethyl benzene	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34.	p-Isopropyl toluene	93538	043019	0.010	1.00	0.004	2000.3	20.0	0.5	99-87-6	N/A	orl-rat 4750mg/kg
35.	Naphthalene	93538	043019	0.010	1.00	0.004	2000.1	20.0	0.5	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36.	Toluene	93538	043019	0.010	1.00	0.004	2000.1	20.0	0.5	108-88-3	200 ppm	orl-rat 5000mg/kg
37.	1,2,3-Trichlorobenzene	93538	043019	0.010	1.00	0.004	2001.1	20.0	0.5	87-61-6	N/A	ipr-mus 1390mg/kg
38.	1,2,4-Trichlorobenzene	93538	043019	0.010	1.00	0.004	2000.7	20.0	0.5	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39.	1,2,4-Trimethylbenzene	93538	043019	0.010	1.00	0.004	2000.6	20.0	0.5	95-63-6	N/A	orl-rat 5g/kg
40.	1,3,5-Trimethylbenzene	93538	043019	0.010	1.00	0.004	2000.4	20.0	0.5	108-67-8	N/A	N/A
41.	Styrene	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	100-42-5	100 ppm	orl-rat 5000mg/kg
42.	tert-Butyl benzene	93538	043019	0.010	1.00	0.004	2000.2	20.0	0.5	98-06-6	N/A	N/A
43.	sec-Butyl benzene	93538	043019	0.010	1.00	0.004	2000.4	20.0	0.5	135-98-8	N/A	orl-rat 2240mg/kg
44.	Chlorobenzene	93538	043019	0.010	1.00	0.004	2000.6	20.0	0.5	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45.	2-Chlorotoluene	93538	043019	0.010	1.00	0.004	2000.1	20.0	0.5	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46.	4-Chlorotoluene	93538	043019	0.010	1.00	0.004	2000.3	20.0	0.5	106-43-4	N/A	orl-rat 2100mg/kg
47.	1,2-Dichlorobenzene	93538	043019	0.010	1.00	0.004	2000.6	20.0	0.5	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48.	1,3-Dichlorobenzene	93538	043019	0.010	1.00	0.004	2000.5	20.0	0.5	541-73-1	N/A	ipr-mus 1062mg/kg
49.	1,4-Dichlorobenzene	93538	043019	0.010	1.00	0.004	2000.3	20.0	0.5	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50.	Isopropylbenzene	93538	043019	0.010	1.00	0.004	2000.6	20.0	0.5	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51.	n-Propylbenzene	93538	043019	0.010	1.00	0.004	2000.4	20.0	0.5	103-65-1	N/A	orl-rat 6040mg/kg
52.	o-Xylene	93538	043019	0.010	1.00	0.004	2000.0	20.0	0.5	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53.	m-Xylene	93538	043019	0.010	1.00	0.004	1000.0	**10.0**	0.3	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54.	p-Xylene	93538	043019	0.010	1.00	0.004	999.9	**10.0**	0.3	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55.	Carbon disulphide	97233	021720	0.010	1.00	0.004	2000.6	20.0	0.5	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56.	1,4-Dioxane	97233	021720	0.010	1.00	0.004	2000.8	20.0	0.5	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
57.	Hexachloroethane	97233	021720	0.010	1.00	0.004	2000.7	20.0	0.5	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
58.	Methyl tert-butyl ether (MTBE)	97233	021720	0.010	1.00	0.004	2000.7	20.0	0.5	1634-04-4	N/A	orl-rat 4g/kg
59.	2-Methylnaphthalene	97233	021720	0.010	1.00	0.004	2000.4	20.0	0.5	91-57-6	N/A	orl-rat 1630mg/kg
60.	1,1,2-Trichlorotrifluoroethane	97233	021720	0.010	1.00	0.004	2000.9	20.0	0.5	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
61.	n-Pentane	97235	120114	0.010	1.00	0.004	2002.6	20.0	0.5	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
62.	n-Hexane	97235	120114	0.010	1.00	0.004	2002.6	20.0	0.5	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
63.	n-Heptane	97235	120114	0.010	1.00	0.004	2003.1	20.0	0.5	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
64.	n-Octane	97235	120114	0.010	1.00	0.004	2001.6	20.0	0.5	111-65-9	300 ppm(1450mg/m3/8H)	N/A
65.	n-Nonane	97235	120114	0.010	1.00	0.004	2000.7	20.0	0.5	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
66.	n-Decane	97235	120114	0.010	1.00	0.004	2001.8	20.0	0.5	124-18-5	N/A	N/A
67.	n-Undecane	97235	120114	0.010	1.00	0.004	2003.6	20.0	0.5	1120-21-4	N/A	ivn-mus 517mg/kg
68.	n-Dodecane	97235	120114	0.010	1.00	0.004	2000.6	20.0	0.5	112-40-3	N/A	N/A
69.	n-Tridecane	97235	120114	0.010	1.00	0.004	2000.2	20.0	0.5	629-50-5	N/A	ivn-mus 1161mg/kg
70.	n-Tetradecane	97235	120114	0.010	1.00	0.004	2001.5	20.0	0.5	629-59-4	N/A	N/A
71.	n-Pentadecane	97235	120114	0.010	1.00	0.004	2001.3	20.0	0.5	629-62-9	N/A	ivn-mus 3494mg/kg
72.	Bromomethane	30058	123019	0.010	1.00	0.004	2004.8	20.0	0.5	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73.	Chloroethane	30058	123019	0.010	1.00	0.004	2002.5	20.0	0.5	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74.	Chloromethane	30058	123019	0.010	1.00	0.004	2003.0	20.0	0.5	74-87-3	100 ppm	orl-rat 1800mg/kg
75.	Dichlorodifluoromethane	30058	123019	0.010	1.00	0.004	2034.9	20.3	0.5	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76.	Trichlorofluoromethane	30058	123019	0.010	1.00	0.004	2009.6	20.1	0.5	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77.	Vinyl chloride	30058	123019	0.010	1.00	0.004	2001.2	20.0	0.5	75-01-4	N/A	N/A
78.	4-Methyl-2-pentanone	97259	112816	0.010	1.00	0.004	2000.1	20.0	0.5	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79.	p-Bromofluorobenzene	20002	020419	0.010	1.00	0.004	2000.7	20.0	0.5	460-00-4	N/A	orl-rat 2700mg/kg
80.	1,2-Dichloroethane-d4	20002	020419	0.010	1.00	0.004	2000.6	20.0	0.5	17060-07-0	N/A	orl-mus 625mg/kg
81.	Toluene-d8	20002	020419	0.010	1.00	0.004	2000.4	20.0	0.5	2037-26-5	200 ppm	orl-rat 5000mg/kg
82.	Chlorobenzene-d5	22013	021720	0.10	10.00	0.042	2001.6	**200.1**	1.9	3114-55-4	N/A	orl-rat 1110mg/kg
83.	1,4-Dichlorobenzene-d4	22013	021720	0.10	10.00	0.042	2002.0	**200.2**	1.9	3855-82-1	N/A	orl-rat 500mg/kg
84.	Fluorobenzene	22013	021720	0.10	10.00	0.042	2002.1	**200.2**	1.9	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 2000092

Lot No.: 021820

CERTIFIED WEIGHT REPORT

Part Number: 97255
Lot Number: 021820
Description: 8260 VOC Primary Calibration Level 3
84 components
Expiration Date: 021823
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 50
NIST Test ID#: 6UTB

Solvent(s):	Lot#
Methanol	DV182-USQ12

5E-05 Balance Uncertainty
0.012 Flask Uncertainty

Volume(s) shown below were combined and diluted to (mL): 100.0

Gabriel Helland 021820
Formulated By: Gabriel Helland DATE

Pedro Rentas 021820
Reviewed By: Pedro L. Rentas DATE

	Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Bromodichloromethane	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	75-27-4	N/A	orl-rat 916mg/kg
2.	Dibromochloromethane	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	124-48-1	N/A	orl-rat 848mg/kg
3.	cis-1,2-Dichloroethene	93538	043019	0.025	2.50	0.017	1999.9	50.0	0.9	156-59-2	N/A	N/A
4.	trans-1,2-Dichloroethene	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	156-60-5	N/A	orl-rat 1235mg/kg
5.	Methylene chloride	93538	043019	0.025	2.50	0.017	1999.9	50.0	0.9	75-09-2	500 ppm	orl-rat 820mg/kg
6.	1,1-Dichloroethene	93538	043019	0.025	2.50	0.017	2000.3	50.0	0.9	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7.	Bromochloromethane	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8.	Bromoform	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9.	Carbon tetrachloride	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10.	Chloroform	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11.	Dibromomethane	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	74-95-3	N/A	orl-rat 108mg/kg
12.	1,1-Dichloroethane	93538	043019	0.025	2.50	0.017	1999.9	50.0	0.9	75-34-3	100 ppm	orl-rat 725mg/kg
13.	2,2-Dichloropropane	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	594-20-7	N/A	N/A
14.	Tetrachloroethene	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15.	1,1,1-Trichloroethane	93538	043019	0.025	2.50	0.017	1999.9	50.0	0.9	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16.	1,2-Dibromo-3-chloropropane	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	96-12-8	0.001 ppm	orl-rat 170mg/kg
17.	1,2-Dibromoethane	93538	043019	0.025	2.50	0.017	1999.9	50.0	0.9	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18.	1,2-Dichloroethane	93538	043019	0.025	2.50	0.017	1999.9	50.0	0.9	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19.	1,2-Dichloropropane	93538	043019	0.025	2.50	0.017	1999.9	50.0	0.9	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20.	1,3-Dichloropropane	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	142-28-9	N/A	unr-mus 3600mg/kg
21.	1,1-Dichloropropene	93538	043019	0.025	2.50	0.017	1961.8	49.5	1.0	563-58-6	N/A	N/A
22.	cis-1,3-Dichloropropene	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	10061-01-5	N/A	N/A
23.	trans-1,3-Dichloropropene	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	10061-02-6	N/A	N/A
24.	Hexachloro-1,3-butadiene	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25.	1,1,1,2-Tetrachloroethane	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	630-20-6	N/A	orl-rat 670mg/kg
26.	1,1,2,2-Tetrachloroethane	93538	043019	0.025	2.50	0.017	1999.9	50.0	0.9	79-34-5	5 ppm (35mg/m3/8H)(skin)	orl-rat 800mg/kg
27.	1,1,2-Trichloroethane	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	93538	043019	0.025	2.50	0.017	1999.8	50.0	0.9	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	Benzene	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	71-43-2	1 ppm	orl-rat 4894mg/kg
31.	Bromobenzene	93538	043019	0.025	2.50	0.017	2000.2	50.0	0.9	108-86-1	N/A	orl-rat 2699mg/kg
32.	n-Butyl benzene	93538	043019	0.025	2.50	0.017	2000.9	50.0	0.9	104-51-8	N/A	N/A
33.	Ethyl benzene	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34.	p-Isopropyl toluene	93538	043019	0.025	2.50	0.017	2000.3	50.0	0.9	99-87-6	N/A	orl-rat 4750mg/kg
35.	Naphthalene	93538	043019	0.025	2.50	0.017	2000.1	50.0	0.9	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36.	Toluene	93538	043019	0.025	2.50	0.017	2000.1	50.0	0.9	108-88-3	200 ppm	orl-rat 5000mg/kg
37.	1,2,3-Trichlorobenzene	93538	043019	0.025	2.50	0.017	2001.1	50.0	0.9	87-61-6	N/A	ipr-mus 1390mg/kg
38.	1,2,4-Trichlorobenzene	93538	043019	0.025	2.50	0.017	2000.7	50.0	0.9	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39.	1,2,4-Trimethylbenzene	93538	043019	0.025	2.50	0.017	2000.6	50.0	0.9	95-63-6	N/A	orl-rat 5g/kg
40.	1,3,5-Trimethylbenzene	93538	043019	0.025	2.50	0.017	2000.4	50.0	0.9	108-67-8	N/A	N/A
41.	Styrene	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	100-42-5	100 ppm	orl-rat 5000mg/kg
42.	tert-Butyl benzene	93538	043019	0.025	2.50	0.017	2000.2	50.0	0.9	98-06-6	N/A	N/A
43.	sec-Butyl benzene	93538	043019	0.025	2.50	0.017	2000.4	50.0	0.9	135-98-8	N/A	orl-rat 2240mg/kg
44.	Chlorobenzene	93538	043019	0.025	2.50	0.017	2000.6	50.0	0.9	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45.	2-Chlorotoluene	93538	043019	0.025	2.50	0.017	2000.1	50.0	0.9	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46.	4-Chlorotoluene	93538	043019	0.025	2.50	0.017	2000.3	50.0	0.9	106-43-4	N/A	orl-rat 2100mg/kg
47.	1,2-Dichlorobenzene	93538	043019	0.025	2.50	0.017	2000.6	50.0	0.9	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48.	1,3-Dichlorobenzene	93538	043019	0.025	2.50	0.017	2000.5	50.0	0.9	541-73-1	N/A	ipr-mus 1062mg/kg
49.	1,4-Dichlorobenzene	93538	043019	0.025	2.50	0.017	2000.3	50.0	0.9	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50.	Isopropylbenzene	93538	043019	0.025	2.50	0.017	2000.6	50.0	0.9	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51.	n-Propylbenzene	93538	043019	0.025	2.50	0.017	2000.4	50.0	0.9	103-65-1	N/A	orl-rat 6040mg/kg
52.	o-Xylene	93538	043019	0.025	2.50	0.017	2000.0	50.0	0.9	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53.	m-Xylene	93538	043019	0.025	2.50	0.017	1000.0	**25.0**	0.5	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54.	p-Xylene	93538	043019	0.025	2.50	0.017	999.9	**25.0**	0.5	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55.	Carbon disulphide	97233	021720	0.025	2.50	0.017	2000.6	50.0	0.9	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56.	1,4-Dioxane	97233	021720	0.025	2.50	0.017	2000.8	50.0	0.9	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
57.	Hexachloroethane	97233	021720	0.025	2.50	0.017	2000.7	50.0	0.9	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
58.	Methyl tert-butyl ether (MTBE)	97233	021720	0.025	2.50	0.017	2000.7	50.0	0.9	1634-04-4	N/A	orl-rat 4g/kg
59.	2-Methylnaphthalene	97233	021720	0.025	2.50	0.017	2000.4	50.0	0.9	91-57-6	N/A	orl-rat 1630mg/kg
60.	1,1,2-Trichlorotrifluoroethane	97233	021720	0.025	2.50	0.017	2000.9	50.0	0.9	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
61.	n-Pentane	97235	120114	0.025	2.50	0.017	2002.6	50.1	0.9	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
62.	n-Hexane	97235	120114	0.025	2.50	0.017	2002.6	50.1	0.9	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
63.	n-Heptane	97235	120114	0.025	2.50	0.017	2003.1	50.1	0.9	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
64.	n-Octane	97235	120114	0.025	2.50	0.017	2001.6	50.0	0.9	111-65-9	300 ppm(1450mg/m3/8H)	N/A
65.	n-Nonane	97235	120114	0.025	2.50	0.017	2000.7	50.0	0.9	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
66.	n-Decane	97235	120114	0.025	2.50	0.017	2001.8	50.0	0.9	124-18-5	N/A	N/A
67.	n-Undecane	97235	120114	0.025	2.50	0.017	2003.6	50.1	0.9	1120-21-4	N/A	ivn-mus 517mg/kg
68.	n-Dodecane	97235	120114	0.025	2.50	0.017	2000.6	50.0	0.9	112-40-3	N/A	N/A
69.	n-Tridecane	97235	120114	0.025	2.50	0.017	2000.2	50.0	0.8	629-50-5	N/A	ivn-mus 1161mg/kg
70.	n-Tetradecane	97235	120114	0.025	2.50	0.017	2001.5	50.0	0.9	629-59-4	N/A	N/A
71.	n-Pentadecane	97235	120114	0.025	2.50	0.017	2001.3	50.0	0.9	629-62-9	N/A	ivn-mus 3494mg/kg
72.	Bromomethane	30058	123019	0.025	2.50	0.017	2004.8	50.1	0.9	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73.	Chloroethane	30058	123019	0.025	2.50	0.017	2002.5	50.1	0.9	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74.	Chloromethane	30058	123019	0.025	2.50	0.017	2003.0	50.1	0.9	74-87-3	100 ppm	orl-rat 1800mg/kg
75.	Dichlorodifluoromethane	30058	123019	0.025	2.50	0.017	2034.9	50.9	0.9	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76.	Trichlorofluoromethane	30058	123019	0.025	2.50	0.017	2009.6	50.2	0.9	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77.	Vinyl chloride	30058	123019	0.025	2.50	0.017	2001.2	50.0	0.8	75-01-4	N/A	N/A
78.	4-Methyl-2-pentanone	97259	112816	0.025	2.50	0.017	2000.1	50.0	0.9	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79.	p-Bromofluorobenzene	20002	020419	0.025	2.50	0.017	2000.7	50.0	0.8	460-00-4	N/A	orl-rat 2700mg/kg
80.	1,2-Dichloroethane-d4	20002	020419	0.025	2.50	0.017	2000.6	50.0	0.8	17060-07-0	N/A	orl-mus 625mg/kg
81.	Toluene-d8	20002	020419	0.025	2.50	0.017	2000.4	50.0	0.8	2037-26-5	200 ppm	orl-rat 5000mg/kg
82.	Chlorobenzene-d5	22013	021720	0.10	10.00	0.042	2001.6	**200.1**	1.9	3114-55-4	N/A	orl-rat 1110mg/kg
83.	1,4-Dichlorobenzene-d4	22013	021720	0.10	10.00	0.042	2002.0	**200.2**	1.9	3855-82-1	N/A	orl-rat 500mg/kg
84.	Fluorobenzene	22013	021720	0.10	10.00	0.042	2002.1	**200.2**	1.9	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 2000093

Lot No.: 021820

CERTIFIED WEIGHT REPORT

Part Number: 97256
Lot Number: 021820
Description: 8260 VOC Primary Calibration Level 4
84 components
Expiration Date: 021823 **Solvent(s):** Methanol **Lot#** DV182-USQ12
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 100
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 100.0 0.012 Flask Uncertainty

Gabriel Helland 021820
Formulated By: Gabriel Helland DATE

Pedro Rentas 021820
Reviewed By: Pedro L. Rentas DATE

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. Bromodichloromethane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	75-27-4	N/A	orl-rat 916mg/kg
2. Dibromochloromethane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	124-48-1	N/A	orl-rat 848mg/kg
3. cis-1,2-Dichloroethene	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	156-59-2	N/A	N/A
4. trans-1,2-Dichloroethene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	156-60-5	N/A	orl-rat 1235mg/kg
5. Methylene chloride	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	75-09-2	500 ppm	orl-rat 820mg/kg
6. 1,1-Dichloroethene	93538	043019	0.05	5.00	0.017	2000.3	100.0	1.2	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7. Bromochloromethane	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8. Bromoform	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9. Carbon tetrachloride	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10. Chloroform	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11. Dibromomethane	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	74-95-3	N/A	orl-rat 108mg/kg
12. 1,1-Dichloroethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	75-34-3	100 ppm	orl-rat 725mg/kg
13. 2,2-Dichloropropane	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	594-20-7	N/A	N/A
14. Tetrachloroethene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15. 1,1,1-Trichloroethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16. 1,2-Dibromo-3-chloropropane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	96-12-8	0.001 ppm	orl-rat 170mg/kg
17. 1,2-Dibromoethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18. 1,2-Dichloroethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19. 1,2-Dichloropropane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20. 1,3-Dichloropropane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	142-28-9	N/A	unr-mus 3600mg/kg
21. 1,1-Dichloropropene	93538	043019	0.05	5.00	0.017	1981.8	99.1	1.5	563-58-6	N/A	N/A
22. cis-1,3-Dichloropropene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	10061-01-5	N/A	N/A
23. trans-1,3-Dichloropropene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	10061-02-6	N/A	N/A
24. Hexachloro-1,3-butadiene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25. 1,1,1,2-Tetrachloroethane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	630-20-6	N/A	orl-rat 670mg/kg
26. 1,1,2,2-Tetrachloroethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	79-34-5	5 ppm (35mg/m3/8H)(skin)	orl-rat 800mg/kg
27. 1,1,2-Trichloroethane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28. Trichloroethene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29. 1,2,3-Trichloropropane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30. Benzene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.2	71-43-2	1 ppm	orl-rat 4894mg/kg
31. Bromobenzene	93538	043019	0.05	5.00	0.017	2000.2	100.0	1.2	108-86-1	N/A	orl-rat 2699mg/kg
32. n-Butyl benzene	93538	043019	0.05	5.00	0.017	2000.9	100.0	1.2	104-51-8	N/A	N/A
33. Ethyl benzene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.2	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34. p-Isopropyl toluene	93538	043019	0.05	5.00	0.017	2000.3	100.0	1.2	99-87-6	N/A	orl-rat 4750mg/kg
35. Naphthalene	93538	043019	0.05	5.00	0.017	2000.1	100.0	1.2	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36. Toluene	93538	043019	0.05	5.00	0.017	2000.1	100.0	1.2	108-88-3	200 ppm	orl-rat 5000mg/kg
37. 1,2,3-Trichlorobenzene	93538	043019	0.05	5.00	0.017	2001.1	100.0	1.2	87-61-6	N/A	ipr-mus 1390mg/kg
38. 1,2,4-Trichlorobenzene	93538	043019	0.05	5.00	0.017	2000.7	100.0	1.2	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39. 1,2,4-Trimethylbenzene	93538	043019	0.05	5.00	0.017	2000.6	100.0	1.2	95-63-6	N/A	orl-rat 5g/kg
40. 1,3,5-Trimethylbenzene	93538	043019	0.05	5.00	0.017	2000.4	100.0	1.2	108-67-8	N/A	N/A
41. Styrene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.2	100-42-5	100 ppm	orl-rat 5000mg/kg
42. tert-Butyl benzene	93538	043019	0.05	5.00	0.017	2000.2	100.0	1.2	98-06-6	N/A	N/A
43. sec-Butyl benzene	93538	043019	0.05	5.00	0.017	2000.4	100.0	1.2	135-98-8	N/A	orl-rat 2240mg/kg
44. Chlorobenzene	93538	043019	0.05	5.00	0.017	2000.6	100.0	1.2	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45. 2-Chlorotoluene	93538	043019	0.05	5.00	0.017	2000.1	100.0	1.2	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46. 4-Chlorotoluene	93538	043019	0.05	5.00	0.017	2000.3	100.0	1.2	106-43-4	N/A	orl-rat 2100mg/kg
47. 1,2-Dichlorobenzene	93538	043019	0.05	5.00	0.017	2000.6	100.0	1.2	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48. 1,3-Dichlorobenzene	93538	043019	0.05	5.00	0.017	2000.5	100.0	1.2	541-73-1	N/A	ipr-mus 1062mg/kg
49. 1,4-Dichlorobenzene	93538	043019	0.05	5.00	0.017	2000.3	100.0	1.2	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50. Isopropylbenzene	93538	043019	0.05	5.00	0.017	2000.6	100.0	1.2	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51. n-Propylbenzene	93538	043019	0.05	5.00	0.017	2000.4	100.0	1.2	103-65-1	N/A	orl-rat 6040mg/kg
52. o-Xylene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.2	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53. m-Xylene	93538	043019	0.05	5.00	0.017	1000.0	50.0	0.6	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54. p-Xylene	93538	043019	0.05	5.00	0.017	999.9	50.0	0.6	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55. Carbon disulphide	97269	020720	0.005	0.50	0.004	20004.9	100.0	5.0	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56. 1,4-Dioxane	97269	020720	0.005	0.50	0.004	20006.9	100.0	5.0	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
57. Hexachloroethane	97269	020720	0.005	0.50	0.004	20005.9	100.0	5.0	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
58. Methyl tert-butyl ether (MTBE)	97269	020720	0.005	0.50	0.004	20005.9	100.0	5.0	1634-04-4	N/A	orl-rat 4g/kg
59. 2-Methylnaphthalene	97269	020720	0.005	0.50	0.004	20003.3	100.0	5.0	91-57-6	N/A	orl-rat 1630mg/kg
60. 1,1,2-Trichlorotrifluoroethane	97269	020720	0.005	0.50	0.004	20007.9	100.0	5.0	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
61. n-Pentane	97235	120114	0.05	5.00	0.017	2002.6	100.1	0.9	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
62. n-Hexane	97235	120114	0.05	5.00	0.017	2002.6	100.1	0.9	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
63. n-Heptane	97235	120114	0.05	5.00	0.017	2003.1	100.2	0.9	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
64. n-Octane	97235	120114	0.05	5.00	0.017	2001.6	100.1	0.9	111-65-9	300 ppm(1450mg/m3/8H)	N/A
65. n-Nonane	97235	120114	0.05	5.00	0.017	2000.7	100.0	0.9	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
66. n-Decane	97235	120114	0.05	5.00	0.017	2001.8	100.1	0.9	124-18-5	N/A	N/A
67. n-Undecane	97235	120114	0.05	5.00	0.017	2003.6	100.2	0.9	1120-21-4	N/A	ivn-mus 517mg/kg
68. n-Dodecane	97235	120114	0.05	5.00	0.017	2000.6	100.0	0.9	112-40-3	N/A	N/A
69. n-Tridecane	97235	120114	0.05	5.00	0.017	2000.2	100.0	0.9	629-50-5	N/A	ivn-mus 1161mg/kg
70. n-Tetradecane	97235	120114	0.05	5.00	0.017	2001.5	100.1	0.9	629-59-4	N/A	N/A
71. n-Pentadecane	97235	120114	0.05	5.00	0.017	2001.3	100.1	0.9	629-62-9	N/A	ivn-mus 3494mg/kg
72. Bromomethane	30058	123019	0.05	5.00	0.017	2004.8	100.2	0.9	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73. Chloroethane	30058	123019	0.05	5.00	0.017	2002.5	100.1	0.9	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74. Chloromethane	30058	123019	0.05	5.00	0.017	2003.0	100.1	0.9	74-87-3	100 ppm	orl-rat 1800mg/kg
75. Dichlorodifluoromethane	30058	123019	0.05	5.00	0.017	2034.9	101.7	0.9	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76. Trichlorofluoromethane	30058	123019	0.05	5.00	0.017	2009.6	100.5	0.9	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77. Vinyl chloride	30058	123019	0.05	5.00	0.017	2001.2	100.1	0.9	75-01-4	N/A	N/A
78. 4-Methyl-2-pentanone (MIBK)	82442	112816	0.00	0.50	0.004	20003.5	100.0	5.0	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79. p-Bromofluorobenzene	20002	020419	0.05	5.00	0.017	2000.7	100.0	0.9	460-00-4	N/A	orl-rat 2700mg/kg
80. 1,2-Dichloroethane-d4	20002	020419	0.05	5.00	0.017	2000.6	100.0	0.9	17060-07-0	N/A	orl-mus 625mg/kg
81. Toluene-d8	20002	020419	0.05	5.00	0.017	2000.4	100.0	0.9	2037-26-5	200 ppm	orl-rat 5000mg/kg
82. Chlorobenzene-d5	22013	021720	0.10	10.00	0.042	2001.6	200.1	1.9	3114-55-4	N/A	orl-rat 1110mg/kg
83. 1,4-Dichlorobenzene-d4	22013	021720	0.10	10.00	0.042	2002.0	200.2	1.9	3855-82-1	N/A	orl-rat 500mg/kg
84. Fluorobenzene	22013	021720	0.10	10.00	0.042	2002.1	200.2	1.9	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 2000094

Lot No.: 021820

CERTIFIED WEIGHT REPORT

Part Number: 97257
Lot Number: 021820
Description: 8260 VOC Primary Calibration Level 5
84 components
Expiration Date: 021823 **Solvent(s):** Methanol **Lot#** DV182-USQ12
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 200
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 50.0 0.007 Flask Uncertainty

Gabriel Helland 021820
Formulated By: Gabriel Helland DATE

Pedro Rentas 021820
Reviewed By: Pedro L. Rentas DATE

	Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Bromodichloromethane	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	75-27-4	N/A	orl-rat 916mg/kg
2.	Dibromochloromethane	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	124-48-1	N/A	orl-rat 848mg/kg
3.	cis-1,2-Dichloroethene	93538	043019	0.10	5.00	0.017	1999.9	200.0	2.2	156-59-2	N/A	N/A
4.	trans-1,2-Dichloroethene	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	156-60-5	N/A	orl-rat 1235mg/kg
5.	Methylene chloride	93538	043019	0.10	5.00	0.017	1999.9	200.0	2.2	75-09-2	500 ppm	orl-rat 820mg/kg
6.	1,1-Dichloroethene	93538	043019	0.10	5.00	0.017	2000.3	200.0	2.4	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7.	Bromochloromethane	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.2	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8.	Bromoform	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.2	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9.	Carbon tetrachloride	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.2	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10.	Chloroform	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.1	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11.	Dibromomethane	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.2	74-95-3	N/A	orl-rat 108mg/kg
12.	1,1-Dichloroethane	93538	043019	0.10	5.00	0.017	1999.9	200.0	2.2	75-34-3	100 ppm	orl-rat 725mg/kg
13.	2,2-Dichloropropane	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.2	594-20-7	N/A	N/A
14.	Tetrachloroethene	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.2	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15.	1,1,1-Trichloroethane	93538	043019	0.10	5.00	0.017	1999.9	200.0	2.2	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16.	1,2-Dibromo-3-chloropropane	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	96-12-8	0.001 ppm	orl-rat 170mg/kg
17.	1,2-Dibromoethane	93538	043019	0.10	5.00	0.017	1999.9	200.0	2.2	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18.	1,2-Dichloroethane	93538	043019	0.10	5.00	0.017	1999.9	200.0	2.1	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19.	1,2-Dichloropropane	93538	043019	0.10	5.00	0.017	1999.9	200.0	2.2	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20.	1,3-Dichloropropane	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	142-28-9	N/A	unr-mus 3600mg/kg
21.	1,1-Dichloropropene	93538	043019	0.10	5.00	0.017	1981.8	198.2	2.8	563-58-6	N/A	N/A
22.	cis-1,3-Dichloropropene	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	10061-01-5	N/A	N/A
23.	trans-1,3-Dichloropropene	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	10061-02-6	N/A	N/A
24.	Hexachloro-1,3-butadiene	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25.	1,1,1,2-Tetrachloroethane	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	630-20-6	N/A	orl-rat 670mg/kg
26.	1,1,2,2-Tetrachloroethane	93538	043019	0.10	5.00	0.017	1999.9	200.0	2.2	79-34-5	5 ppm (35mg/m3/9H)(skin)	orl-rat 800mg/kg
27.	1,1,2-Trichloroethane	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	93538	043019	0.10	5.00	0.017	1999.8	200.0	2.2	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	Benzene	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.4	71-43-2	1 ppm	orl-rat 4894mg/kg
31.	Bromobenzene	93538	043019	0.10	5.00	0.017	2000.2	200.0	2.4	108-86-1	N/A	orl-rat 2699mg/kg
32.	n-Butyl benzene	93538	043019	0.10	5.00	0.017	2000.9	200.1	2.4	104-51-8	N/A	N/A
33.	Ethyl benzene	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.4	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34.	p-Isopropyl toluene	93538	043019	0.10	5.00	0.017	2000.3	200.0	2.4	99-87-6	N/A	orl-rat 4750mg/kg
35.	Naphthalene	93538	043019	0.10	5.00	0.017	2000.1	200.0	2.4	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36.	Toluene	93538	043019	0.10	5.00	0.017	2000.1	200.0	2.4	108-88-3	200 ppm	orl-rat 5000mg/kg
37.	1,2,3-Trichlorobenzene	93538	043019	0.10	5.00	0.017	2001.1	200.1	2.4	87-61-6	N/A	ipr-mus 1390mg/kg
38.	1,2,4-Trichlorobenzene	93538	043019	0.10	5.00	0.017	2000.7	200.1	2.4	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39.	1,2,4-Trimethylbenzene	93538	043019	0.10	5.00	0.017	2000.6	200.1	2.4	95-63-6	N/A	orl-rat 5g/kg
40.	1,3,5-Trimethylbenzene	93538	043019	0.10	5.00	0.017	2000.4	200.1	2.4	108-67-8	N/A	N/A
41.	Styrene	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.4	100-42-5	100 ppm	orl-rat 5000mg/kg
42.	tert-Butyl benzene	93538	043019	0.10	5.00	0.017	2000.2	200.0	2.4	98-06-6	N/A	N/A
43.	sec-Butyl benzene	93538	043019	0.10	5.00	0.017	2000.4	200.0	2.4	135-98-8	N/A	orl-rat 2240mg/kg
44.	Chlorobenzene	93538	043019	0.10	5.00	0.017	2000.6	200.1	2.4	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45.	2-Chlorotoluene	93538	043019	0.10	5.00	0.017	2000.1	200.0	2.4	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46.	4-Chlorotoluene	93538	043019	0.10	5.00	0.017	2000.3	200.0	2.4	106-43-4	N/A	orl-rat 2100mg/kg
47.	1,2-Dichlorobenzene	93538	043019	0.10	5.00	0.017	2000.6	200.1	2.4	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48.	1,3-Dichlorobenzene	93538	043019	0.10	5.00	0.017	2000.5	200.1	2.4	541-73-1	N/A	ipr-mus 1062mg/kg
49.	1,4-Dichlorobenzene	93538	043019	0.10	5.00	0.017	2000.3	200.0	2.4	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50.	Isopropylbenzene	93538	043019	0.10	5.00	0.017	2000.6	200.1	2.4	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51.	n-Propylbenzene	93538	043019	0.10	5.00	0.017	2000.4	200.0	2.4	103-65-1	N/A	orl-rat 8040mg/kg
52.	o-Xylene	93538	043019	0.10	5.00	0.017	2000.0	200.0	2.4	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53.	m-Xylene	93538	043019	0.10	5.00	0.017	1000.0	**100.0**	1.1	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54.	p-Xylene	93538	043019	0.10	5.00	0.017	999.9	**100.0**	1.1	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55.	Carbon disulphide	97269	020720	0.01	0.50	0.004	20004.9	200.1	6.3	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56.	1,4-Dioxane	97269	020720	0.01	0.50	0.004	20006.9	200.1	6.3	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
57.	Hexachloroethane	97269	020720	0.01	0.50	0.004	20005.9	200.1	6.3	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
58.	Methyl tert-butyl ether (MTBE)	97269	020720	0.01	0.50	0.004	20005.9	200.1	6.3	1634-04-4	N/A	orl-rat 4g/kg
59.	2-Methylnaphthalene	97269	020720	0.01	0.50	0.004	20003.3	200.0	6.3	91-57-6	N/A	orl-rat 1630mg/kg
60.	1,1,2-Trichlorotrifluoroethane	97269	020720	0.01	0.50	0.004	20007.9	200.1	6.3	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
61.	n-Pentane	97235	120114	0.10	5.00	0.017	2002.6	200.3	1.7	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
62.	n-Hexane	97235	120114	0.10	5.00	0.017	2002.6	200.3	1.7	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
63.	n-Heptane	97235	120114	0.10	5.00	0.017	2003.1	200.3	1.7	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
64.	n-Octane	97235	120114	0.10	5.00	0.017	2001.6	200.2	1.7	111-65-9	300 ppm(1450mg/m3/8H)	N/A
65.	n-Nonane	97235	120114	0.10	5.00	0.017	2000.7	200.1	1.7	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
66.	n-Decane	97235	120114	0.10	5.00	0.017	2001.8	200.2	1.7	124-18-5	N/A	N/A
67.	n-Undecane	97235	120114	0.10	5.00	0.017	2003.6	200.4	1.7	1120-21-4	N/A	ivn-mus 517mg/kg
68.	n-Dodecane	97235	120114	0.10	5.00	0.017	2000.6	200.1	1.7	112-40-3	N/A	N/A
69.	n-Tridecane	97235	120114	0.10	5.00	0.017	2000.2	200.0	1.7	629-50-5	N/A	ivn-mus 1161mg/kg
70.	n-Tetradecane	97235	120114	0.10	5.00	0.017	2001.5	200.2	1.7	629-59-4	N/A	N/A
71.	n-Pentadecane	97235	120114	0.10	5.00	0.017	2001.3	200.1	1.7	629-62-9	N/A	ivn-mus 3494mg/kg
72.	Bromomethane	30058	123019	0.10	5.00	0.017	2004.8	200.5	1.7	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73.	Chloroethane	30058	123019	0.10	5.00	0.017	2002.5	200.3	1.7	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74.	Chloromethane	30058	123019	0.10	5.00	0.017	2003.0	200.3	1.7	74-87-3	100 ppm	orl-rat 1800mg/kg
75.	Dichlorodifluoromethane	30058	123019	0.10	5.00	0.017	2034.9	203.5	1.7	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76.	Trichlorofluoromethane	30058	123019	0.10	5.00	0.017	2009.6	201.0	1.7	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77.	Vinyl chloride	30058	123019	0.10	5.00	0.017	2001.2	200.1	1.7	75-01-4	N/A	N/A
78.	4-Methyl-2-pentanone (MIBK)	82442	112816	0.01	0.50	0.004	20003.5	200.0	6.3	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79.	p-Bromofluorobenzene	20002	020419	0.10	5.00	0.017	2000.7	200.1	1.7	460-00-4	N/A	orl-rat 2700mg/kg
80.	1,2-Dichloroethane-d4	20002	020419	0.10	5.00	0.017	2000.6	200.1	1.7	17060-07-0	N/A	orl-mus 625mg/kg
81.	Toluene-d8	20002	020419	0.10	5.00	0.017	2000.4	200.1	1.7	2037-26-5	200 ppm	orl-rat 5000mg/kg
82.	Chlorobenzene-d5	22013	021720	0.10	5.00	0.017	2001.6	**200.2**	1.7	3114-55-4	N/A	orl-rat 1110mg/kg
83.	1,4-Dichlorobenzene-d4	22013	021720	0.10	5.00	0.017	2002.0	**200.2**	1.7	3855-82-1	N/A	orl-rat 500mg/kg
84.	Fluorobenzene	22013	021720	0.10	5.00	0.017	2002.1	**200.2**	1.7	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 2000095

Lot No.: 021820

CERTIFIED WEIGHT REPORT

Part Number: 97258
Lot Number: 021820
Description: 8260 VOC Primary Calibration Level 6
84 components
Expiration Date: 021823 **Solvent(s):** Methanol **Lot#** DV182-USQ12
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 400
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 50.0 0.007 Flask Uncertainty

Gabriel Helland 021820
Formulated By: Gabriel Helland DATE

Pedro Rentas 021820
Reviewed By: Pedro L. Rentas DATE

	Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1.	Bromodichloromethane	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	75-27-4	N/A	orl-rat 916mg/kg
2.	Dibromochloromethane	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	124-48-1	N/A	orl-rat 848mg/kg
3.	cis-1,2-Dichloroethene	93538	043019	0.20	10.00	0.042	1999.9	400.0	4.6	156-59-2	N/A	N/A
4.	trans-1,2-Dichloroethene	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	156-60-5	N/A	orl-rat 1235mg/kg
5.	Methylene chloride	93538	043019	0.20	10.00	0.042	1999.9	400.0	4.6	75-09-2	500 ppm	orl-rat 820mg/kg
6.	1,1-Dichloroethene	93538	043019	0.20	10.00	0.042	2000.3	400.1	5.0	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7.	Bromochloromethane	93538	043019	0.20	10.00	0.042	2000.0	400.0	4.6	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8.	Bromoform	93538	043019	0.20	10.00	0.042	2000.0	400.0	4.6	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9.	Carbon tetrachloride	93538	043019	0.20	10.00	0.042	2000.0	400.0	4.6	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10.	Chloroform	93538	043019	0.20	10.00	0.042	2000.0	400.0	4.6	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11.	Dibromomethane	93538	043019	0.20	10.00	0.042	2000.0	400.0	4.6	74-95-3	N/A	orl-rat 108mg/kg
12.	1,1-Dichloroethane	93538	043019	0.20	10.00	0.042	1999.9	400.0	4.6	75-34-3	100 ppm	orl-rat 725mg/kg
13.	2,2-Dichloropropane	93538	043019	0.20	10.00	0.042	2000.0	400.0	4.6	594-20-7	N/A	N/A
14.	Tetrachloroethene	93538	043019	0.20	10.00	0.042	2000.0	400.0	4.6	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15.	1,1,1-Trichloroethane	93538	043019	0.20	10.00	0.042	1999.9	400.0	4.6	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16.	1,2-Dibromo-3-chloropropane	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	96-12-8	0.001 ppm	orl-rat 170mg/kg
17.	1,2-Dibromoethane	93538	043019	0.20	10.00	0.042	1999.9	400.0	4.6	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18.	1,2-Dichloroethane	93538	043019	0.20	10.00	0.042	1999.9	400.0	4.6	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19.	1,2-Dichloropropane	93538	043019	0.20	10.00	0.042	1999.9	400.0	4.6	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20.	1,3-Dichloropropane	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	142-28-9	N/A	unr-mus 3600mg/kg
21.	1,1-Dichloropropene	93538	043019	0.20	10.00	0.042	1981.8	396.4	5.9	563-58-6	N/A	N/A
22.	cis-1,3-Dichloropropene	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	10061-01-5	N/A	N/A
23.	trans-1,3-Dichloropropene	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	10061-02-6	N/A	N/A
24.	Hexachloro-1,3-butadiene	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25.	1,1,1,2-Tetrachloroethane	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	630-20-6	N/A	orl-rat 670mg/kg
26.	1,1,2,2-Tetrachloroethane	93538	043019	0.20	10.00	0.042	1999.9	400.0	4.6	79-34-5	5 ppm (35mg/m3/8H)(skin)	orl-rat 800mg/kg
27.	1,1,2-Trichloroethane	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28.	Trichloroethene	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29.	1,2,3-Trichloropropane	93538	043019	0.20	10.00	0.042	1999.8	400.0	4.6	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30.	Benzene	93538	043019	0.20	10.00	0.042	2000.0	400.0	5.0	71-43-2	1 ppm	orl-rat 4894mg/kg
31.	Bromobenzene	93538	043019	0.20	10.00	0.042	2000.2	400.1	5.0	108-86-1	N/A	orl-rat 2699mg/kg
32.	n-Butyl benzene	93538	043019	0.20	10.00	0.042	2000.9	400.2	5.0	104-51-8	N/A	N/A
33.	Ethyl benzene	93538	043019	0.20	10.00	0.042	2000.0	400.0	5.0	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34.	p-Isopropyl toluene	93538	043019	0.20	10.00	0.042	2000.3	400.1	5.0	99-87-6	N/A	orl-rat 4750mg/kg
35.	Naphthalene	93538	043019	0.20	10.00	0.042	2000.1	400.0	5.0	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36.	Toluene	93538	043019	0.20	10.00	0.042	2000.1	400.0	5.0	108-88-3	200 ppm	orl-rat 5000mg/kg
37.	1,2,3-Trichlorobenzene	93538	043019	0.20	10.00	0.042	2001.1	400.2	5.0	87-61-6	N/A	ipr-mus 1390mg/kg
38.	1,2,4-Trichlorobenzene	93538	043019	0.20	10.00	0.042	2000.7	400.2	5.0	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39.	1,2,4-Trimethylbenzene	93538	043019	0.20	10.00	0.042	2000.6	400.1	5.0	95-63-6	N/A	orl-rat 5g/kg
40.	1,3,5-Trimethylbenzene	93538	043019	0.20	10.00	0.042	2000.4	400.1	5.0	108-67-8	N/A	N/A
41.	Styrene	93538	043019	0.20	10.00	0.042	2000.0	400.0	5.0	100-42-5	100 ppm	orl-rat 5000mg/kg
42.	tert-Butyl benzene	93538	043019	0.20	10.00	0.042	2000.2	400.1	5.0	98-06-6	N/A	N/A
43.	sec-Butyl benzene	93538	043019	0.20	10.00	0.042	2000.4	400.1	5.0	135-98-8	N/A	orl-rat 2240mg/kg
44.	Chlorobenzene	93538	043019	0.20	10.00	0.042	2000.6	400.1	5.0	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45.	2-Chlorotoluene	93538	043019	0.20	10.00	0.042	2000.1	400.0	5.0	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46.	4-Chlorotoluene	93538	043019	0.20	10.00	0.042	2000.3	400.1	5.0	106-43-4	N/A	orl-rat 2100mg/kg
47.	1,2-Dichlorobenzene	93538	043019	0.20	10.00	0.042	2000.6	400.1	5.0	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48.	1,3-Dichlorobenzene	93538	043019	0.20	10.00	0.042	2000.5	400.1	5.0	541-73-1	N/A	ipr-mus 1062mg/kg
49.	1,4-Dichlorobenzene	93538	043019	0.20	10.00	0.042	2000.3	400.1	5.0	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50.	Isopropylbenzene	93538	043019	0.20	10.00	0.042	2000.6	400.1	5.0	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51.	n-Propylbenzene	93538	043019	0.20	10.00	0.042	2000.4	400.1	5.0	103-65-1	N/A	orl-rat 6040mg/kg
52.	o-Xylene	93538	043019	0.20	10.00	0.042	2000.0	400.0	5.0	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53.	m-Xylene	93538	043019	0.20	10.00	0.042	1000.0	**200.0**	2.3	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54.	p-Xylene	93538	043019	0.20	10.00	0.042	999.9	**200.0**	2.3	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55.	Carbon disulphide	97269	020720	0.02	1.00	0.004	20004.9	400.1	3.6	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56.	1,4-Dioxane	97269	020720	0.02	1.00	0.004	20006.9	400.2	3.6	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
57.	Hexachloroethane	97269	020720	0.02	1.00	0.004	20005.9	400.1	3.6	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
58.	Methyl tert-butyl ether (MTBE)	97269	020720	0.02	1.00	0.004	20005.9	400.1	3.6	1634-04-4	N/A	orl-rat 4g/kg
59.	2-Methylnaphthalene	97269	020720	0.02	1.00	0.004	20003.3	400.1	3.6	91-57-6	N/A	orl-rat 1630mg/kg
60.	1,1,2-Trichlorotrifluoroethane	97269	020720	0.02	1.00	0.004	20007.9	400.2	3.6	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
61.	n-Pentane	97235	120114	0.20	10.00	0.042	2002.6	400.5	3.7	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
62.	n-Hexane	97235	120114	0.20	10.00	0.042	2002.6	400.5	3.7	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
63.	n-Heptane	97235	120114	0.20	10.00	0.042	2003.1	400.6	3.8	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
64.	n-Octane	97235	120114	0.20	10.00	0.042	2001.6	400.3	3.7	111-65-9	300 ppm(1450mg/m3/8H)	N/A
65.	n-Nonane	97235	120114	0.20	10.00	0.042	2000.7	400.2	3.7	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
66.	n-Decane	97235	120114	0.20	10.00	0.042	2001.8	400.4	3.7	124-18-5	N/A	N/A
67.	n-Undecane	97235	120114	0.20	10.00	0.042	2003.6	400.7	3.8	1120-21-4	N/A	ivn-mus 517mg/kg
68.	n-Dodecane	97235	120114	0.20	10.00	0.042	2000.6	400.1	3.7	112-40-3	N/A	N/A
69.	n-Tridecane	97235	120114	0.20	10.00	0.042	2000.2	400.1	3.7	629-50-5	N/A	ivn-mus 1161mg/kg
70.	n-Tetradecane	97235	120114	0.20	10.00	0.042	2001.5	400.3	3.7	629-59-4	N/A	N/A
71.	n-Pentadecane	97235	120114	0.20	10.00	0.042	2001.3	400.3	3.7	629-62-9	N/A	ivn-mus 3494mg/kg
72.	Bromomethane	30058	123019	0.20	10.00	0.042	2004.8	401.0	3.7	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73.	Chloroethane	30058	123019	0.20	10.00	0.042	2002.5	400.5	3.7	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74.	Chloromethane	30058	123019	0.20	10.00	0.042	2003.0	400.6	3.7	74-87-3	100 ppm	orl-rat 1800mg/kg
75.	Dichlorodifluoromethane	30058	123019	0.20	10.00	0.042	2034.9	407.0	3.8	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76.	Trichlorofluoromethane	30058	123019	0.20	10.00	0.042	2009.6	401.9	3.8	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77.	Vinyl chloride	30058	123019	0.20	10.00	0.042	2001.2	400.3	3.7	75-01-4	N/A	N/A
78.	4-Methyl-2-pentanone (MIBK)	82442	103019	0.02	1.00	0.004	20002.0	400.1	3.6	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79.	p-Bromofluorobenzene	20002	020419	0.20	10.00	0.042	2000.7	400.2	3.7	460-00-4	N/A	orl-rat 2700mg/kg
80.	1,2-Dichloroethane-d4	20002	020419	0.20	10.00	0.042	2000.6	400.1	3.7	17060-07-0	N/A	orl-mus 625mg/kg
81.	Toluene-d8	20002	020419	0.20	10.00	0.042	2000.4	400.1	3.7	2037-26-5	200 ppm	orl-rat 5000mg/kg
82.	Chlorobenzene-d5	22013	021720	0.10	5.00	0.017	2001.6	**200.2**	1.6	3114-55-4	N/A	orl-rat 1110mg/kg
83.	1,4-Dichlorobenzene-d4	22013	021720	0.10	5.00	0.017	2002.0	**200.2**	1.6	3855-82-1	N/A	orl-rat 500mg/kg
84.	Fluorobenzene	22013	021720	0.10	5.00	0.017	2002.1	**200.2**	1.6	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Vendor: Absolute Standards, Inc.

Lab Standard No.: 2000348

Lot No.: 021820

CERTIFIED WEIGHT REPORT

Part Number: 97256
Lot Number: 021820
Description: 8260 VOC Primary Calibration Level 4
84 components
Expiration Date: 021823 **Solvent(s):** Methanol **Lot#** DV182-USQ12
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 100
NIST Test ID#: 6UTB 5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to (mL): 100.0 0.012 Flask Uncertainty

Gabriel Helland 021820
Formulated By: Gabriel Helland DATE

Pedro Rentas 021820
Reviewed By: Pedro L. Rentas DATE

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc.(ug/mL)	Final Conc.(ug/mL)	Expanded Uncertainty (+/-) (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. Bromodichloromethane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	75-27-4	N/A	orl-rat 916mg/kg
2. Dibromochloromethane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	124-48-1	N/A	orl-rat 848mg/kg
3. cis-1,2-Dichloroethene	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	156-59-2	N/A	N/A
4. trans-1,2-Dichloroethene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	156-60-5	N/A	orl-rat 1235mg/kg
5. Methylene chloride	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	75-09-2	500 ppm	orl-rat 820mg/kg
6. 1,1-Dichloroethene	93538	043019	0.05	5.00	0.017	2000.3	100.0	1.2	75-35-4	1 ppm (4mg/m3/8H)	orl-rat 200mg/kg
7. Bromochloromethane	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	74-97-5	200 ppm (1050mg/m3/8H)	orl-rat 5000mg/kg
8. Bromoform	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	75-25-2	0.5 ppm (5mg/m3) (skin)	orl-rat 933mg/kg
9. Carbon tetrachloride	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	56-23-5	2 ppm (12.6mg/m3/8H)	orl-rat 2350mg/kg
10. Chloroform	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	67-66-3	50 ppm (240mg/m3) (CL)	orl-rat 908mg/kg
11. Dibromomethane	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	74-95-3	N/A	orl-rat 108mg/kg
12. 1,1-Dichloroethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	75-34-3	100 ppm	orl-rat 725mg/kg
13. 2,2-Dichloropropane	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	594-20-7	N/A	N/A
14. Tetrachloroethene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.1	127-18-4	25 ppm (170mg/m3/8H)(final)	orl-rat 2629mg/kg
15. 1,1,1-Trichloroethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	71-55-6	350 ppm (1900mg/m3/8H)	orl-rat 10300mg/kg
16. 1,2-Dibromo-3-chloropropane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	96-12-8	0.001 ppm	orl-rat 170mg/kg
17. 1,2-Dibromoethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	106-93-4	20 ppm (8H)	orl-rat 108mg/kg
18. 1,2-Dichloroethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	107-06-2	50 ppm (8H)	orl-rat 670mg/kg
19. 1,2-Dichloropropane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	78-87-5	75 ppm (350mg/m3/8H)	orl-rat 1947mg/kg
20. 1,3-Dichloropropane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	142-28-9	N/A	unr-mus 3600mg/kg
21. 1,1-Dichloropropene	93538	043019	0.05	5.00	0.017	1981.8	99.1	1.5	563-58-6	N/A	N/A
22. cis-1,3-Dichloropropene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	10061-01-5	N/A	N/A
23. trans-1,3-Dichloropropene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	10061-02-6	N/A	N/A
24. Hexachloro-1,3-butadiene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	87-68-3	0.02 ppm (0.24mg/m3/8H)	orl-rat 82mg/kg
25. 1,1,1,2-Tetrachloroethane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	630-20-6	N/A	orl-rat 670mg/kg
26. 1,1,2,2-Tetrachloroethane	93538	043019	0.05	5.00	0.017	1999.9	100.0	1.1	79-34-5	5 ppm (35mg/m3/8H)(skin)	orl-rat 800mg/kg
27. 1,1,2-Trichloroethane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	79-00-5	10 ppm (45mg/m3/8H)(skin)	orl-rat 836mg/kg
28. Trichloroethene	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	79-01-6	50 ppm (270mg/m3/8H)	orl-mus 2402mg/kg
29. 1,2,3-Trichloropropane	93538	043019	0.05	5.00	0.017	1999.8	100.0	1.1	96-18-4	10 ppm (60mg/m3/8H)	orl-rat 149.6mg/kg
30. Benzene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.2	71-43-2	1 ppm	orl-rat 4894mg/kg
31. Bromobenzene	93538	043019	0.05	5.00	0.017	2000.2	100.0	1.2	108-86-1	N/A	orl-rat 2699mg/kg
32. n-Butyl benzene	93538	043019	0.05	5.00	0.017	2000.9	100.0	1.2	104-51-8	N/A	N/A
33. Ethyl benzene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.2	100-41-4	100 ppm (435mg/m3/8H)	orl-rat >2000mg/kg
34. p-Isopropyl toluene	93538	043019	0.05	5.00	0.017	2000.3	100.0	1.2	99-87-6	N/A	orl-rat 4750mg/kg
35. Naphthalene	93538	043019	0.05	5.00	0.017	2000.1	100.0	1.2	91-20-3	10 ppm (50mg/m3/8H)	orl-rat 490mg/kg
36. Toluene	93538	043019	0.05	5.00	0.017	2000.1	100.0	1.2	108-88-3	200 ppm	orl-rat 5000mg/kg
37. 1,2,3-Trichlorobenzene	93538	043019	0.05	5.00	0.017	2001.1	100.0	1.2	87-61-6	N/A	ipr-mus 1390mg/kg
38. 1,2,4-Trichlorobenzene	93538	043019	0.05	5.00	0.017	2000.7	100.0	1.2	120-82-1	5 ppm (CL) (40mg/m3)	orl-rat 756mg/kg
39. 1,2,4-Trimethylbenzene	93538	043019	0.05	5.00	0.017	2000.6	100.0	1.2	95-63-6	N/A	orl-rat 5g/kg
40. 1,3,5-Trimethylbenzene	93538	043019	0.05	5.00	0.017	2000.4	100.0	1.2	108-67-8	N/A	N/A
41. Styrene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.2	100-42-5	100 ppm	orl-rat 5000mg/kg
42. tert-Butyl benzene	93538	043019	0.05	5.00	0.017	2000.2	100.0	1.2	98-06-6	N/A	N/A
43. sec-Butyl benzene	93538	043019	0.05	5.00	0.017	2000.4	100.0	1.2	135-98-8	N/A	orl-rat 2240mg/kg
44. Chlorobenzene	93538	043019	0.05	5.00	0.017	2000.6	100.0	1.2	108-90-7	75 ppm (350mg/m3/8H)	orl-rat 2290mg/kg
45. 2-Chlorotoluene	93538	043019	0.05	5.00	0.017	2000.1	100.0	1.2	95-49-8	50 ppm (250mg/m3/8H)	orl-rat 3900mg/kg
46. 4-Chlorotoluene	93538	043019	0.05	5.00	0.017	2000.3	100.0	1.2	106-43-4	N/A	orl-rat 2100mg/kg
47. 1,2-Dichlorobenzene	93538	043019	0.05	5.00	0.017	2000.6	100.0	1.2	95-50-1	50 ppm (300mg/m3) (CL)	orl-rat 500mg/kg
48. 1,3-Dichlorobenzene	93538	043019	0.05	5.00	0.017	2000.5	100.0	1.2	541-73-1	N/A	ipr-mus 1062mg/kg
49. 1,4-Dichlorobenzene	93538	043019	0.05	5.00	0.017	2000.3	100.0	1.2	106-46-7	75 ppm (450mg/m3/8H)	orl-rat 500mg/kg
50. Isopropylbenzene	93538	043019	0.05	5.00	0.017	2000.6	100.0	1.2	98-82-8	50 ppm (245mg/m3/8H)	orl-rat 1400mg/kg
51. n-Propylbenzene	93538	043019	0.05	5.00	0.017	2000.4	100.0	1.2	103-65-1	N/A	orl-rat 6040mg/kg
52. o-Xylene	93538	043019	0.05	5.00	0.017	2000.0	100.0	1.2	95-47-6	100 ppm (435mg/m3/8H)	ipr-mus 1364mg/kg
53. m-Xylene	93538	043019	0.05	5.00	0.017	1000.0	50.0	0.6	108-38-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
54. p-Xylene	93538	043019	0.05	5.00	0.017	999.9	50.0	0.6	106-42-3	100 ppm (435mg/m3/8H)	orl-rat 5g/kg
55. Carbon disulphide	97269	020720	0.005	0.50	0.004	20004.9	100.0	5.0	75-15-0	4 ppm (12mg/m3) (skin)	orl-rat 1200mg/kg
56. 1,4-Dioxane	97269	020720	0.005	0.50	0.004	20006.9	100.0	5.0	123-91-1	25 ppm (90mg/m3/8H)(skin)	orl-mus 5700mg/kg
57. Hexachloroethane	97269	020720	0.005	0.50	0.004	20005.9	100.0	5.0	67-72-1	1 ppm (10mg/m3/8H)(skin)	orl-gpg 4970mg/kg
58. Methyl tert-butyl ether (MTBE)	97269	020720	0.005	0.50	0.004	20005.9	100.0	5.0	1634-04-4	N/A	orl-rat 4g/kg
59. 2-Methylnaphthalene	97269	020720	0.005	0.50	0.004	20003.3	100.0	5.0	91-57-6	N/A	orl-rat 1630mg/kg
60. 1,1,2-Trichlorotrifluoroethane	97269	020720	0.005	0.50	0.004	20007.9	100.0	5.0	76-13-1	1000 ppm (7600mg/m3/8H)	orl-rat 43g/kg
61. n-Pentane	97235	120114	0.05	5.00	0.017	2002.6	100.1	0.9	109-66-0	600 ppm(1800mg/m3/8H)	ivn-mus 446mg/kg
62. n-Hexane	97235	120114	0.05	5.00	0.017	2002.6	100.1	0.9	110-54-3	50 ppm(180mg/m3/8H)	orl-rat 28710mg/kg
63. n-Heptane	97235	120114	0.05	5.00	0.017	2003.1	100.2	0.9	142-82-5	400 ppm(1600mg/m3/8H)	ivn-mus 222mg/kg
64. n-Octane	97235	120114	0.05	5.00	0.017	2001.6	100.1	0.9	111-65-9	300 ppm(1450mg/m3/8H)	N/A
65. n-Nonane	97235	120114	0.05	5.00	0.017	2000.7	100.0	0.9	111-84-2	200 ppm (1050mg/m3/8H)	ivn-mus 218mg/kg
66. n-Decane	97235	120114	0.05	5.00	0.017	2001.8	100.1	0.9	124-18-5	N/A	N/A
67. n-Undecane	97235	120114	0.05	5.00	0.017	2003.6	100.2	0.9	1120-21-4	N/A	ivn-mus 517mg/kg
68. n-Dodecane	97235	120114	0.05	5.00	0.017	2000.6	100.0	0.9	112-40-3	N/A	N/A
69. n-Tridecane	97235	120114	0.05	5.00	0.017	2000.2	100.0	0.9	629-50-5	N/A	ivn-mus 1161mg/kg
70. n-Tetradecane	97235	120114	0.05	5.00	0.017	2001.5	100.1	0.9	629-59-4	N/A	N/A
71. n-Pentadecane	97235	120114	0.05	5.00	0.017	2001.3	100.1	0.9	629-62-9	N/A	ivn-mus 3494mg/kg
72. Bromomethane	30058	123019	0.05	5.00	0.017	2004.8	100.2	0.9	74-83-9	5 ppm (20mg/m3/8H) (skin)	orl-rat 214mg/kg
73. Chloroethane	30058	123019	0.05	5.00	0.017	2002.5	100.1	0.9	75-00-3	1000 ppm (2600mg/m3/8H)	N/A
74. Chloromethane	30058	123019	0.05	5.00	0.017	2003.0	100.1	0.9	74-87-3	100 ppm	orl-rat 1800mg/kg
75. Dichlorodifluoromethane	30058	123019	0.05	5.00	0.017	2034.9	101.7	0.9	75-71-8	1000 ppm (4950mg/m3/8H)	N/A
76. Trichlorofluoromethane	30058	123019	0.05	5.00	0.017	2009.6	100.5	0.9	75-69-4	1000 ppm (5600mg/m3/8H)	ipr-mus 1743mg/kg
77. Vinyl chloride	30058	123019	0.05	5.00	0.017	2001.2	100.1	0.9	75-01-4	N/A	N/A
78. 4-Methyl-2-pentanone (MIBK)	82442	112816	0.00	0.50	0.004	20003.5	100.0	5.0	108-10-1	100 ppm (410mg/m3/8H)	orl-rat 2080mg/kg
79. p-Bromofluorobenzene	20002	020419	0.05	5.00	0.017	2000.7	100.0	0.9	460-00-4	N/A	orl-rat 2700mg/kg
80. 1,2-Dichloroethane-d4	20002	020419	0.05	5.00	0.017	2000.6	100.0	0.9	17060-07-0	N/A	orl-mus 625mg/kg
81. Toluene-d8	20002	020419	0.05	5.00	0.017	2000.4	100.0	0.9	2037-26-5	200 ppm	orl-rat 5000mg/kg
82. Chlorobenzene-d5	22013	021720	0.10	10.00	0.042	2001.6	200.1	1.9	3114-55-4	N/A	orl-rat 1110mg/kg
83. 1,4-Dichlorobenzene-d4	22013	021720	0.10	10.00	0.042	2002.0	200.2	1.9	3855-82-1	N/A	orl-rat 500mg/kg
84. Fluorobenzene	22013	021720	0.10	10.00	0.042	2002.1	200.2	1.9	462-06-6	N/A	orl-rat 4399mg/kg

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Working Standard Preparation Summary

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2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Working Standard Preparation Summary

Parent Standard	Amount (ml)	FinalVolume (ml)	Prepared	Expires
Calibration QC				
Standard: 2000337 / 8260 Calibration Std, 5ng, Working			10/19/2020	02/18/2023
2000090	0.5000	1.00		
Standard: 2000338 / 8260 Calibration Std, 10ng, Working			10/19/2020	02/18/2023
2000091	0.5000	1.00		
Standard: 2000339 / 8260 Calibration Std, 25ng, Working			10/19/2020	02/18/2023
2000092	0.5000	1.00		
Standard: 2000340 / 8260 Calibration Std, 50ng, Working			10/19/2020	02/18/2023
2000093	0.5000	1.00		
Standard: 2000341 / 8260 Calibration Std, 100ng, Working			10/19/2020	02/18/2023
2000094	0.5000	1.00		
Standard: 2000342 / 8260 Calibration Std, 200ng, Working			10/19/2020	02/18/2023
2000095	0.5000	1.00		
Standard: 2000343 / 8260 Calibration Std, 2.5ng, Working			10/19/2020	02/18/2023
2000089	0.5000	1.00		
Standard: 2000344 / 8260 Calibration Std, 400ng, Working			10/19/2020	06/10/2022
1900054	0.5000	1.00		
Standard: 2000345 / 8260 Calibration Std, 600ng, Working			10/19/2020	06/10/2022
1900055	0.5000	1.00		
Standard: 2000346 / 8260 Calibration Std, 800ng, Working			10/19/2020	06/10/2022
1900056	0.5000	1.00		
Standard: 2000347 / 8260 Calibration Std, 1000ng, Working			10/19/2020	06/10/2022
1900057	0.5000	1.00		
Sequence/Sample QC				
Standard: 1900037 / LCSD Second Source Working Standard, 50ng			06/17/2019	11/29/2021
1900018	0.5000	1.00		
Standard: 2100120 / Working (LB, SMP) ISTD/SURR, Sub-Stock			03/29/2021	04/05/2021
1900019	0.0500	1.00		
Standard: 2100146 / Working (LB, SMP) ISTD/SURR, Sub-Stock			04/12/2021	04/19/2021
1900019	0.0500	1.00		

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Standard:	2100147 / Working BS ISTD/SURR, Sub-Stock			04/12/2021	04/19/2021
	1900019	0.0500	2.00		

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Purge Log

Laboratory: Beacon Environmental

Work Order: 0005717 **Matrix:** Air

BEACON ENVIRONMENTAL

WORK ORDER: 0005717

Client: Jacobs_Portland
Project: Northwest Pipe
Reporting Options:
Sampler: Beacon Passive Sampler
TAT: 7 Day(s)
Analysis: 8260C (ng)

PURGE TIME: One hour

Sample Purge Log

Beacon Passive Sampler

Purge Gas Tank PSI @Start	Date/Time Purge Start	Initials	LabNumber	SampleID	ReceivedDate	TAT 7 Day(s) DueDate	Comments: (e.g. Wet, Discolored, Damaged, QA/QC Requirements)
1400	4/12/2021 757	PBK	0005717-01	Trip-1	4/8/2021	4/19/2021	
			0005717-02	Trip-2	4/8/2021	4/19/2021	
			0005717-03	NWP_PSG01-03242021	4/8/2021	4/19/2021	
			0005717-04	NWP_PSG02-03242021	4/8/2021	4/19/2021	
			0005717-05	NWP_PSG03-03242021	4/8/2021	4/19/2021	
			0005717-06	NWP_PSG04-03242021	4/8/2021	4/19/2021	
			0005717-07	NWP_PSG05-03242021	4/8/2021	4/19/2021	
			0005717-08	NWP_PSG06-03242021	4/8/2021	4/19/2021	
			0005717-09	NWP_PSG07-03242021	4/8/2021	4/19/2021	
			0005717-10	NWP_PSG08-03242021	4/8/2021	4/19/2021	
			0005717-11	NWP_PSG09-03242021	4/8/2021	4/19/2021	
			0005717-12	NWP_PSG10-03242021	4/8/2021	4/19/2021	
			0005717-13	NWP_PSG11-03242021	4/8/2021	4/19/2021	
			0005717-14	NWP_PSG12-03242021	4/8/2021	4/19/2021	
			0005717-15	NWP_PSG13-03242021	4/8/2021	4/19/2021	
			0005717-16	NWP_PSG14-03242021	4/8/2021	4/19/2021	
			0005717-17	NWP_PSG15-03242021	4/8/2021	4/19/2021	
			0005717-18	NWP_PSG16-03242021	4/8/2021	4/19/2021	
			0005717-19	NWP_PSG17-03242021	4/8/2021	4/19/2021	
			0005717-20	NWP_PSG18-03242021	4/8/2021	4/19/2021	
			0005717-21	NWP_PSG19-03242021	4/8/2021	4/19/2021	
			0005717-22	NWP_PSG20-03242021	4/8/2021	4/19/2021	
			0005717-23	NWP_PSG21-03242021	4/8/2021	4/19/2021	
	4/12/2021 900	PBK	0005717-24	NWP_PSG22-03242021	4/8/2021	4/19/2021	
1250	4/12/2021 902	PBK	0005717-25	NWP_PSG23-03242021	4/8/2021	4/19/2021	
			0005717-26	NWP_PSG24-03242021	4/8/2021	4/19/2021	
			0005717-27	NWP_PSG25-03242021	4/8/2021	4/19/2021	
			0005717-28	NWP_PSG26-03242021	4/8/2021	4/19/2021	
			0005717-29	NWP_PSG27-03242021	4/8/2021	4/19/2021	
			0005717-30	NWP_PSG28-03242021	4/8/2021	4/19/2021	
			0005717-31	NWP_PSG29-03242021	4/8/2021	4/19/2021	
			0005717-32	NWP_PSG30-03242021	4/8/2021	4/19/2021	

BEACON ENVIRONMENTAL

WORK ORDER: 0005717

Client: Jacobs_Portland
Project: Northwest Pipe
Reporting Options:
Sampler: Beacon Passive Sampler
TAT: 7 Day(s)
Analysis: 8260C (ng)

PURGE TIME: One hour

Sample Purge Log

Beacon Passive Sampler

Purge Gas Tank PSI @Start	Date/Time Purge Start	Initials	LabNumber	SampleID	ReceivedDate	TAT 7 Day(s) DueDate	Comments: (e.g. Wet, Discolored, Damaged, QA/QC Requirements)
		RM	0005717-33	NWP_PSG31-03242021	4/8/2021	4/19/2021	
			0005717-34	NWP_PSG32-03242021	4/8/2021	4/19/2021	
			0005717-35	NWP_PSG33-03242021	4/8/2021	4/19/2021	
			0005717-36	NWP_PSG34-03242021	4/8/2021	4/19/2021	
			0005717-37	NWP_PSG35-03242021	4/8/2021	4/19/2021	
			0005717-38	NWP_PSG36-03242021	4/8/2021	4/19/2021	
			0005717-39	NWP_PSG37-03242021	4/8/2021	4/19/2021	
Stop:	4/12/2021 1007	RM					

Sample Count: 39

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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Organics.GCMS

Sample Raw Data

BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 3:10:00PM **FileID:** C21041205.D **DF:** 1.00

Lab Number: 0005717-01 **Sample Name:** Trip-1

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041205.D
Acq On : 12 Apr 2021 03:10 pm
Operator : KAI
Sample : 0005717-01
Misc : Trip-1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 13 10:25:25 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

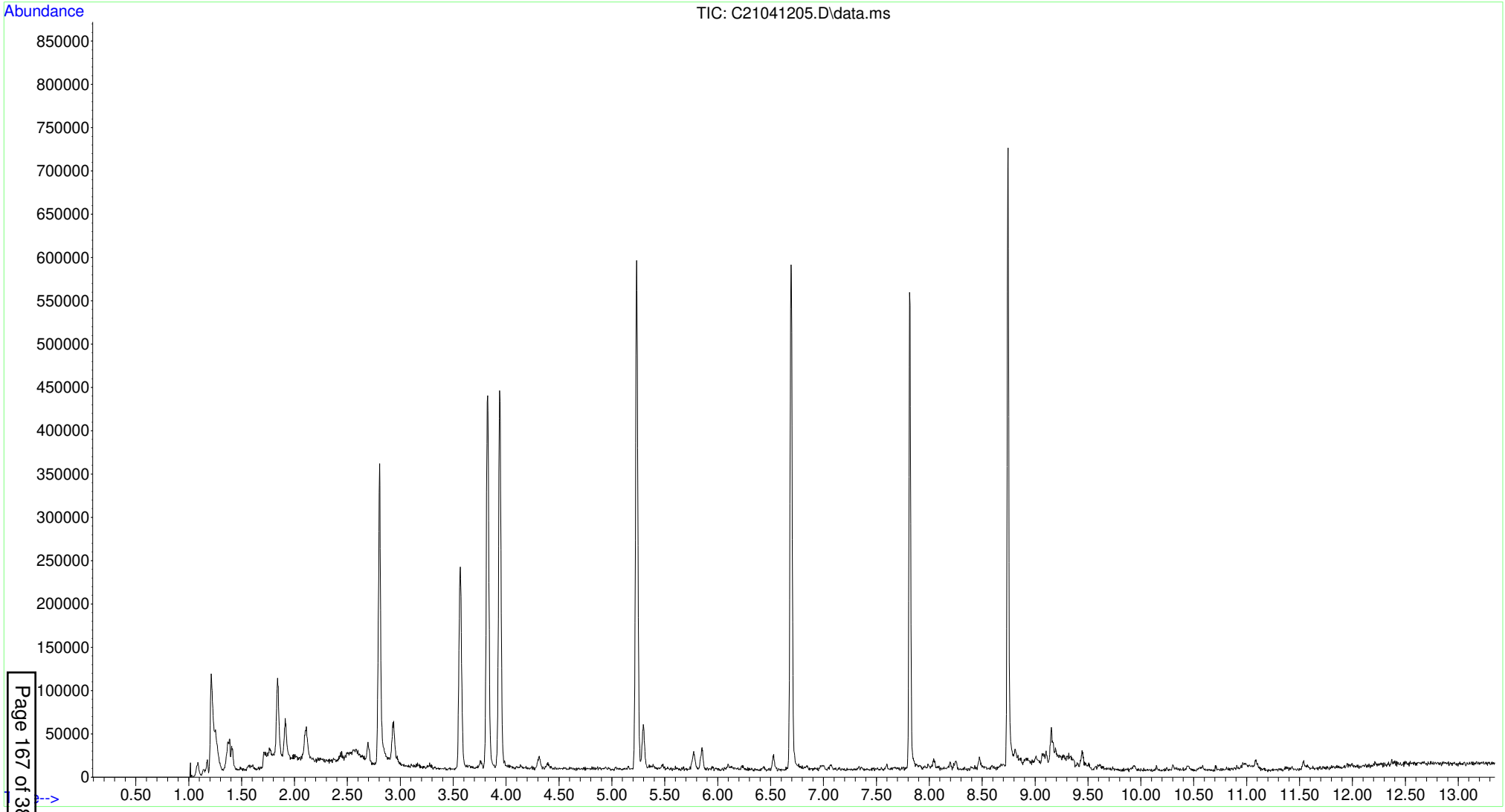
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	331549	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	272001	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	125323	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	137192	107.39	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 107.39%			
19) Toluene-d8	5.234	98	313854	90.85	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 90.85%			
31) Bromofluorobenzene	7.815	95	107793	81.37	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 81.37%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041205.D
Acq On : 12 Apr 2021 03:10 pm
Operator : KAI
Sample : 0005717-01
Misc : Trip-1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 13 10:25:25 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 3:34:00PM **FileID:** C21041206.D **DF:** 1.00

Lab Number: 0005717-02 **Sample Name:** Trip-2

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041206.D
Acq On : 12 Apr 2021 03:34 pm
Operator : KAI
Sample : 0005717-02
Misc : Trip-2
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 13 10:25:29 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

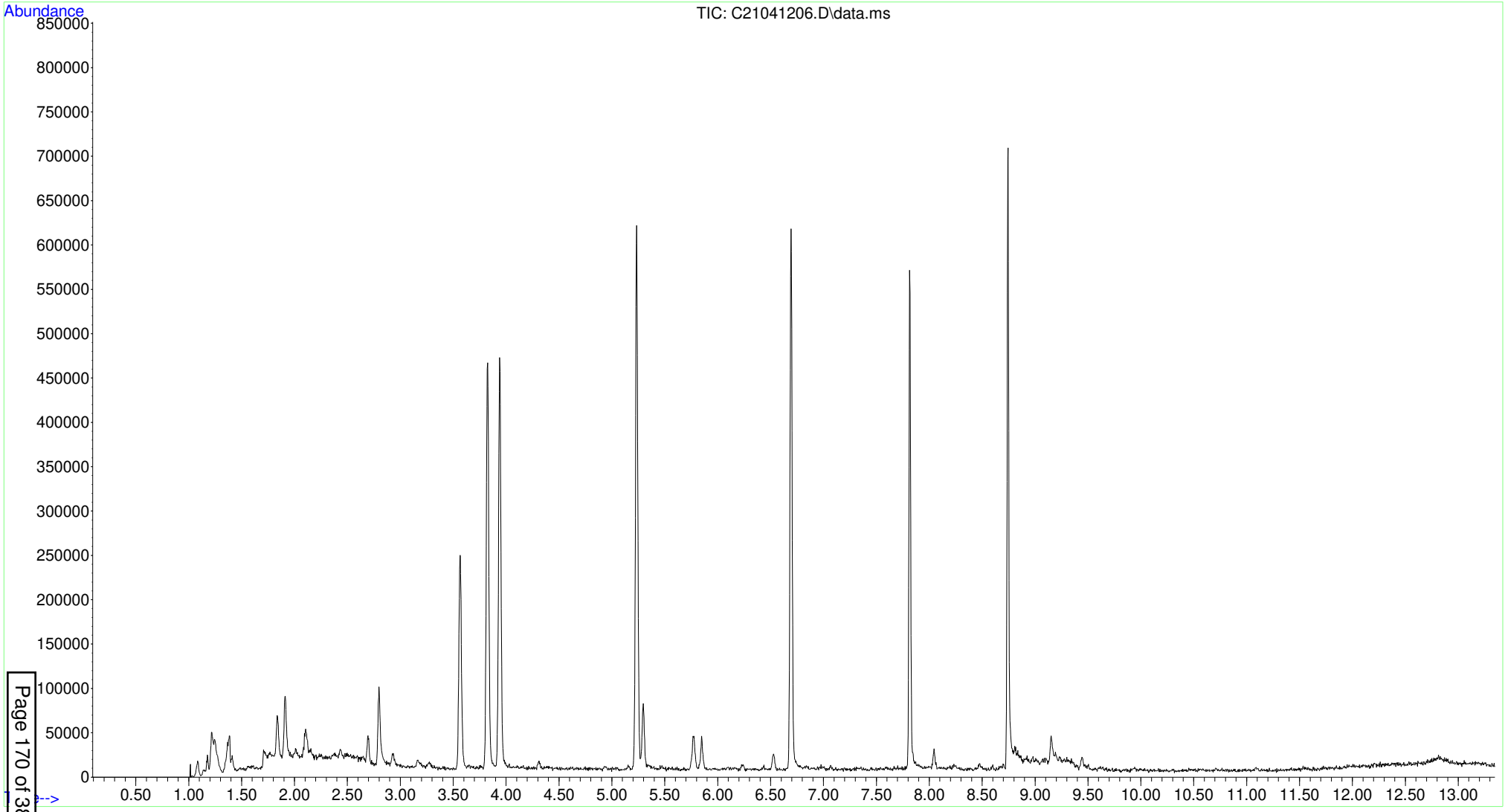
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	346397	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	276526	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	124824	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	142848	107.03	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 107.03%			
19) Toluene-d8	5.234	98	324472	92.38	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 92.38%			
31) Bromofluorobenzene	7.818	95	109295	81.15	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 81.15%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041206.D
Acq On : 12 Apr 2021 03:34 pm
Operator : KAI
Sample : 0005717-02
Misc : Trip-2
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 13 10:25:29 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 3:58:00PM **FileID:** C21041207.D **DF:** 1.00

Lab Number: 0005717-03 **Sample Name:** NWP_PSG01-03262021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041207.D
Acq On : 12 Apr 2021 03:58 pm
Operator : KAI
Sample : 0005717-03
Misc : NWP_PSG01-03262021
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Apr 13 10:25:33 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

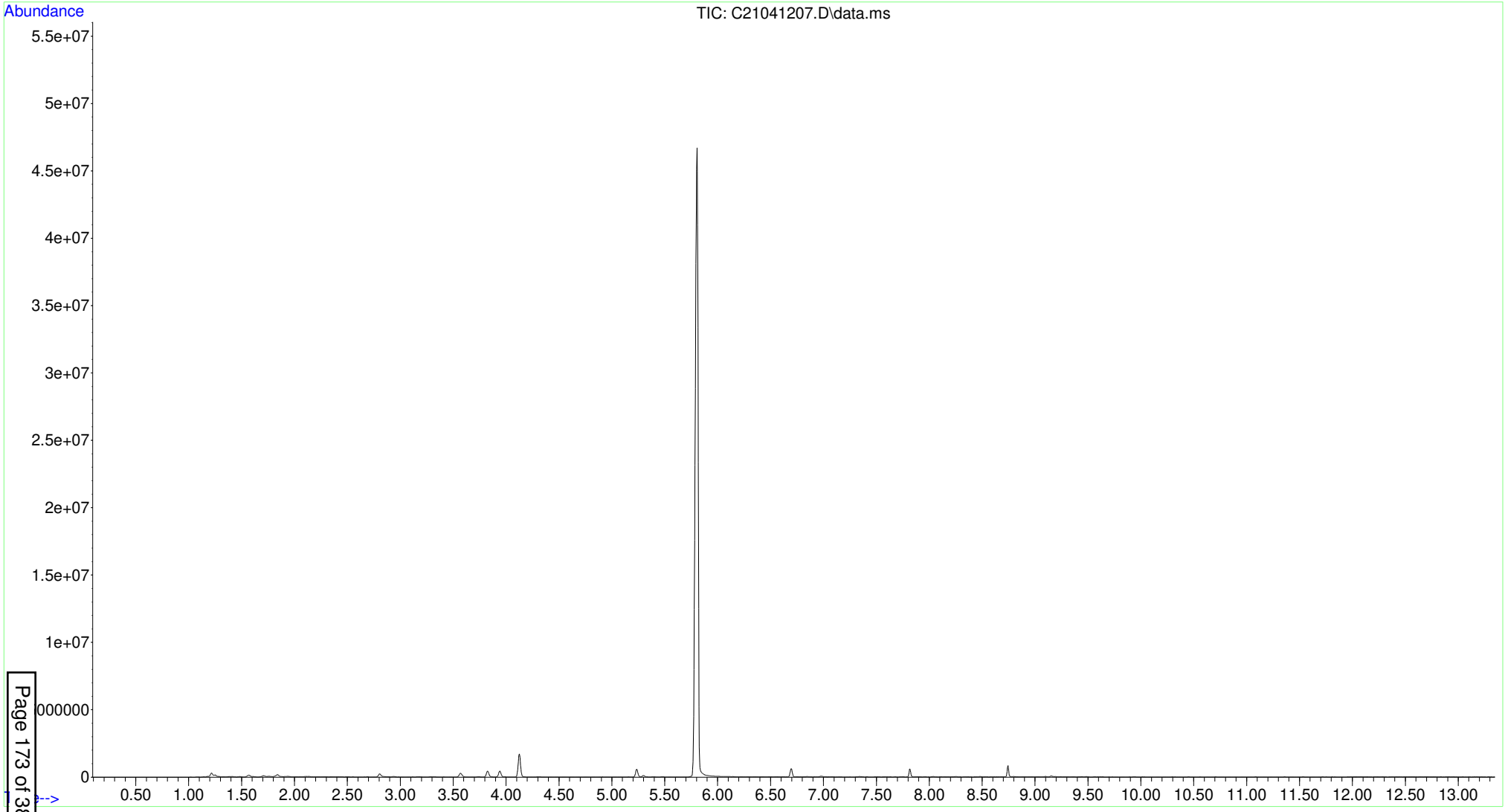
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	324059	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	284787	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.741	152	143499	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	133794	107.15	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 107.15%			
19) Toluene-d8	5.234	98	310820	85.93	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.93%			
31) Bromofluorobenzene	7.815	95	118926	85.74	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.74%			
Target Compounds						Qvalue
15) Trichloroethene	4.125	130	484732	445.89	ng	96
22) Tetrachloroethene	5.804	131	10133030	10906.40	ng	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041207.D
Acq On : 12 Apr 2021 03:58 pm
Operator : KAI
Sample : 0005717-03
Misc : NWP_PSG01-03262021
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Apr 13 10:25:33 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 4:22:00PM **FileID:** C21041208.D **DF:** 1.00

Lab Number: 0005717-04 **Sample Name:** NWP_PSG02-03262021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041208.D
Acq On : 12 Apr 2021 04:22 pm
Operator : KAI
Sample : 0005717-04
Misc : NWP_PSG02-03262021
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Apr 13 10:25:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

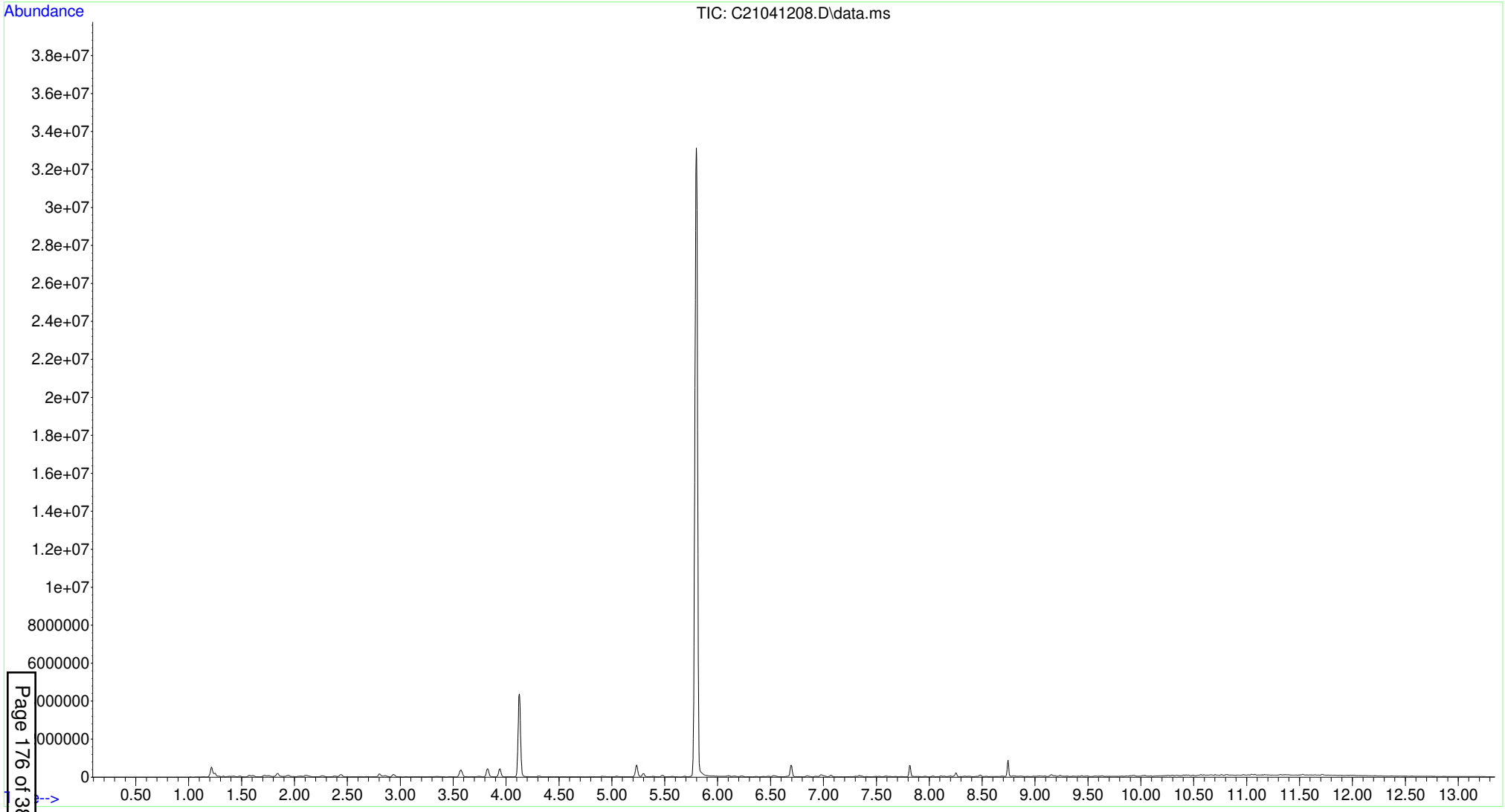
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	322638	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	278560	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	144569	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	126536	101.79	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 101.79%			
19) Toluene-d8	5.234	98	311103	87.93	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.93%			
31) Bromofluorobenzene	7.815	95	118347	87.23	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.23%			
Target Compounds						Qvalue
8) cis-1,2-Dichloroethene	2.937	96	23958	24.70	ng	93
15) Trichloroethene	4.125	130	1277977	1180.75	ng	97
22) Tetrachloroethene	5.798	131	6700288	7372.88	ng	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041208.D
Acq On : 12 Apr 2021 04:22 pm
Operator : KAI
Sample : 0005717-04
Misc : NWP_PSG02-03262021
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Apr 13 10:25:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 4:46:00PM **FileID:** C21041209.D **DF:** 1.00

Lab Number: 0005717-05 **Sample Name:** NWP_PSG03-03242021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041209.D
Acq On : 12 Apr 2021 04:46 pm
Operator : KAI
Sample : 0005717-05
Misc : NWP_PSG03-03242021
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Apr 13 10:25:41 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

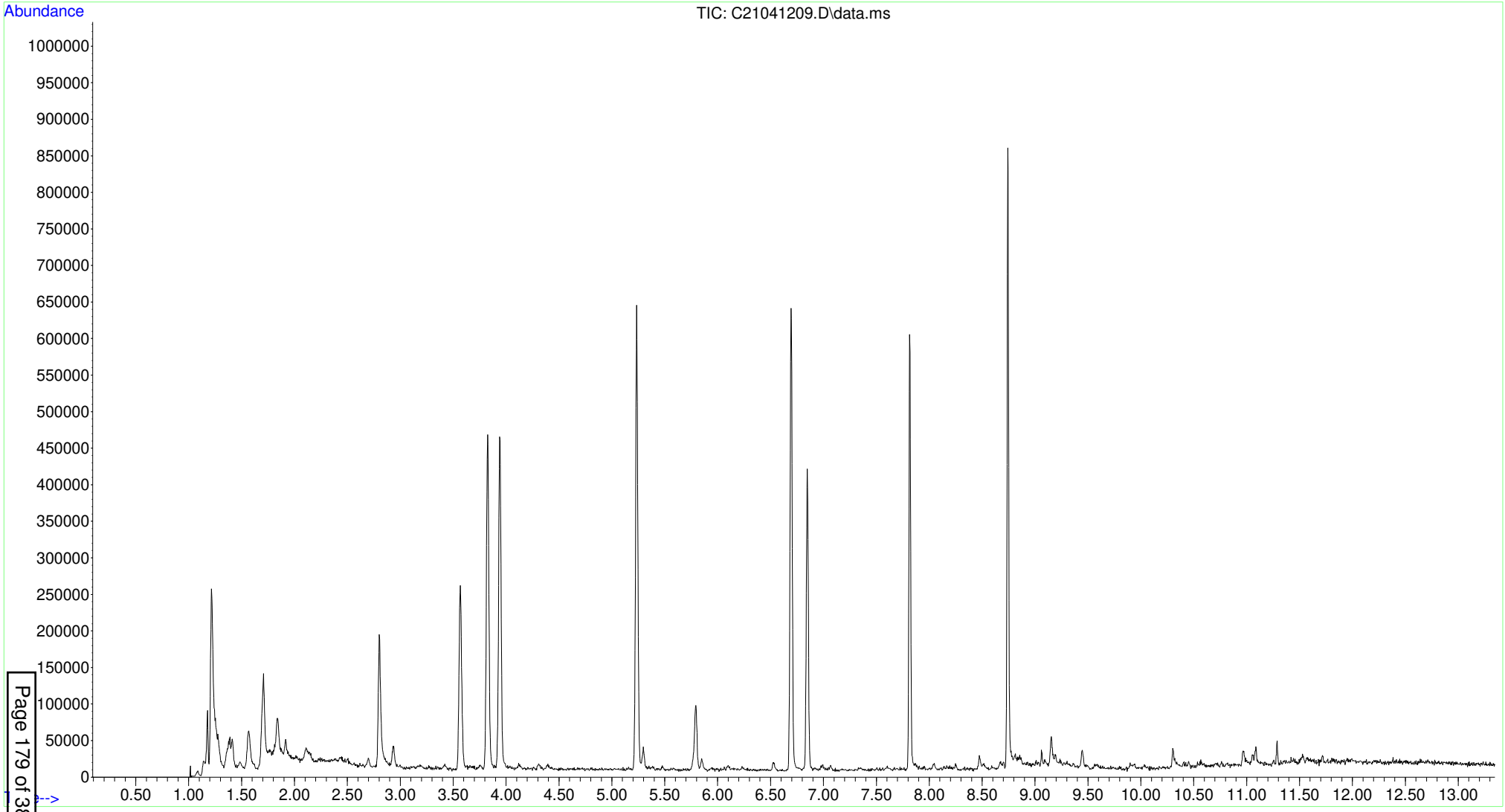
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	342349	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	287282	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	142764	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	137694	104.39	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 104.39%			
19) Toluene-d8	5.234	98	325322	89.16	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 89.16%			
31) Bromofluorobenzene	7.815	95	118578	84.75	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 84.75%			
Target Compounds						Qvalue
22) Tetrachloroethene	5.798	131	15635	16.68	ng	# 95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041209.D
Acq On : 12 Apr 2021 04:46 pm
Operator : KAI
Sample : 0005717-05
Misc : NWP_PSG03-03242021
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Apr 13 10:25:41 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 5:10:00PM **FileID:** C21041210.D **DF:** 1.00

Lab Number: 0005717-06 **Sample Name:** NWP_PSG04-03242021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041210.D
Acq On : 12 Apr 2021 05:10 pm
Operator : KAI
Sample : 0005717-06
Misc : NWP_PSG04-03242021
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 13 10:25:45 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	329793	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	275594	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	145077	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	122366	96.30	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 96.30%			
19) Toluene-d8	5.234	98	312694	89.33	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 89.33%			
31) Bromofluorobenzene	7.818	95	115915	86.36	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.36%			

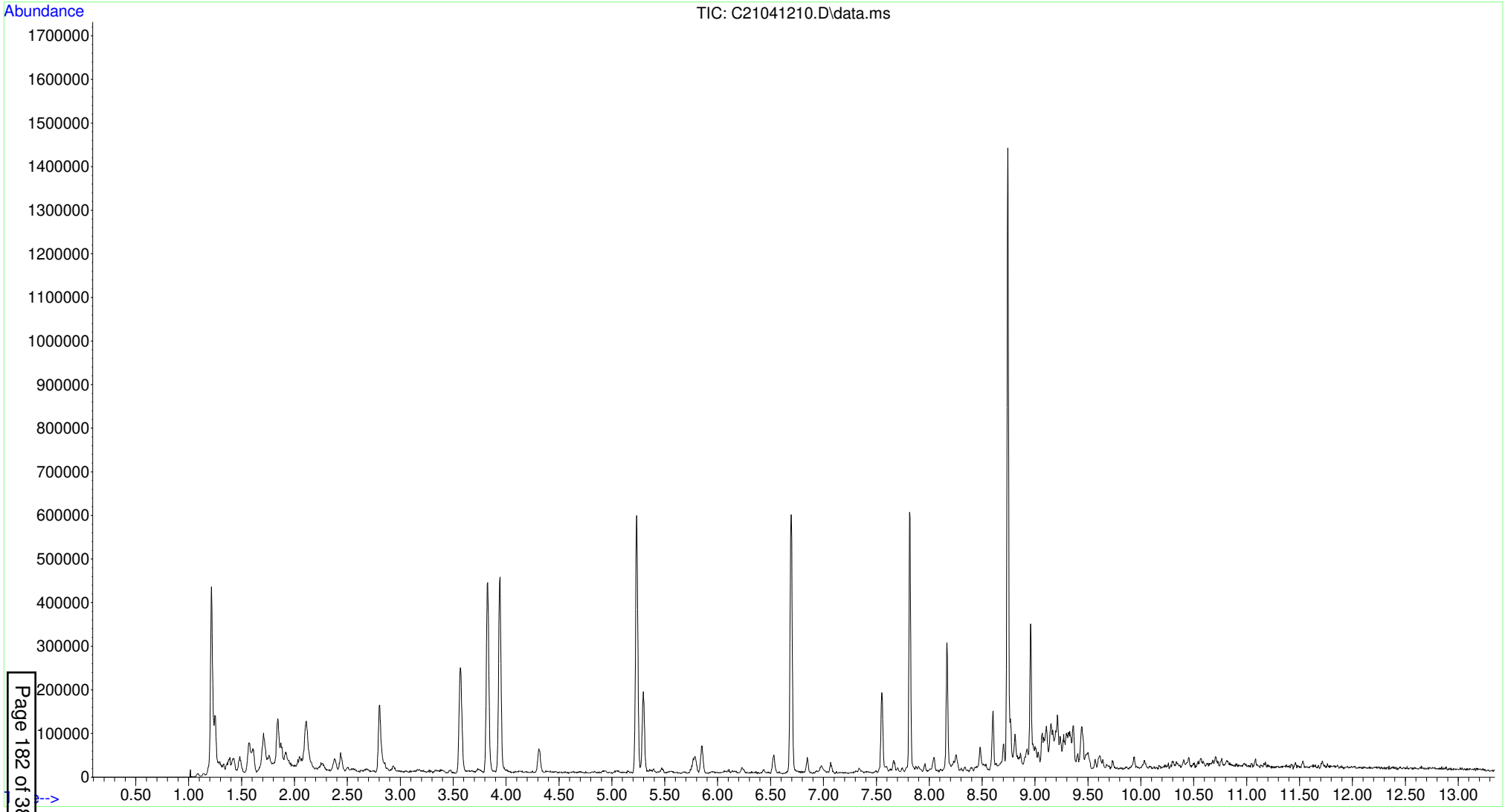
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041210.D
Acq On : 12 Apr 2021 05:10 pm
Operator : KAI
Sample : 0005717-06
Misc : NWP_PSG04-03242021
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 13 10:25:45 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 5:33:00PM **FileID:** C21041211.D **DF:** 1.00

Lab Number: 0005717-07 **Sample Name:** NWP_PSG05-03242021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041211.D
Acq On : 12 Apr 2021 05:33 pm
Operator : KAI
Sample : 0005717-07
Misc : NWP_PSG05-03242021
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Apr 13 10:25:49 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

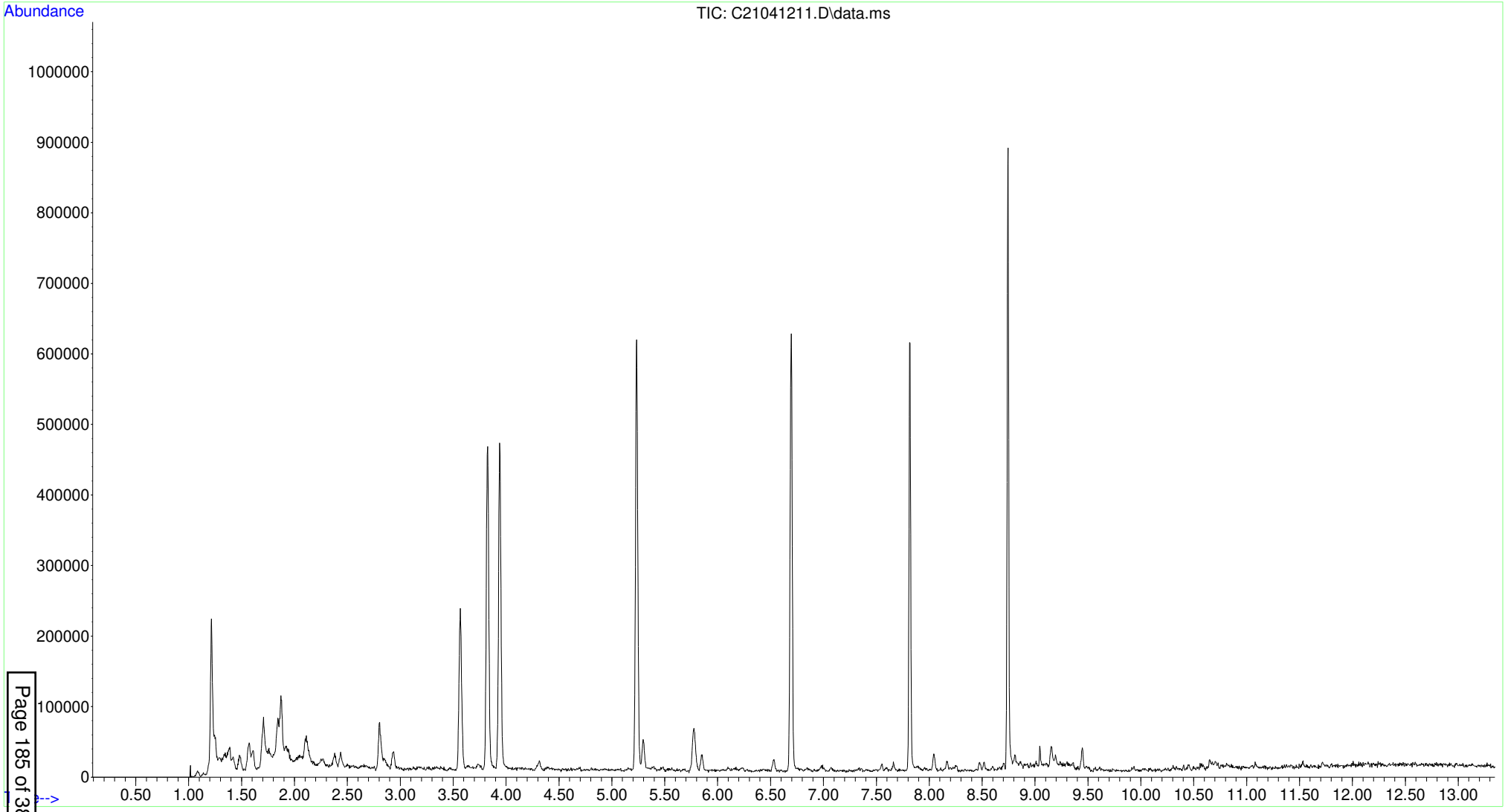
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	342982	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	281342	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.742	152	144264	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	118182	89.43	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 89.43%			
19) Toluene-d8	5.234	98	328373	91.89	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 91.89%			
31) Bromofluorobenzene	7.818	95	119873	87.48	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.48%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041211.D
Acq On : 12 Apr 2021 05:33 pm
Operator : KAI
Sample : 0005717-07
Misc : NWP_PSG05-03242021
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Apr 13 10:25:49 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 5:57:00PM **FileID:** C21041212.D **DF:** 1.00

Lab Number: 0005717-08 **Sample Name:** NWP_PSG06-03242021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041212.D
Acq On : 12 Apr 2021 05:57 pm
Operator : KAI
Sample : 0005717-08
Misc : NWP_PSG06-03242021
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Apr 13 10:25:52 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	339885	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	278279	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	141578	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	131601	100.49	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 100.49%			
19) Toluene-d8	5.234	98	322548	91.26	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 91.26%			
31) Bromofluorobenzene	7.815	95	117084	86.39	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.39%			

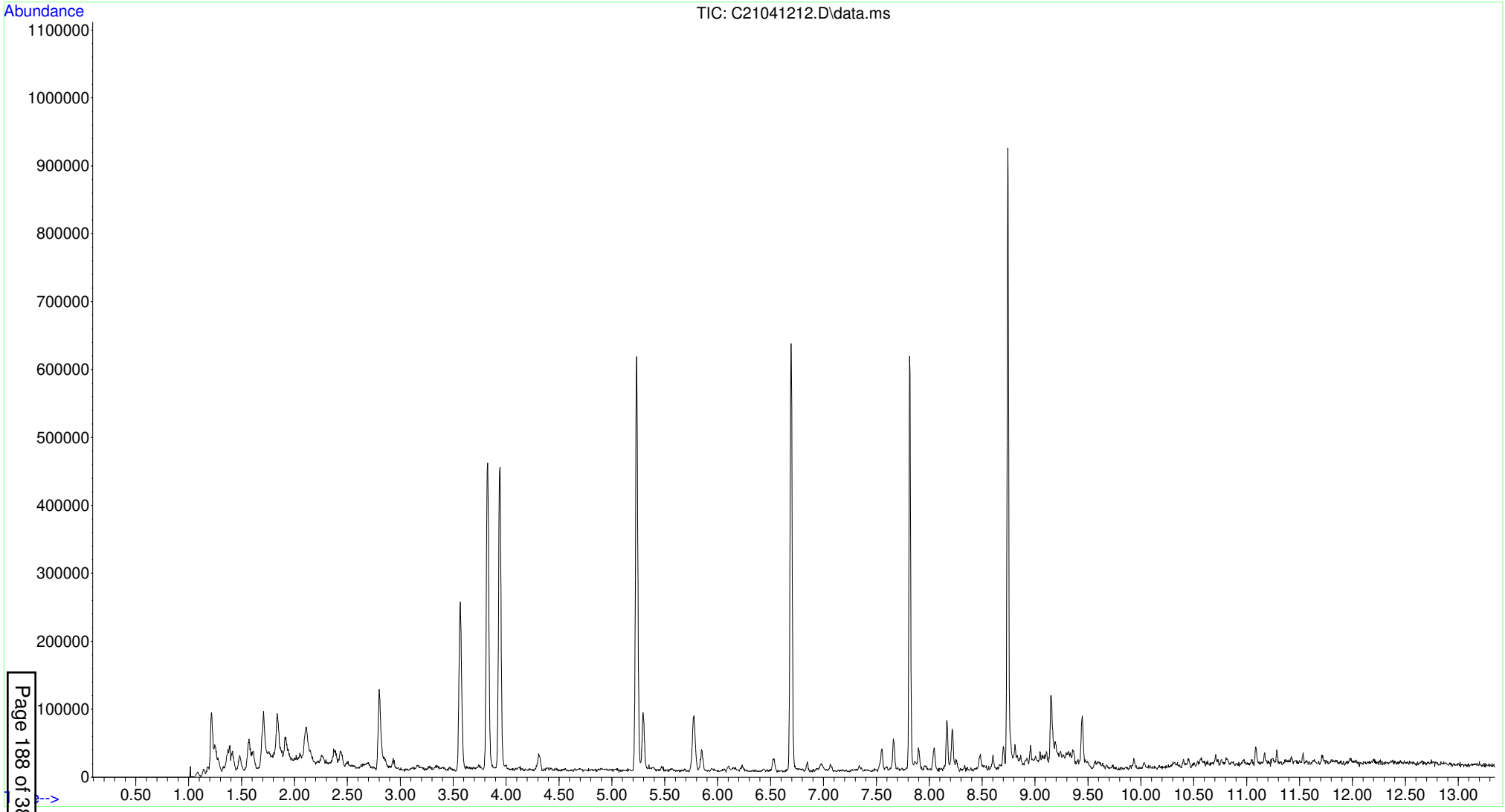
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041212.D
Acq On : 12 Apr 2021 05:57 pm
Operator : KAI
Sample : 0005717-08
Misc : NWP_PSG06-03242021
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Apr 13 10:25:52 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 6:21:00PM **FileID:** C21041213.D **DF:** 1.00

Lab Number: 0005717-09 **Sample Name:** NWP_PSG07-03242021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041213.D
Acq On : 12 Apr 2021 06:21 pm
Operator : KAI
Sample : 0005717-09
Misc : NWP_PSG07-03242021
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Apr 13 10:25:56 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

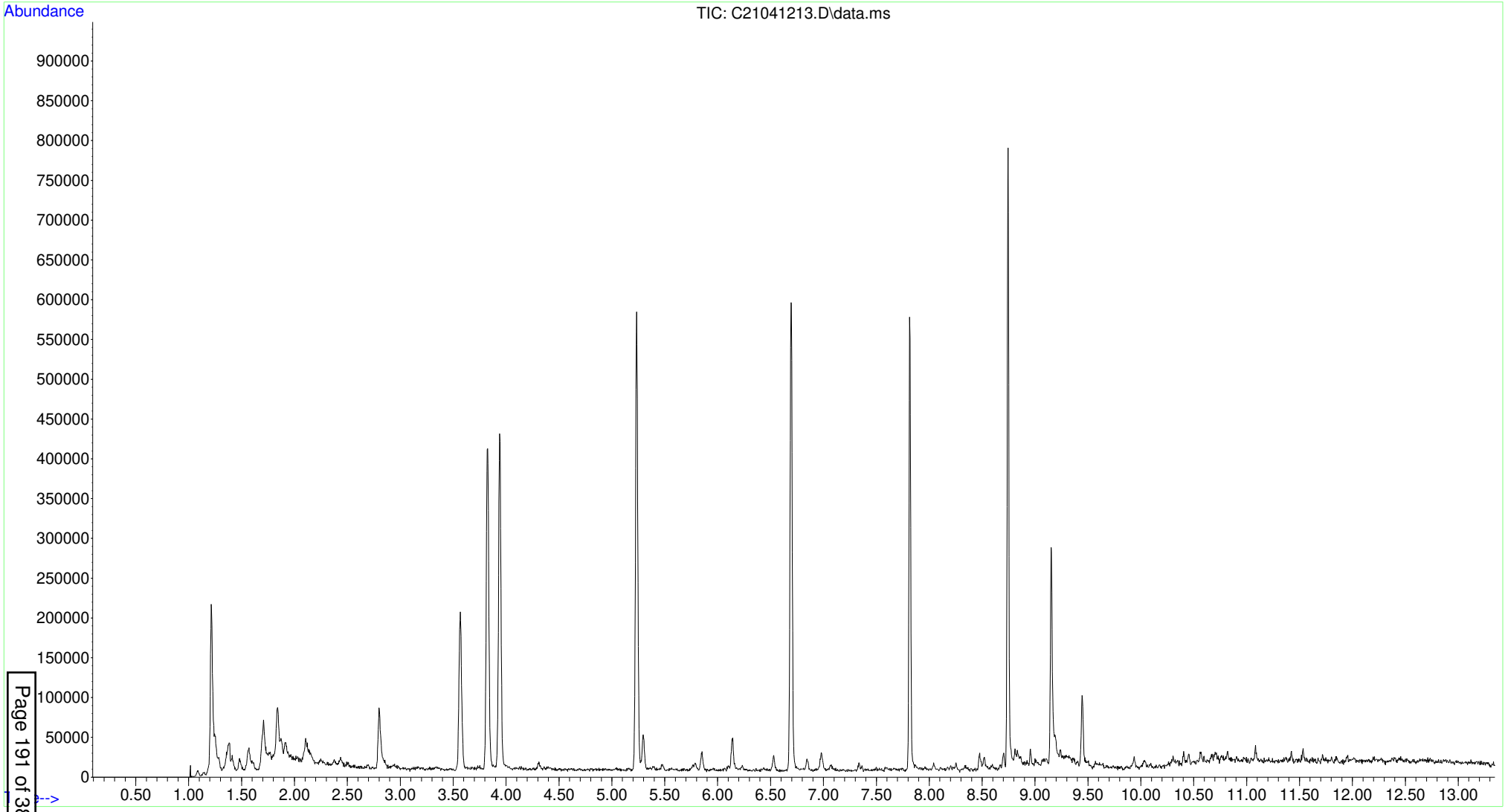
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	310296	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	268146	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	134209	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	106634	89.19	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 89.19%			
19) Toluene-d8	5.234	98	300602	88.26	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.26%			
31) Bromofluorobenzene	7.815	95	111965	85.73	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.73%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041213.D
Acq On : 12 Apr 2021 06:21 pm
Operator : KAI
Sample : 0005717-09
Misc : NWP_PSG07-03242021
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Apr 13 10:25:56 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 6:45:00PM **FileID:** C21041214.D **DF:** 1.00

Lab Number: 0005717-10 **Sample Name:** NWP_PSG08-03242021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041214.D
Acq On : 12 Apr 2021 06:45 pm
Operator : KAI
Sample : 0005717-10
Misc : NWP_PSG08-03242021
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 13 10:26:00 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

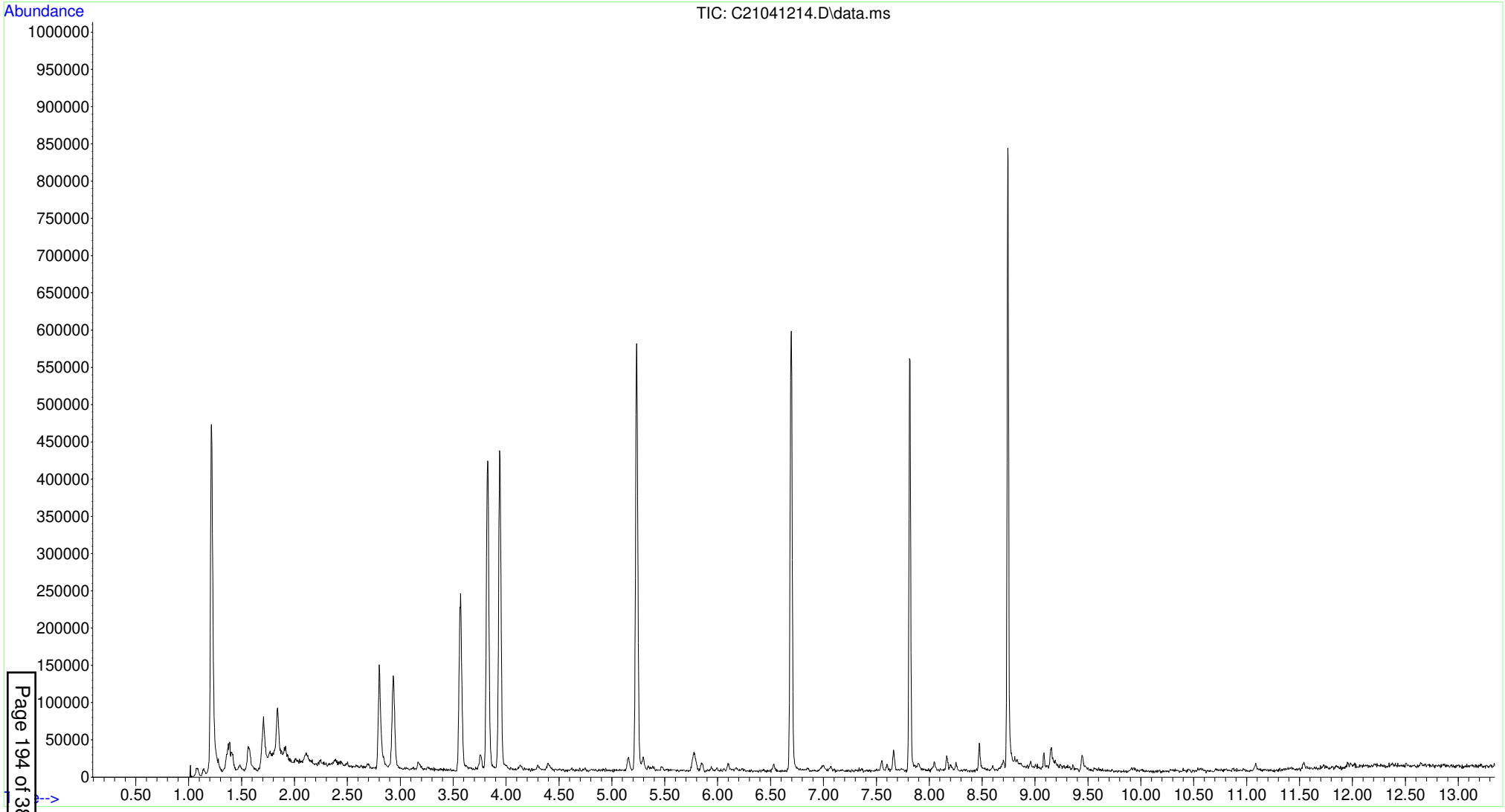
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.826	96	319078	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	266593	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	131930	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	120968	98.39	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 98.39%			
19) Toluene-d8	5.234	98	309961	91.54	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 91.54%			
31) Bromofluorobenzene	7.818	95	108359	83.45	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 83.45%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041214.D
Acq On : 12 Apr 2021 06:45 pm
Operator : KAI
Sample : 0005717-10
Misc : NWP_PSG08-03242021
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 13 10:26:00 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 7:10:00PM	**FileID:**	C21041215.D	**DF:**	1.00
Lab Number:	0005717-11	**Sample Name:**	NWP_PSG09-03252021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041215.D
Acq On : 12 Apr 2021 07:10 pm
Operator : KAI
Sample : 0005717-11
Misc : NWP_PSG09-03252021
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Apr 13 10:26:04 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

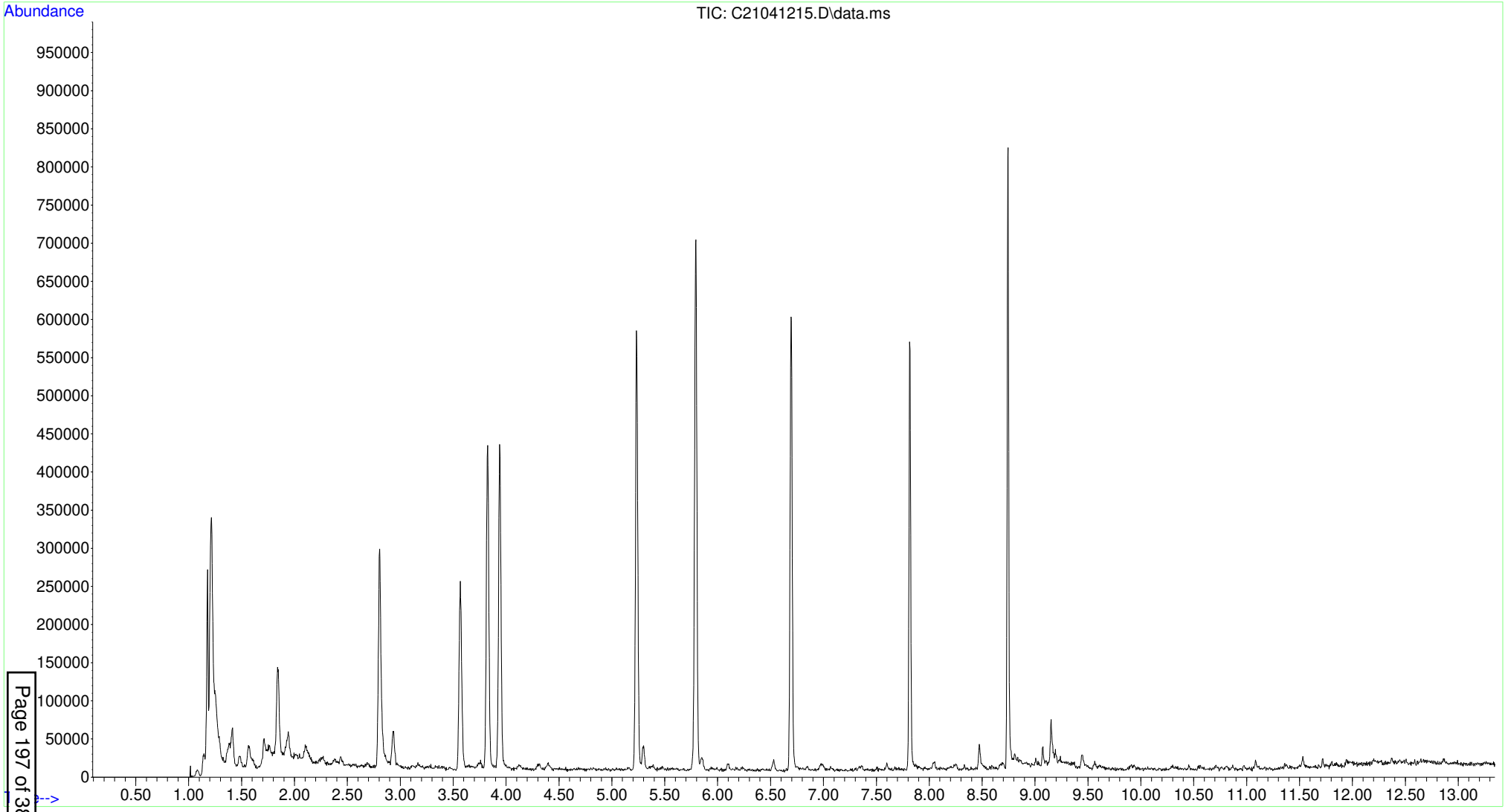
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	314511	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	268897	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	134650	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	127403	105.13	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 105.13%			
19) Toluene-d8	5.231	98	300596	88.01	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.01%			
31) Bromofluorobenzene	7.815	95	112808	86.14	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.14%			
Target Compounds						Qvalue
22) Tetrachloroethene	5.792	131	119713	136.46	ng	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041215.D
Acq On : 12 Apr 2021 07:10 pm
Operator : KAI
Sample : 0005717-11
Misc : NWP_PSG09-03252021
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Apr 13 10:26:04 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 7:34:00PM **FileID:** C21041216.D **DF:** 1.00

Lab Number: 0005717-12 **Sample Name:** NWP_PSG10-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041216.D
Acq On : 12 Apr 2021 07:34 pm
Operator : KAI
Sample : 0005717-12
Misc : NWP_PSG10-03252021
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Apr 13 10:26:08 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

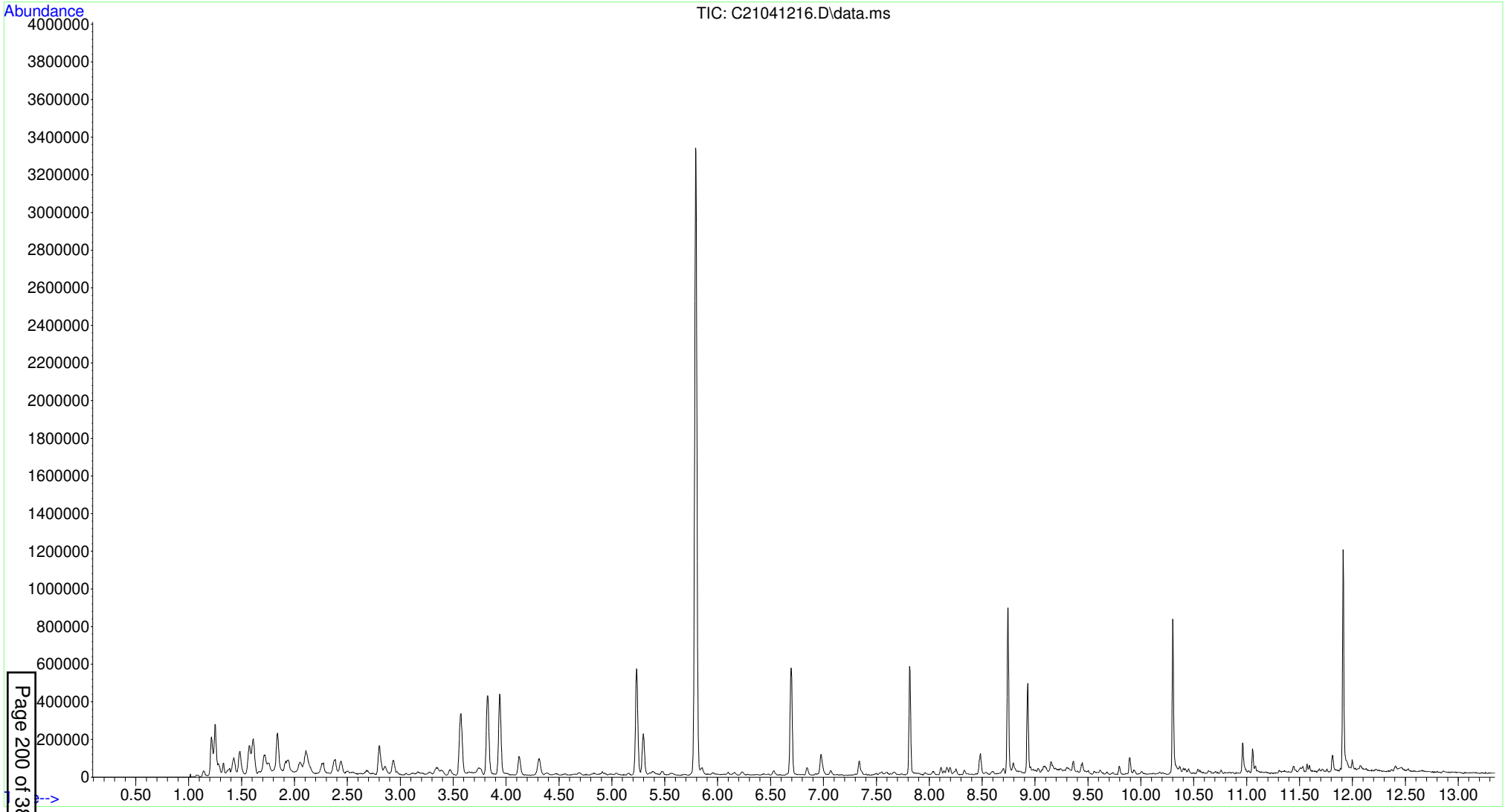
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	314160	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	267311	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	141228	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	126302	104.34	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 104.34%			
19) Toluene-d8	5.234	98	297710	87.69	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.69%			
31) Bromofluorobenzene	7.815	95	112639	86.52	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.52%			
Target Compounds						Qvalue
15) Trichloroethene	4.125	130	25295	24.00	ng	96
22) Tetrachloroethene	5.792	131	588021	674.28	ng	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041216.D
Acq On : 12 Apr 2021 07:34 pm
Operator : KAI
Sample : 0005717-12
Misc : NWP_PSG10-03252021
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Apr 13 10:26:08 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 7:59:00PM	**FileID:**	C21041217.D	**DF:**	1.00
Lab Number:	0005717-13	**Sample Name:**	NWP_PSG11-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041217.D
Acq On : 12 Apr 2021 07:59 pm
Operator : KAI
Sample : 0005717-13
Misc : NWP_PSG11-03242021
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Apr 13 10:26:13 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	298383	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	256520	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	128283	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	110497	96.11	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 96.11%			
19) Toluene-d8	5.234	98	286893	88.05	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.05%			
31) Bromofluorobenzene	7.815	95	108786	87.07	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.07%			

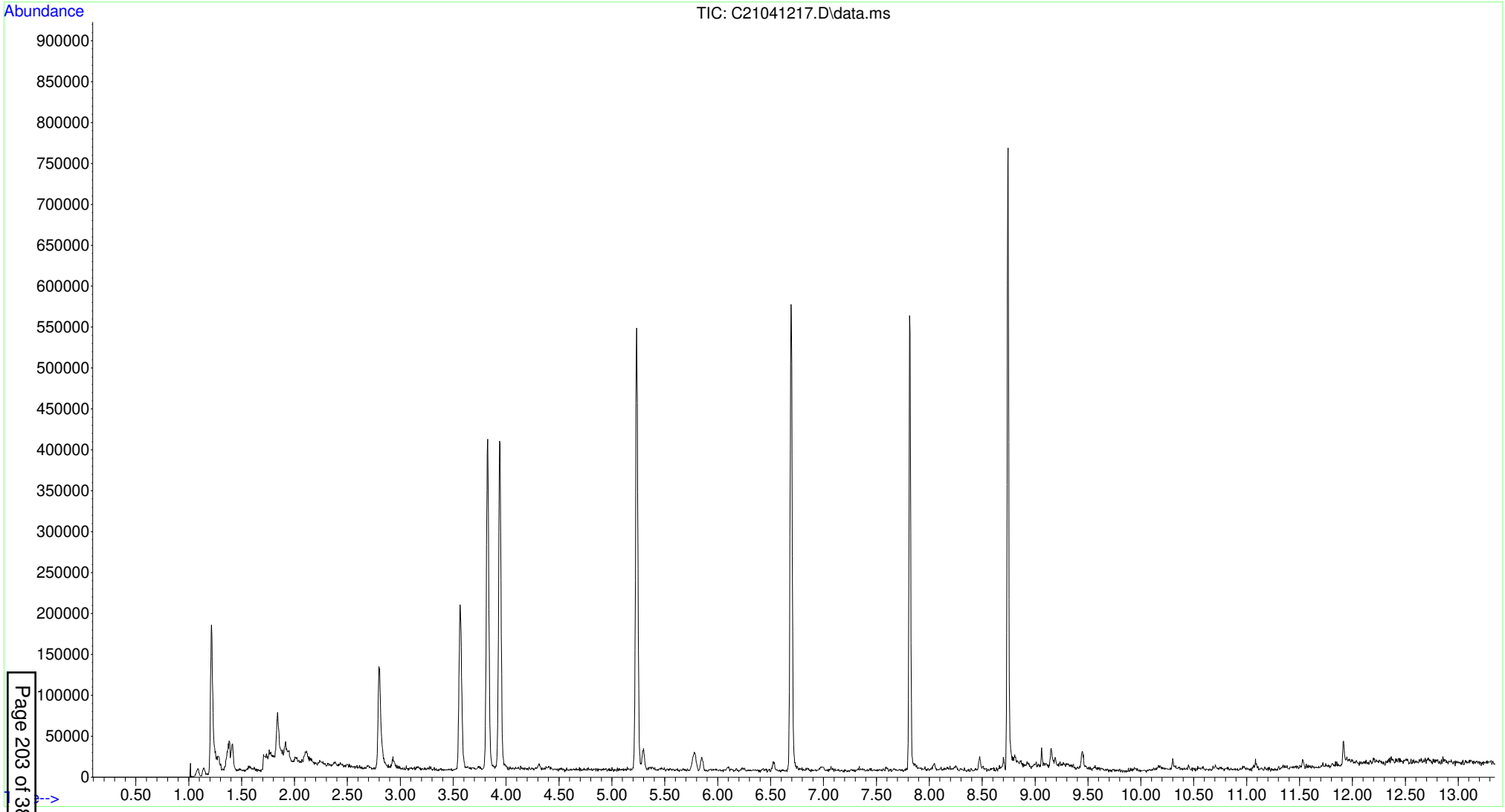
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041217.D
Acq On : 12 Apr 2021 07:59 pm
Operator : KAI
Sample : 0005717-13
Misc : NWP_PSG11-03242021
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Apr 13 10:26:13 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 8:23:00PM	**FileID:**	C21041218.D	**DF:**	1.00
Lab Number:	0005717-14	**Sample Name:**	NWP_PSG12-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041218.D
Acq On : 12 Apr 2021 08:23 pm
Operator : KAI
Sample : 0005717-14
Misc : NWP_PSG12-03242021
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Apr 13 10:26:18 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

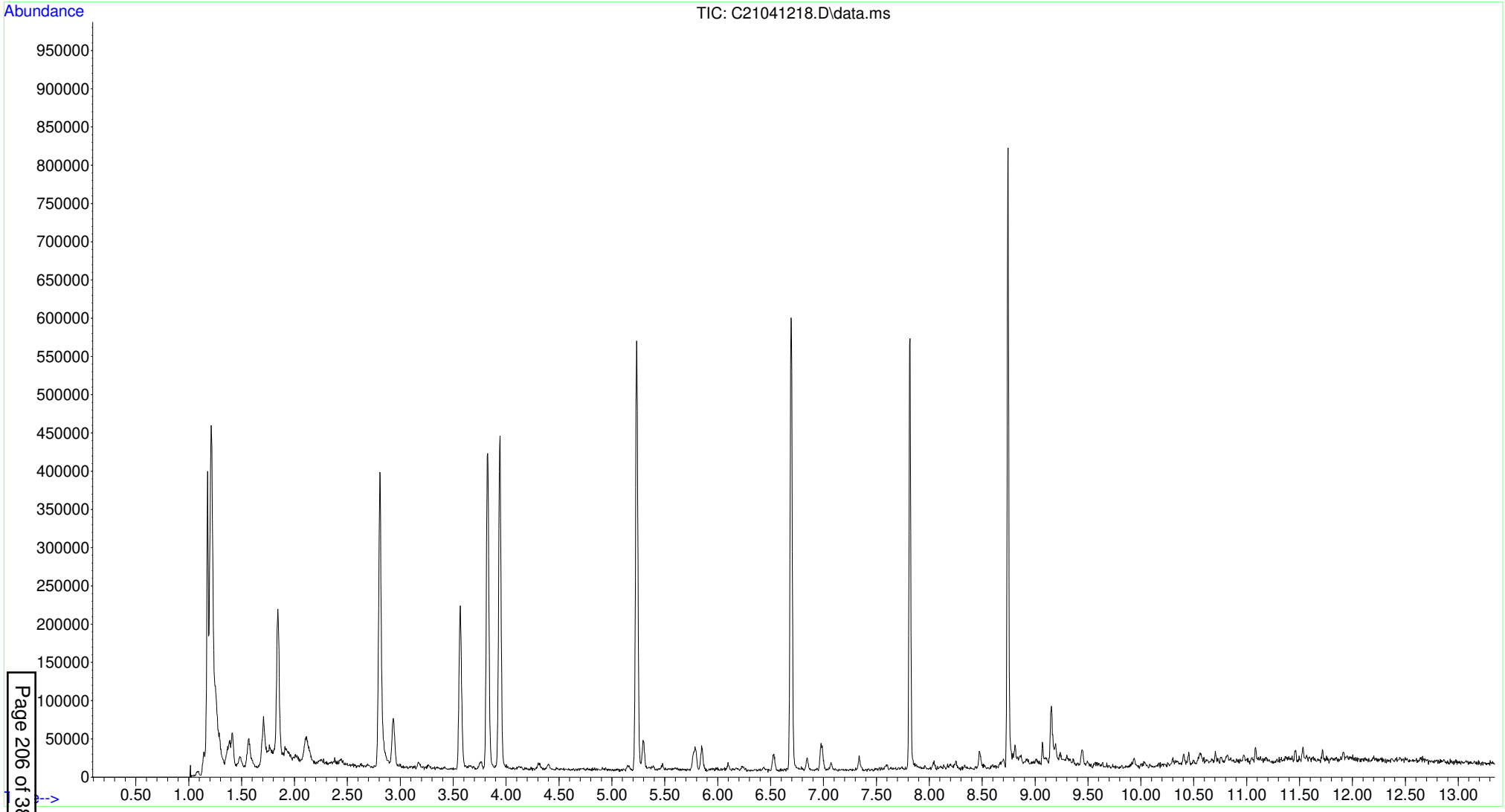
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	315587	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	270957	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	134092	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	118723	97.64	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 97.64%			
19) Toluene-d8	5.234	98	300909	87.44	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.44%			
31) Bromofluorobenzene	7.818	95	110865	84.01	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 84.01%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041218.D
Acq On : 12 Apr 2021 08:23 pm
Operator : KAI
Sample : 0005717-14
Misc : NWP_PSG12-03242021
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Apr 13 10:26:18 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 8:47:00PM **FileID:** C21041219.D **DF:** 1.00

Lab Number: 0005717-15 **Sample Name:** NWP_PSG13-03242021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041219.D
Acq On : 12 Apr 2021 08:47 pm
Operator : KAI
Sample : 0005717-15
Misc : NWP_PSG13-03242021
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 13 10:26:24 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

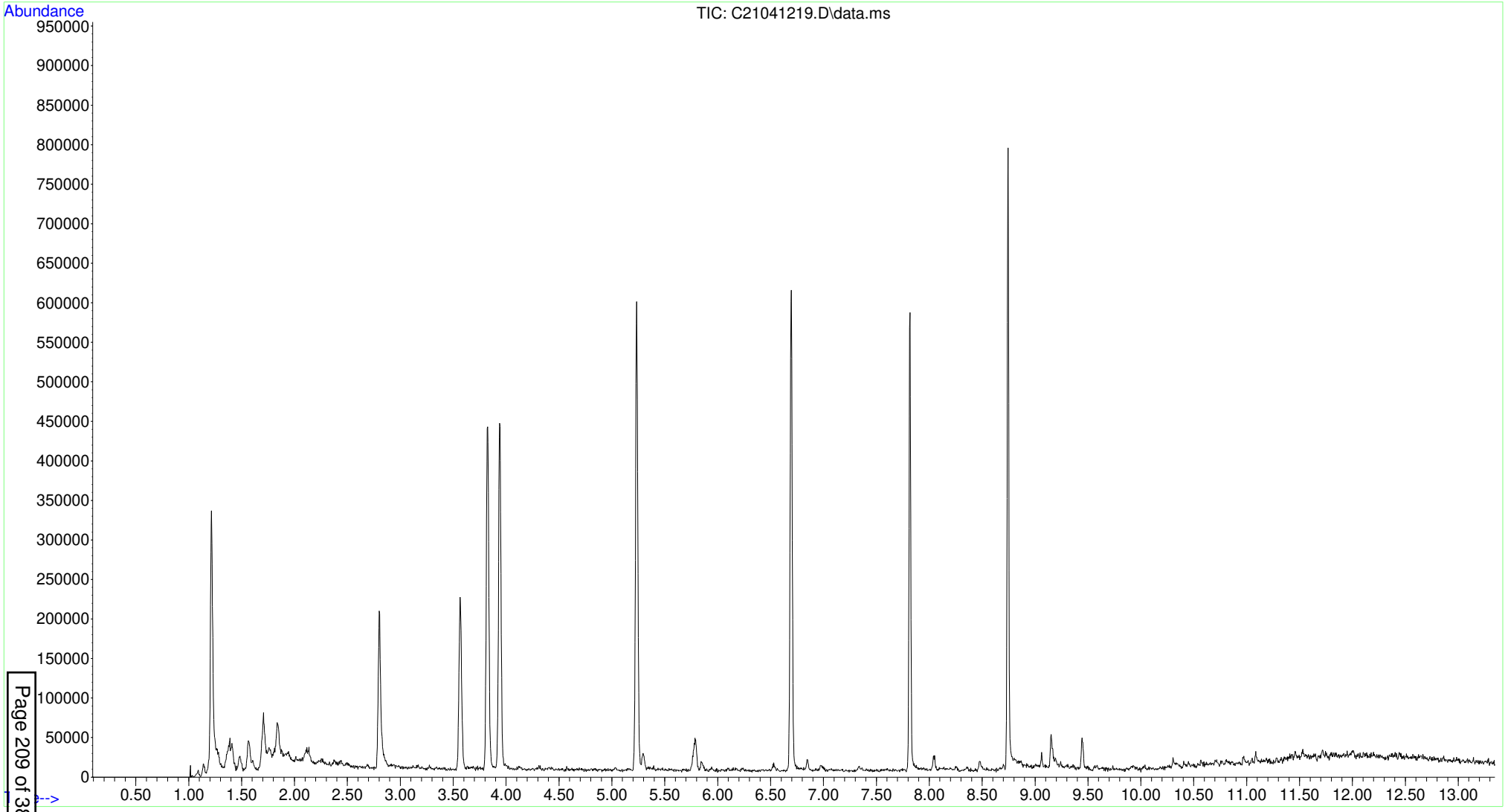
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	329458	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	270234	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	132511	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	119595	94.21	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 94.21%			
19) Toluene-d8	5.234	98	308143	89.78	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 89.78%			
31) Bromofluorobenzene	7.818	95	112830	85.73	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.73%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041219.D
Acq On : 12 Apr 2021 08:47 pm
Operator : KAI
Sample : 0005717-15
Misc : NWP_PSG13-03242021
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 13 10:26:24 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 9:11:00PM	**FileID:**	C21041220.D	**DF:**	1.00
Lab Number:	0005717-16	**Sample Name:**	NWP_PSG14-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041220.D
Acq On : 12 Apr 2021 09:11 pm
Operator : KAI
Sample : 0005717-16
Misc : NWP_PSG14-03242021
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 13 10:26:28 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

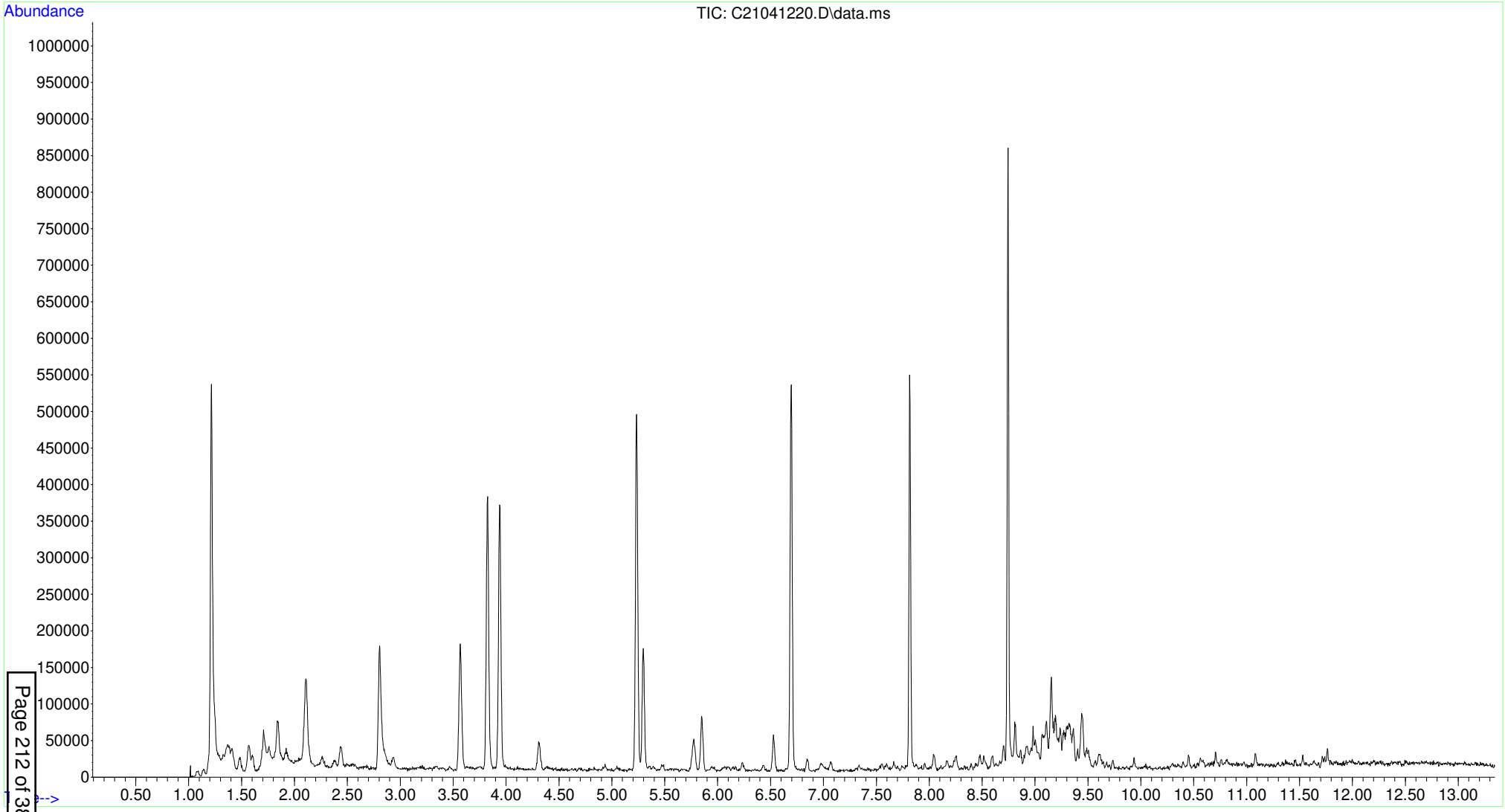
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	267706	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	239528	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	131582	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	89183	86.46	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.46%			
19) Toluene-d8	5.234	98	261242	85.87	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.87%			
31) Bromofluorobenzene	7.815	95	105548	90.47	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 90.47%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041220.D
Acq On : 12 Apr 2021 09:11 pm
Operator : KAI
Sample : 0005717-16
Misc : NWP_PSG14-03242021
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 13 10:26:28 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 9:34:00PM **FileID:** C21041221.D **DF:** 1.00

Lab Number: 0005717-17 **Sample Name:** NWP_PSG15-03242021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041221.D
Acq On : 12 Apr 2021 09:34 pm
Operator : KAI
Sample : 0005717-17
Misc : NWP_PSG15-03242021
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Apr 13 10:26:33 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

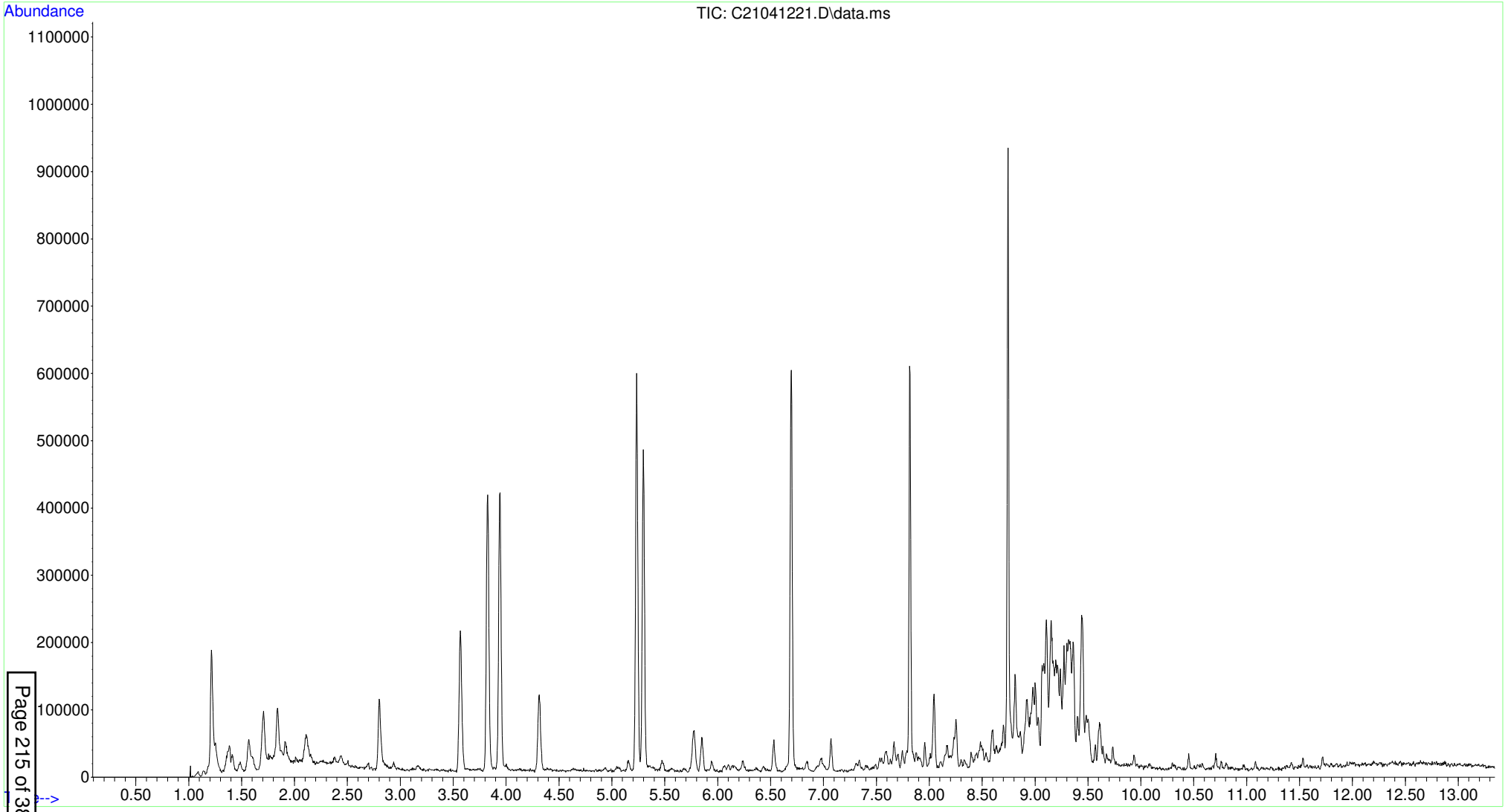
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	314489	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	265895	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	139909	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	107888	89.04	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 89.04%			
19) Toluene-d8	5.234	98	300410	88.95	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.95%			
31) Bromofluorobenzene	7.818	95	114759	88.61	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.61%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041221.D
Acq On : 12 Apr 2021 09:34 pm
Operator : KAI
Sample : 0005717-17
Misc : NWP_PSG15-03242021
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Apr 13 10:26:33 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 9:58:00PM	**FileID:**	C21041222.D	**DF:**	1.00
Lab Number:	0005717-18	**Sample Name:**	NWP_PSG16-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041222.D
Acq On : 12 Apr 2021 09:58 pm
Operator : KAI
Sample : 0005717-18
Misc : NWP_PSG16-03242021
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 13 10:26:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

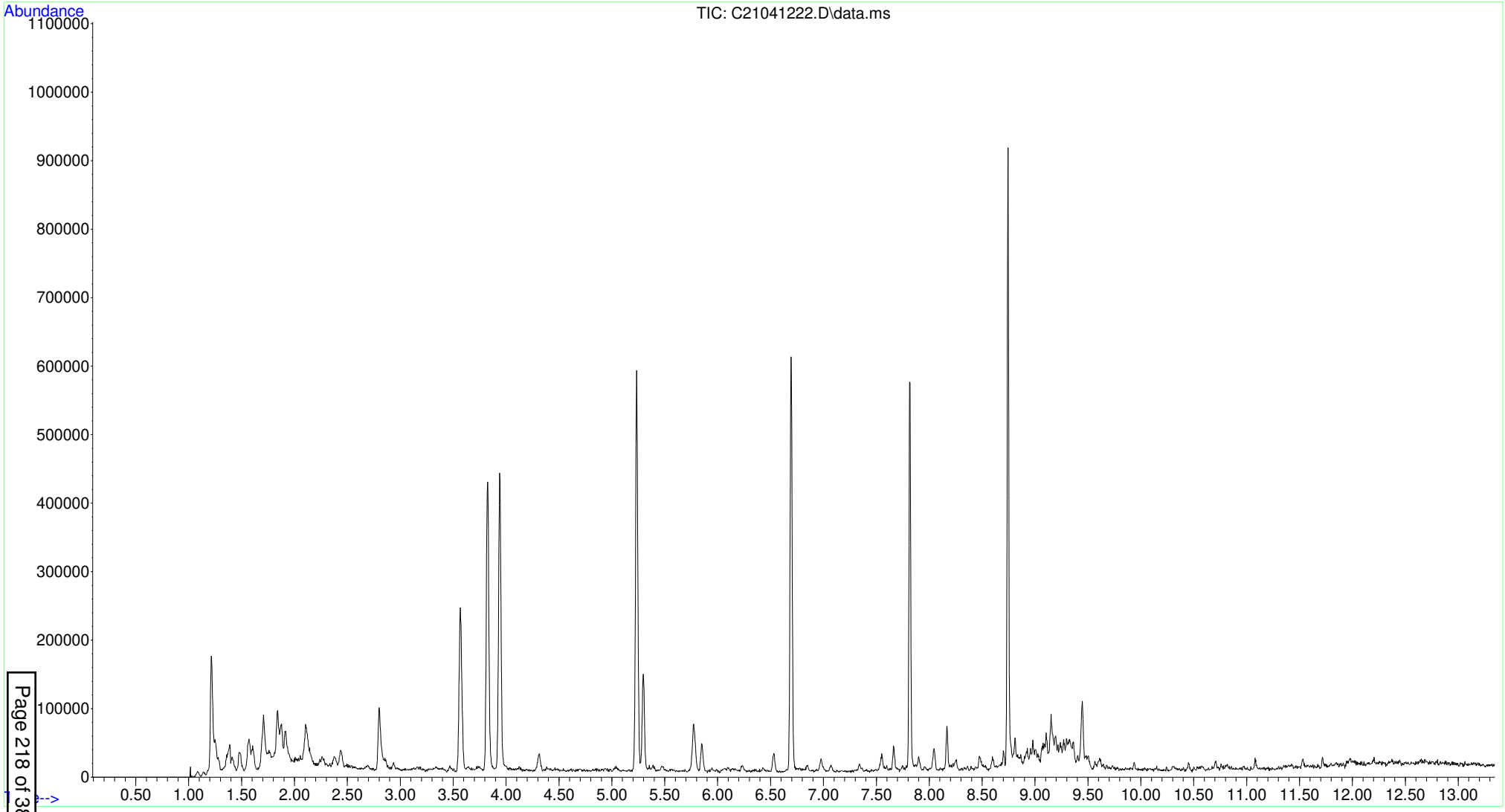
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	319254	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	263646	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	140818	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	112920	91.80	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 91.80%			
19) Toluene-d8	5.234	98	302058	90.20	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 90.20%			
31) Bromofluorobenzene	7.818	95	113150	88.12	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.12%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041222.D
Acq On : 12 Apr 2021 09:58 pm
Operator : KAI
Sample : 0005717-18
Misc : NWP_PSG16-03242021
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 13 10:26:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 10:22:00PM	**FileID:**	C21041223.D	**DF:**	1.00
Lab Number:	0005717-19	**Sample Name:**	NWP_PSG17-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041223.D
Acq On : 12 Apr 2021 10:22 pm
Operator : KAI
Sample : 0005717-19
Misc : NWP_PSG17-03242021
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Apr 13 10:26:40 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

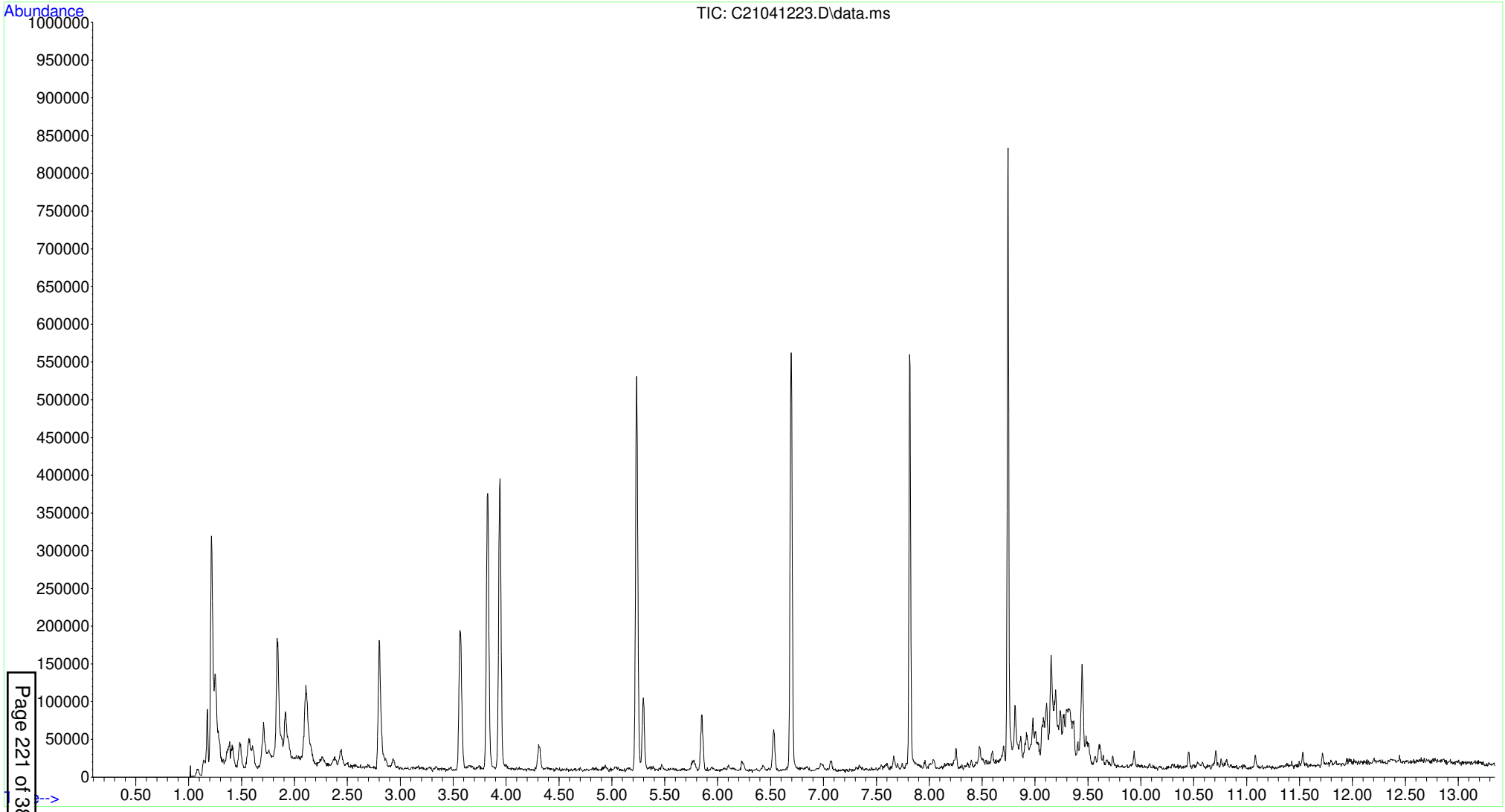
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	278354	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	253665	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	130737	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	108805	101.45	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 101.45%			
19) Toluene-d8	5.234	98	276369	85.78	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.78%			
31) Bromofluorobenzene	7.815	95	109478	88.61	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.61%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041223.D
Acq On : 12 Apr 2021 10:22 pm
Operator : KAI
Sample : 0005717-19
Misc : NWP_PSG17-03242021
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Apr 13 10:26:40 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 10:46:00PM	**FileID:**	C21041224.D	**DF:**	1.00
Lab Number:	0005717-20	**Sample Name:**	NWP_PSG18-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041224.D
Acq On : 12 Apr 2021 10:46 pm
Operator : KAI
Sample : 0005717-20
Misc : NWP_PSG18-03242021
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Apr 13 10:26:45 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

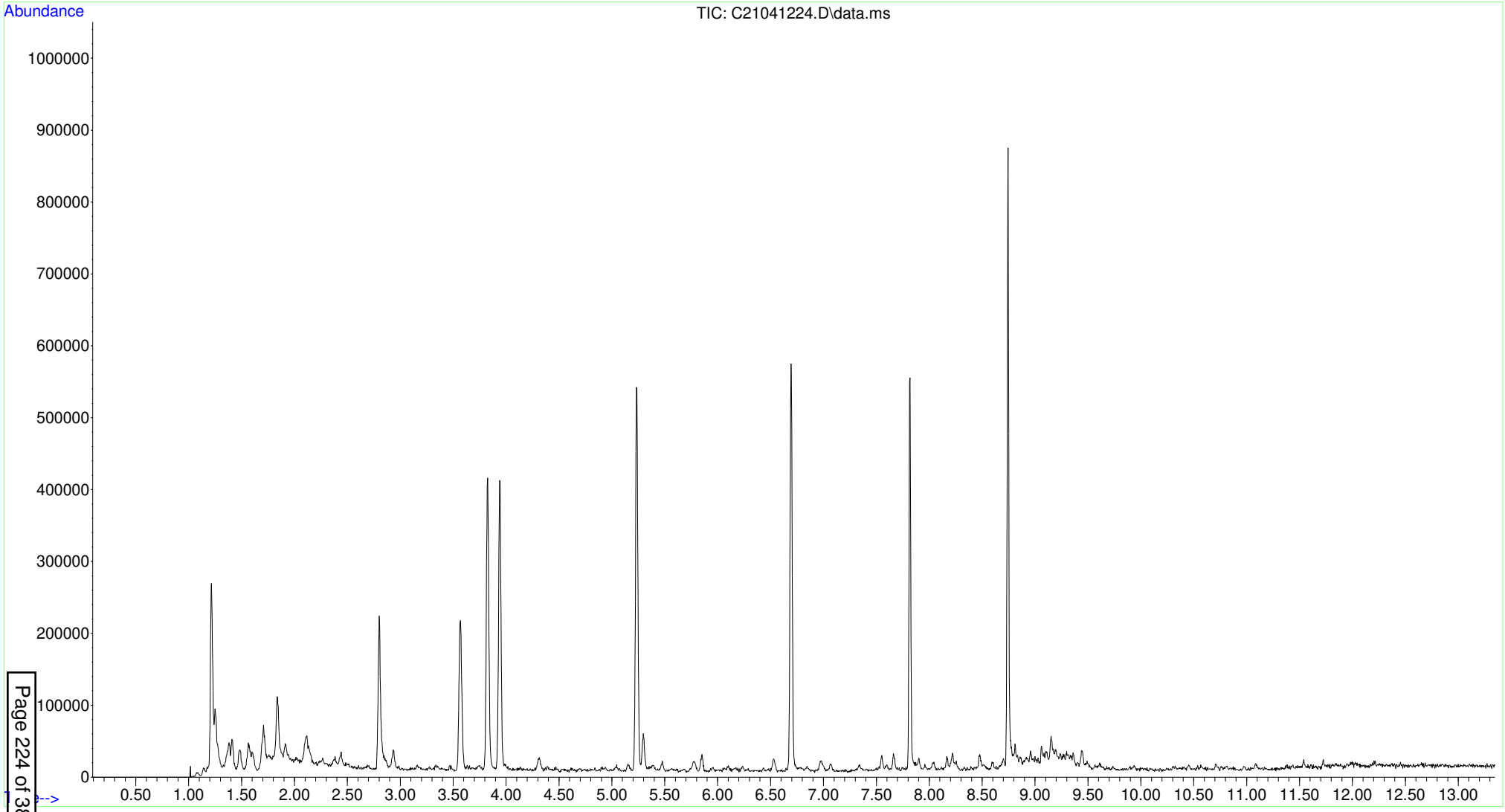
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	298483	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	257179	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	130272	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	112427	97.76	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 97.76%			
19) Toluene-d8	5.237	98	290676	88.99	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.99%			
31) Bromofluorobenzene	7.818	95	107946	86.18	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.18%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041224.D
Acq On : 12 Apr 2021 10:46 pm
Operator : KAI
Sample : 0005717-20
Misc : NWP_PSG18-03242021
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Apr 13 10:26:45 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 11:11:00PM	**FileID:**	C21041225.D	**DF:**	1.00
Lab Number:	0005717-21	**Sample Name:**	NWP_PSG19-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041225.D
Acq On : 12 Apr 2021 11:11 pm
Operator : KAI
Sample : 0005717-21
Misc : NWP_PSG19-03242021
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Apr 13 10:26:49 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	304556	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	264800	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	130238	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	114077	97.21	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 97.21%			
19) Toluene-d8	5.234	98	292770	87.05	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.05%			
31) Bromofluorobenzene	7.815	95	107173	83.10	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 83.10%			

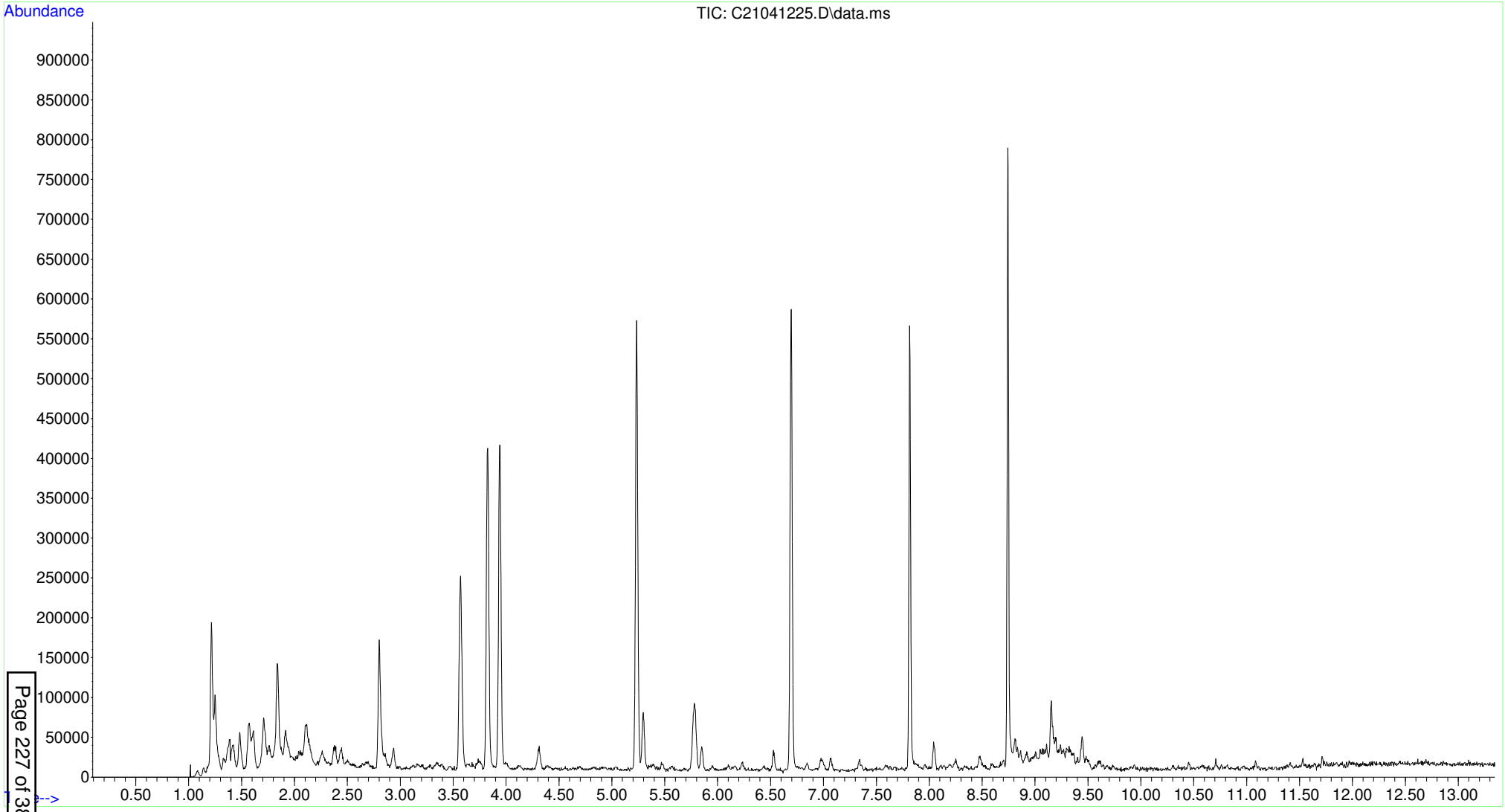
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041225.D
Acq On : 12 Apr 2021 11:11 pm
Operator : KAI
Sample : 0005717-21
Misc : NWP_PSG19-03242021
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Apr 13 10:26:49 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 11:35:00PM **FileID:** C21041226.D **DF:** 1.00

Lab Number: 0005717-22 **Sample Name:** NWP_PSG20-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041226.D
Acq On : 12 Apr 2021 11:35 pm
Operator : KAI
Sample : 0005717-22
Misc : NWP_PSG20-03252021
ALS Vial : 32 Sample Multiplier: 1

Quant Time: Apr 13 10:26:53 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

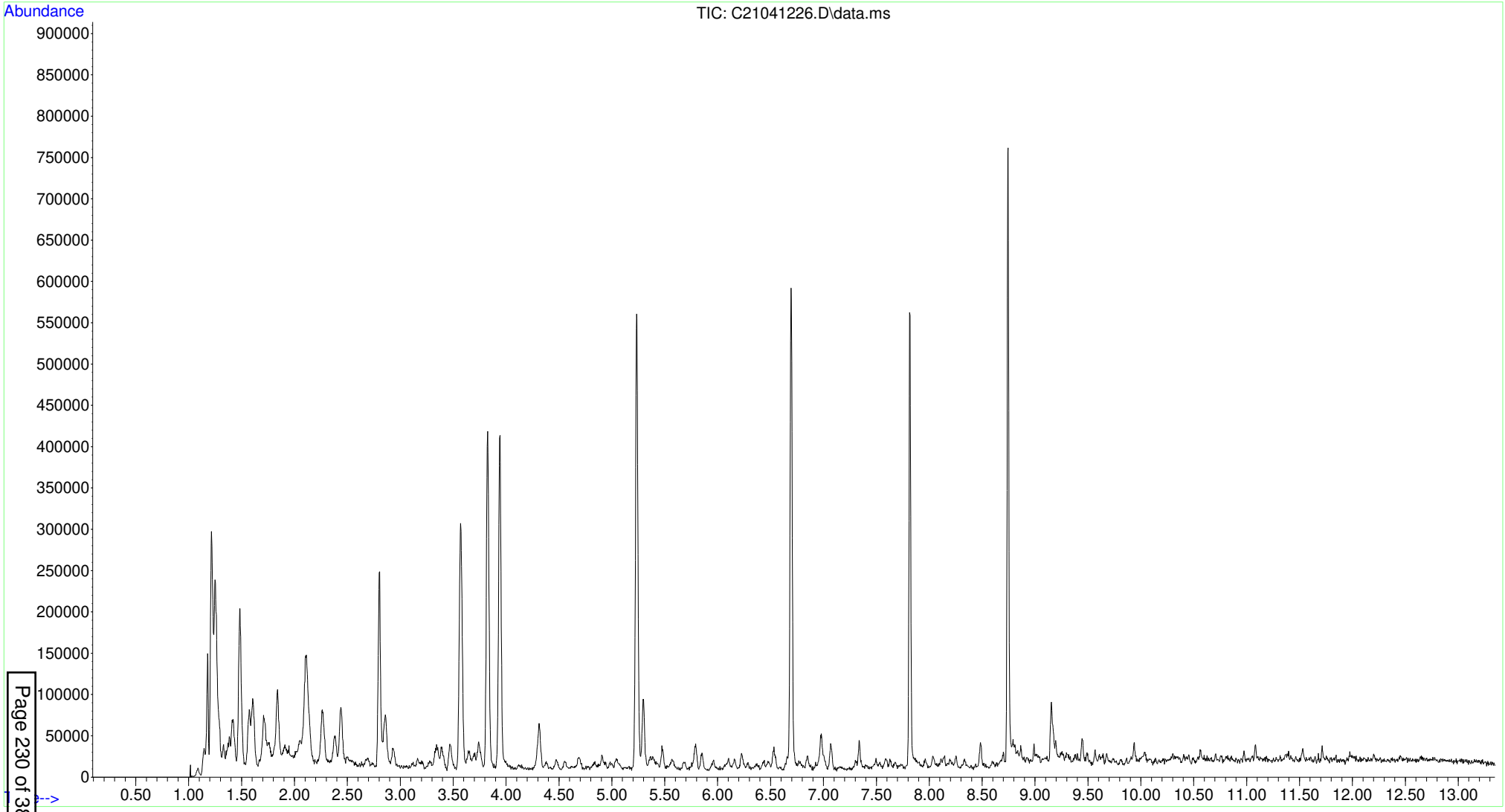
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	300984	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	265967	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	130112	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	121321	104.61	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 104.61%			
19) Toluene-d8	5.237	98	296215	87.69	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.69%			
31) Bromofluorobenzene	7.815	95	108577	83.82	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 83.82%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041226.D
Acq On : 12 Apr 2021 11:35 pm
Operator : KAI
Sample : 0005717-22
Misc : NWP_PSG20-03252021
ALS Vial : 32 Sample Multiplier: 1

Quant Time: Apr 13 10:26:53 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/12/2021 11:59:00PM	**FileID:**	C21041227.D	**DF:**	1.00
Lab Number:	0005717-23	**Sample Name:**	NWP_PSG21-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041227.D
Acq On : 12 Apr 2021 11:59 pm
Operator : KAI
Sample : 0005717-23
Misc : NWP_PSG21-03242021
ALS Vial : 33 Sample Multiplier: 1

Quant Time: Apr 13 10:26:57 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

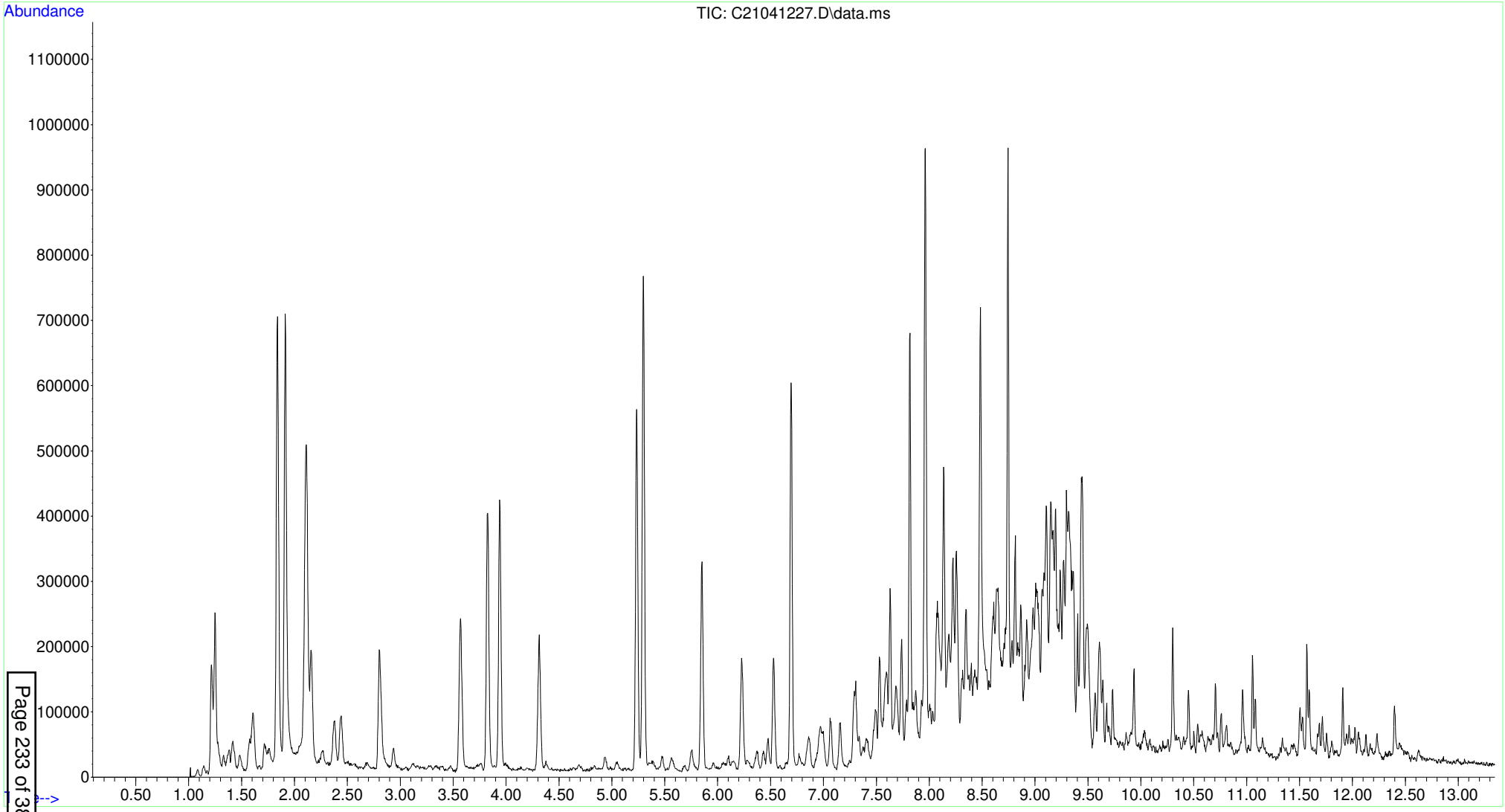
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	302036	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	265462	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	147383	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	110869	95.27	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 95.27%			
19) Toluene-d8	5.234	98	291204	86.37	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.37%			
31) Bromofluorobenzene	7.815	95	115037	88.97	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.97%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041227.D
Acq On : 12 Apr 2021 11:59 pm
Operator : KAI
Sample : 0005717-23
Misc : NWP_PSG21-03242021
ALS Vial : 33 Sample Multiplier: 1

Quant Time: Apr 13 10:26:57 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 12:23:00AM **FileID:** C21041228.D **DF:** 1.00

Lab Number: 0005717-24 **Sample Name:** NWP_PSG22-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041228.D
Acq On : 13 Apr 2021 12:23 am
Operator : KAI
Sample : 0005717-24
Misc : NWP_PSG22-03252021
ALS Vial : 34 Sample Multiplier: 1

Quant Time: Apr 13 10:27:02 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

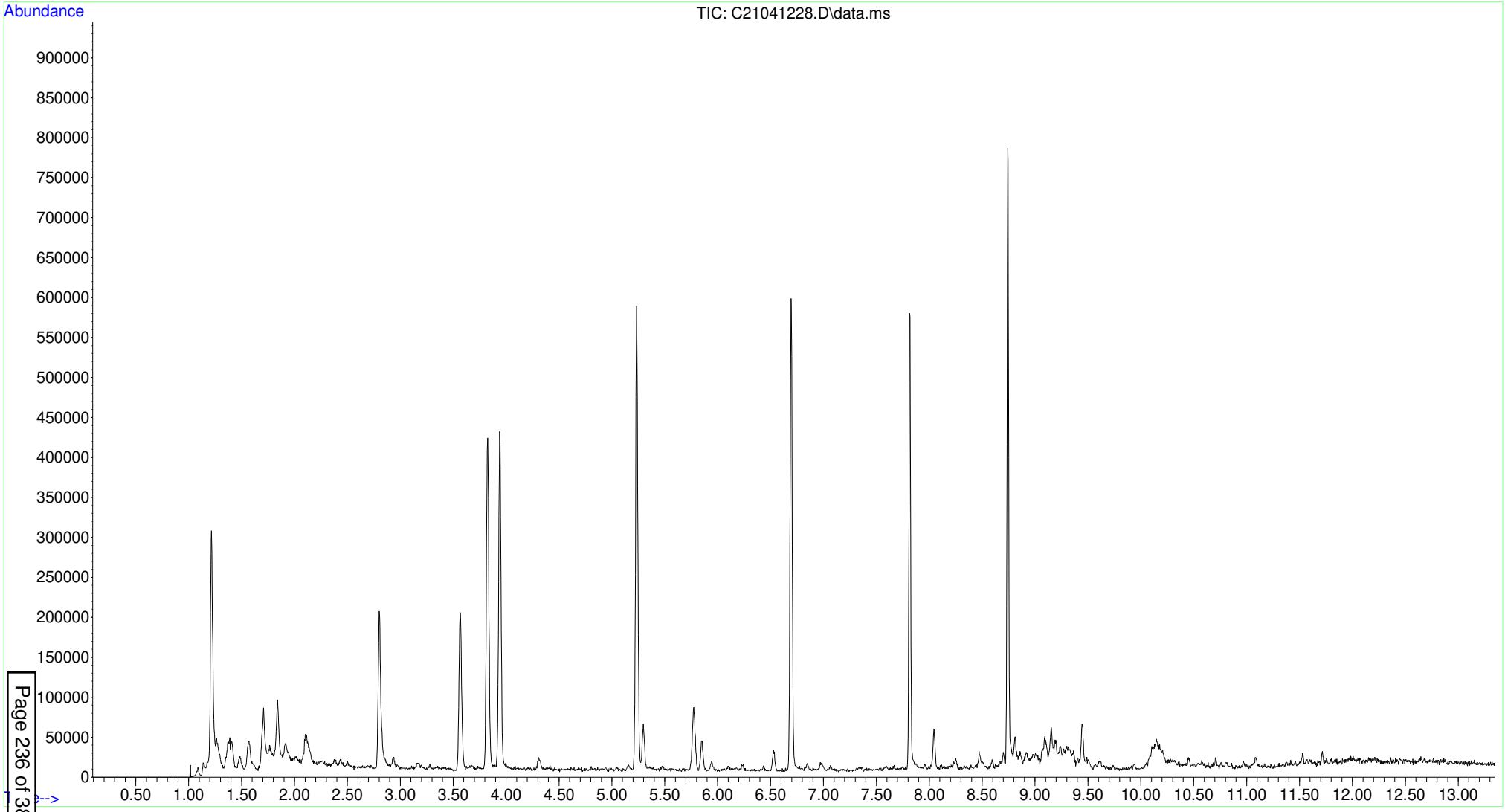
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	311381	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	268761	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	130806	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	113448	94.56	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 94.56%			
19) Toluene-d8	5.234	98	301255	88.25	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.25%			
31) Bromofluorobenzene	7.818	95	112251	85.75	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.75%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041228.D
Acq On : 13 Apr 2021 12:23 am
Operator : KAI
Sample : 0005717-24
Misc : NWP_PSG22-03252021
ALS Vial : 34 Sample Multiplier: 1

Quant Time: Apr 13 10:27:02 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 12:47:00AM **FileID:** C21041229.D **DF:** 1.00

Lab Number: 0005717-25 **Sample Name:** NWP_PSG23-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041229.D
Acq On : 13 Apr 2021 12:47 am
Operator : KAI
Sample : 0005717-25
Misc : NWP_PSG23-03252021
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Apr 13 10:27:06 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	279550	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	249097	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	128788	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	105556	98.00	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 98.00%			
19) Toluene-d8	5.234	98	274993	86.92	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.92%			
31) Bromofluorobenzene	7.815	95	104972	86.52	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.52%			

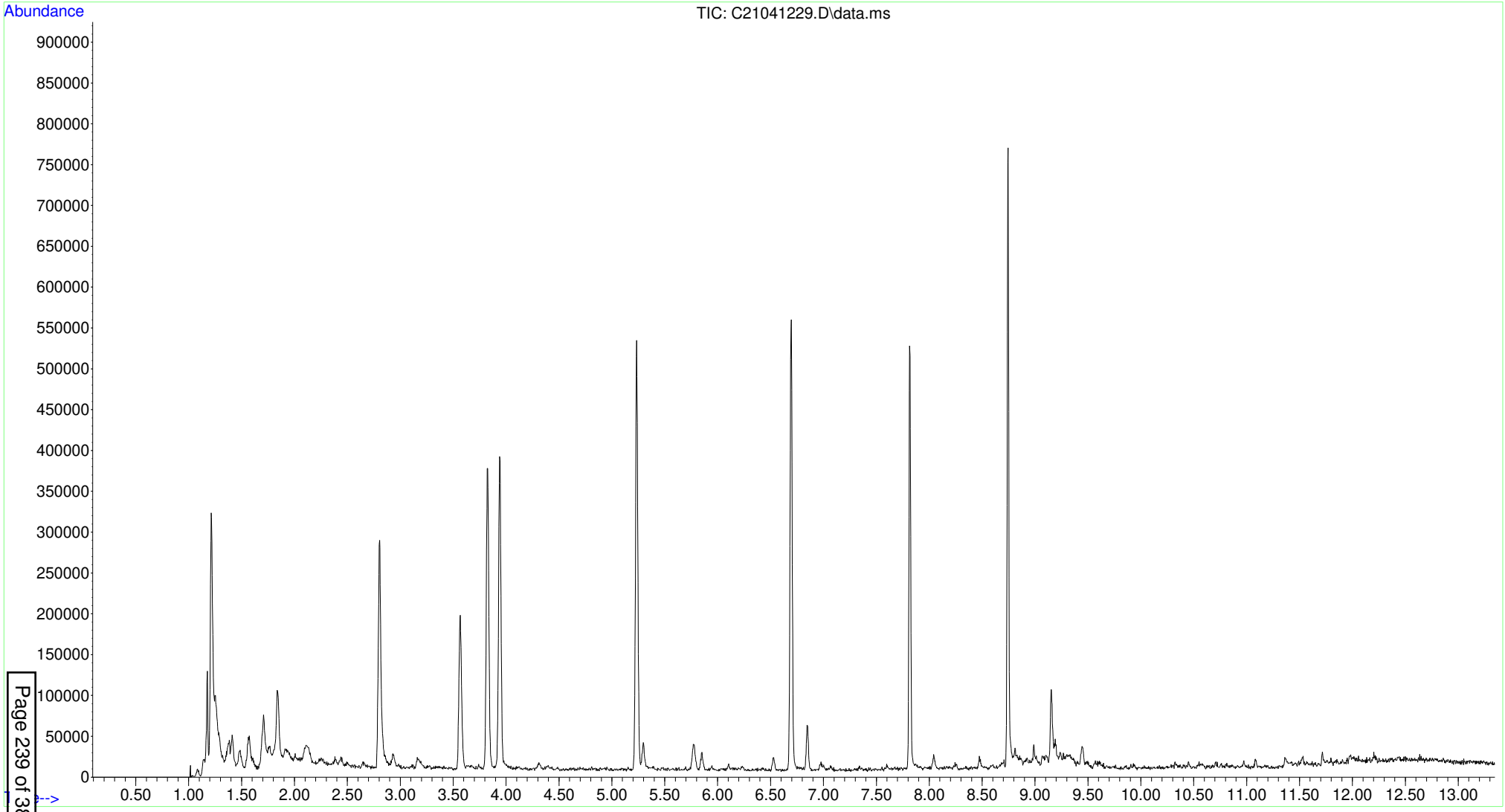
Target Compounds	Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041229.D
Acq On : 13 Apr 2021 12:47 am
Operator : KAI
Sample : 0005717-25
Misc : NWP_PSG23-03252021
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Apr 13 10:27:06 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 1:11:00AM **FileID:** C21041230.D **DF:** 1.00

Lab Number: 0005717-26 **Sample Name:** NWP_PSG24-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041230.D
Acq On : 13 Apr 2021 01:11 am
Operator : KAI
Sample : 0005717-26
Misc : NWP_PSG24-03252021
ALS Vial : 36 Sample Multiplier: 1

Quant Time: Apr 13 10:27:10 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

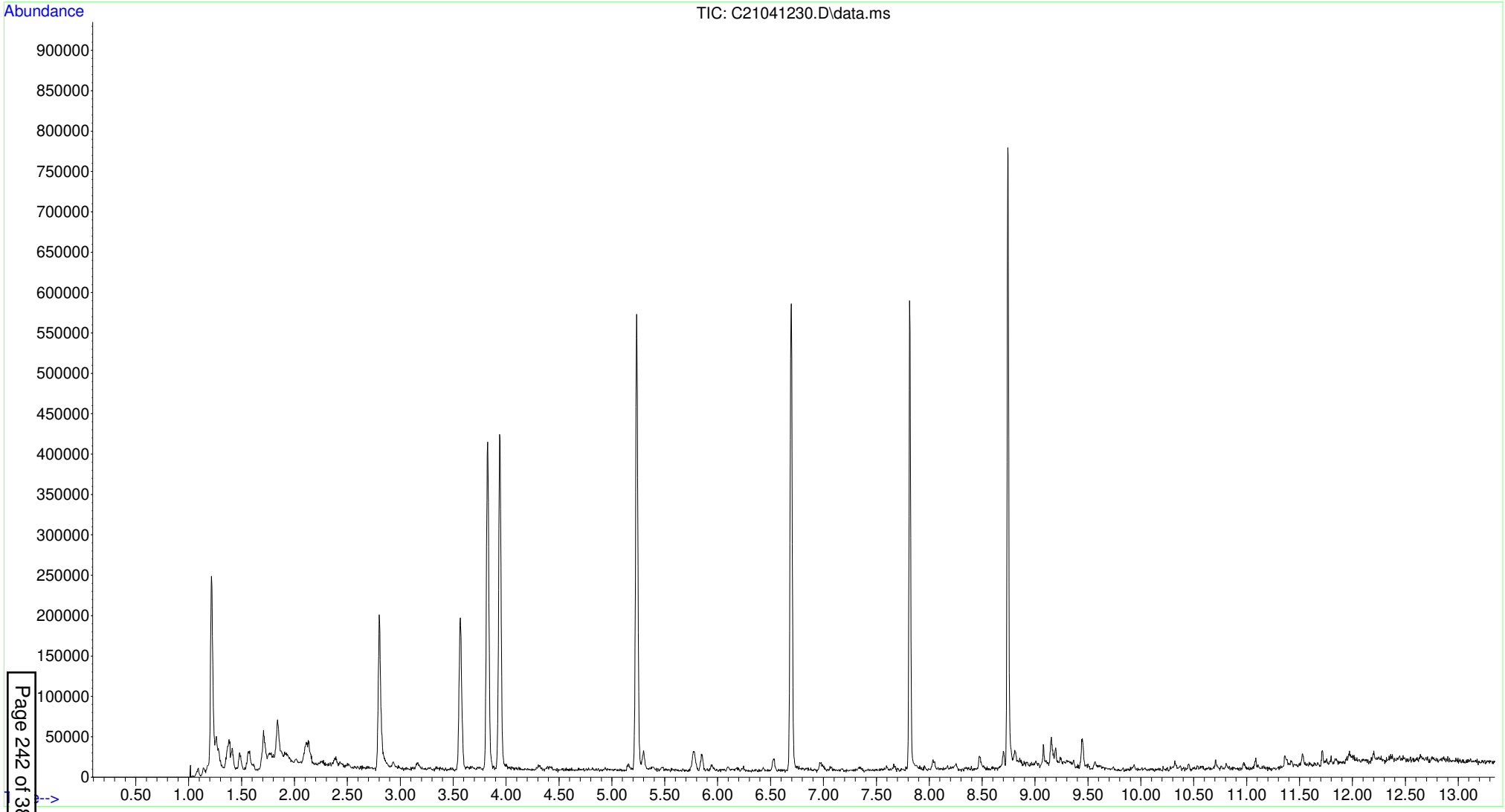
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	303322	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	260702	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	133830	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	102253	87.49	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.49%			
19) Toluene-d8	5.234	98	293343	88.59	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.59%			
31) Bromofluorobenzene	7.815	95	111478	87.80	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.80%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041230.D
Acq On : 13 Apr 2021 01:11 am
Operator : KAI
Sample : 0005717-26
Misc : NWP_PSG24-03252021
ALS Vial : 36 Sample Multiplier: 1

Quant Time: Apr 13 10:27:10 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/13/2021 1:35:00AM	**FileID:**	C21041231.D	**DF:**	1.00
Lab Number:	0005717-27	**Sample Name:**	NWP_PSG25-03252021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041231.D
Acq On : 13 Apr 2021 01:35 am
Operator : KAI
Sample : 0005717-27
Misc : NWP_PSG25-03252021
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Apr 13 10:27:14 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

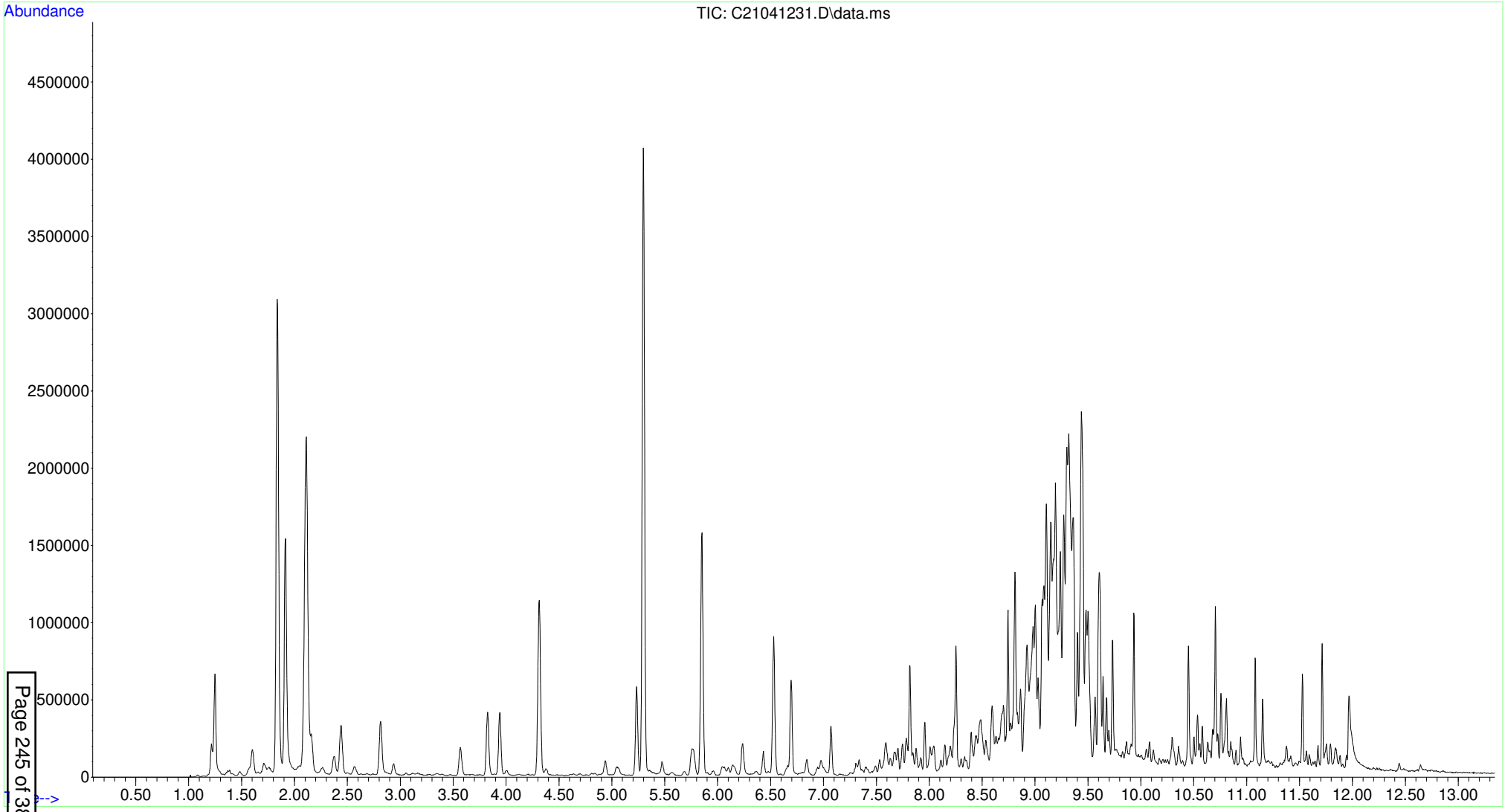
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	301897	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	276780	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	150387	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	95051	81.71	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 81.71%			
19) Toluene-d8	5.234	98	297303	84.57	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 84.57%			
31) Bromofluorobenzene	7.818	95	121429	90.08	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 90.08%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041231.D
Acq On : 13 Apr 2021 01:35 am
Operator : KAI
Sample : 0005717-27
Misc : NWP_PSG25-03252021
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Apr 13 10:27:14 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 1:59:00AM **FileID:** C21041232.D **DF:** 1.00

Lab Number: 0005717-28 **Sample Name:** NWP_PSG26-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041232.D
Acq On : 13 Apr 2021 01:59 am
Operator : KAI
Sample : 0005717-28
Misc : NWP_PSG26-03252021
ALS Vial : 38 Sample Multiplier: 1

Quant Time: Apr 13 10:27:18 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

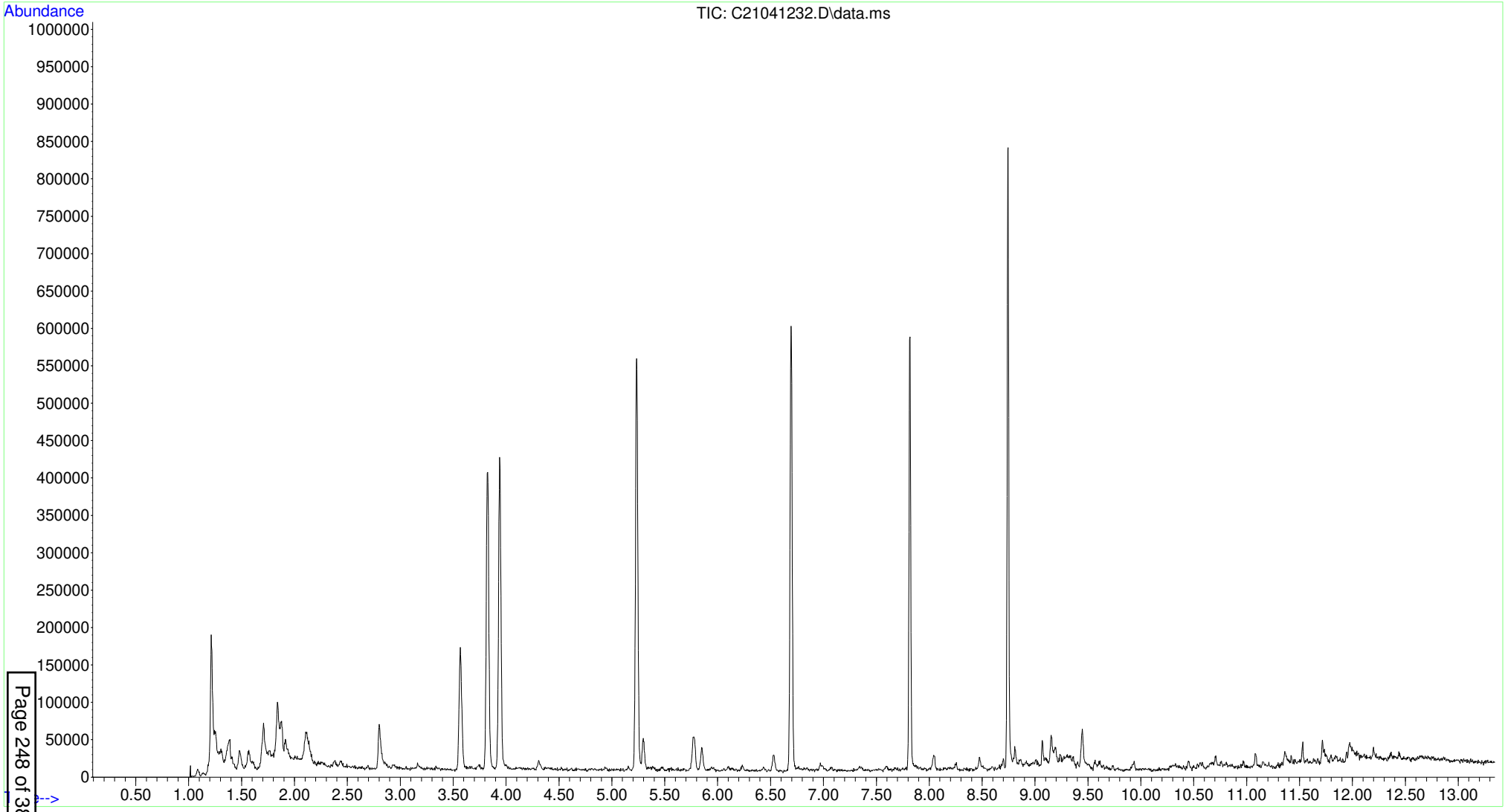
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	306298	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	271607	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	142009	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	77171	65.39	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 65.39%#			
19) Toluene-d8	5.234	98	299111	86.71	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.71%			
31) Bromofluorobenzene	7.818	95	117245	88.63	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.63%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041232.D
Acq On : 13 Apr 2021 01:59 am
Operator : KAI
Sample : 0005717-28
Misc : NWP_PSG26-03252021
ALS Vial : 38 Sample Multiplier: 1

Quant Time: Apr 13 10:27:18 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 2:23:00AM **FileID:** C21041233.D **DF:** 1.00

Lab Number: 0005717-29 **Sample Name:** NWP_PSG27-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041233.D
Acq On : 13 Apr 2021 02:23 am
Operator : KAI
Sample : 0005717-29
Misc : NWP_PSG27-03252021
ALS Vial : 39 Sample Multiplier: 1

Quant Time: Apr 13 10:27:21 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

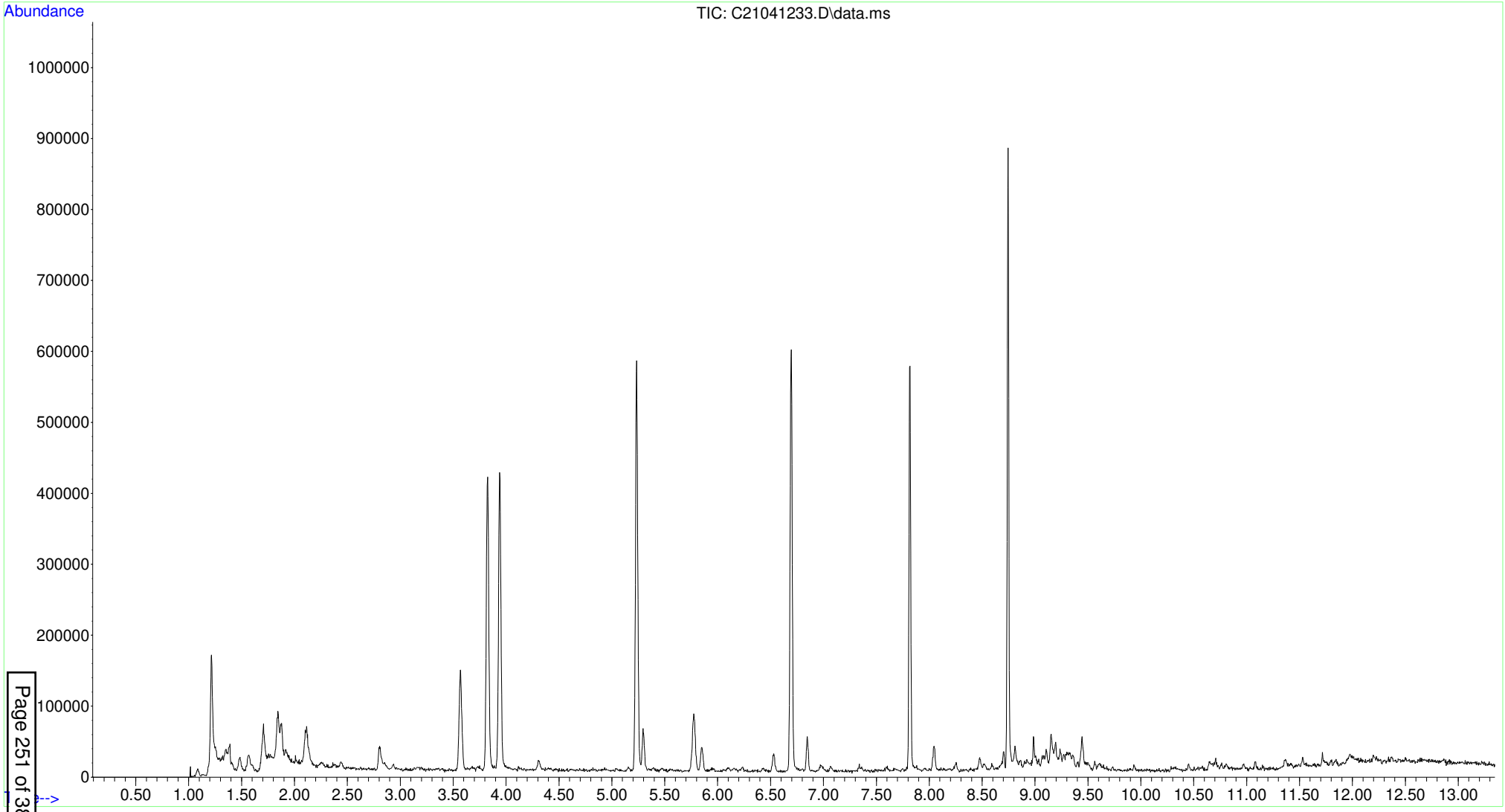
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	310094	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	267224	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	145393	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	66720	55.84	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 55.84%#			
19) Toluene-d8	5.234	98	300007	88.39	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.39%			
31) Bromofluorobenzene	7.815	95	114148	87.70	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.70%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041233.D
Acq On : 13 Apr 2021 02:23 am
Operator : KAI
Sample : 0005717-29
Misc : NWP_PSG27-03252021
ALS Vial : 39 Sample Multiplier: 1

Quant Time: Apr 13 10:27:21 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 2:47:00AM **FileID:** C21041234.D **DF:** 1.00

Lab Number: 0005717-30 **Sample Name:** NWP_PSG28-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041234.D
Acq On : 13 Apr 2021 02:47 am
Operator : KAI
Sample : 0005717-30
Misc : NWP_PSG28-03252021
ALS Vial : 40 Sample Multiplier: 1

Quant Time: Apr 13 10:27:25 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

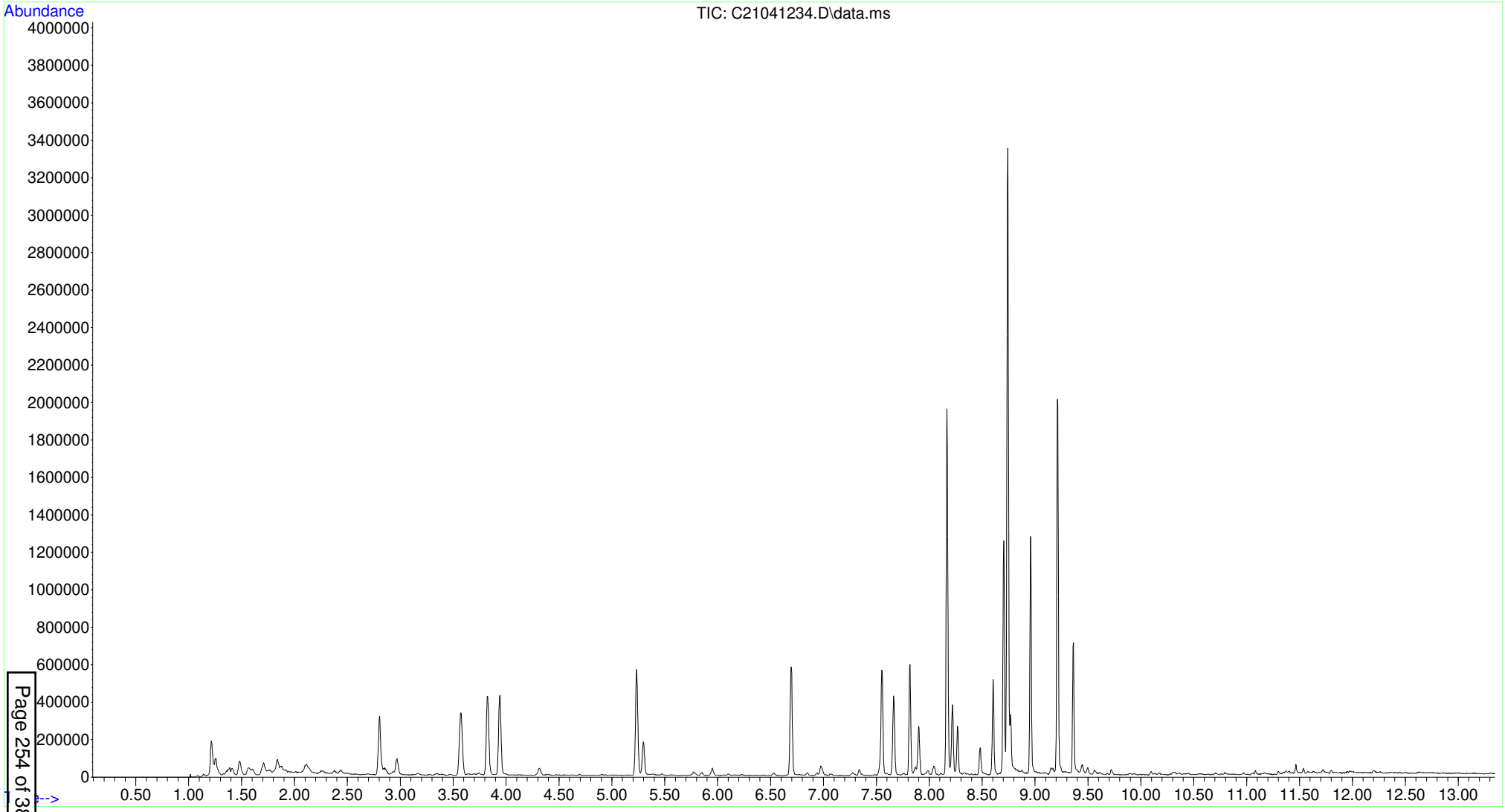
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	318543	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	267765	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	152048	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	110932	90.38	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 90.38%			
19) Toluene-d8	5.234	98	302840	89.05	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 89.05%			
31) Bromofluorobenzene	7.818	95	114770	88.00	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.00%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041234.D
Acq On : 13 Apr 2021 02:47 am
Operator : KAI
Sample : 0005717-30
Misc : NWP_PSG28-03252021
ALS Vial : 40 Sample Multiplier: 1

Quant Time: Apr 13 10:27:25 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 3:12:00AM **FileID:** C21041235.D **DF:** 1.00

Lab Number: 0005717-31 **Sample Name:** NWP_PSG29-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041235.D
Acq On : 13 Apr 2021 03:12 am
Operator : KAI
Sample : 0005717-31
Misc : NWP_PSG29-03252021
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Apr 13 10:27:29 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

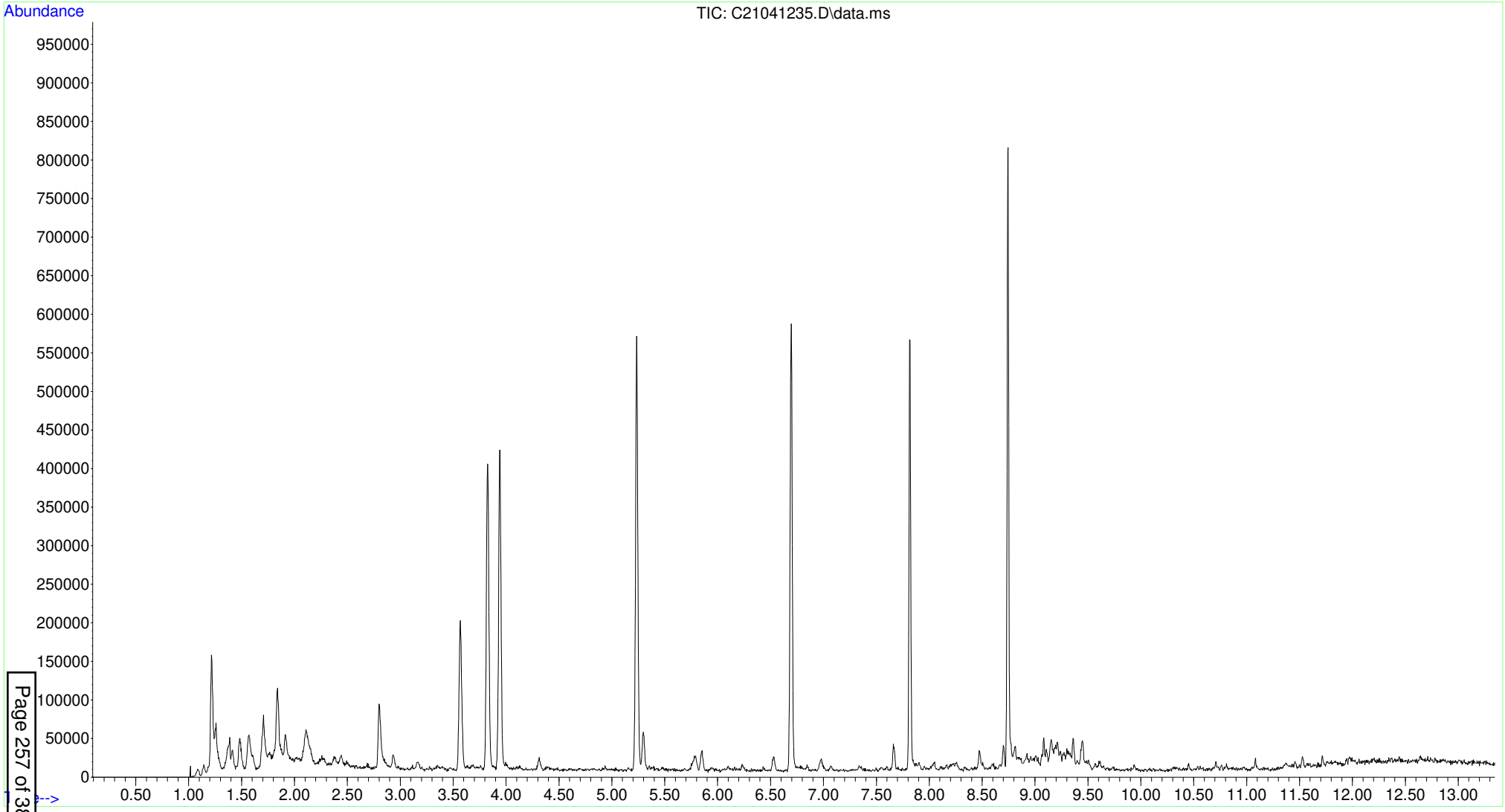
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	302076	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	261051	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	136532	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	103248	88.71	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.71%			
19) Toluene-d8	5.234	98	291745	87.99	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.99%			
31) Bromofluorobenzene	7.815	95	111736	87.88	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.88%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041235.D
Acq On : 13 Apr 2021 03:12 am
Operator : KAI
Sample : 0005717-31
Misc : NWP_PSG29-03252021
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Apr 13 10:27:29 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/13/2021 3:36:00AM	**FileID:**	C21041236.D	**DF:**	1.00
Lab Number:	0005717-32	**Sample Name:**	NWP_PSG30-03242021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041236.D
Acq On : 13 Apr 2021 03:36 am
Operator : KAI
Sample : 0005717-32
Misc : NWP_PSG30-03242021
ALS Vial : 42 Sample Multiplier: 1

Quant Time: Apr 13 10:27:33 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

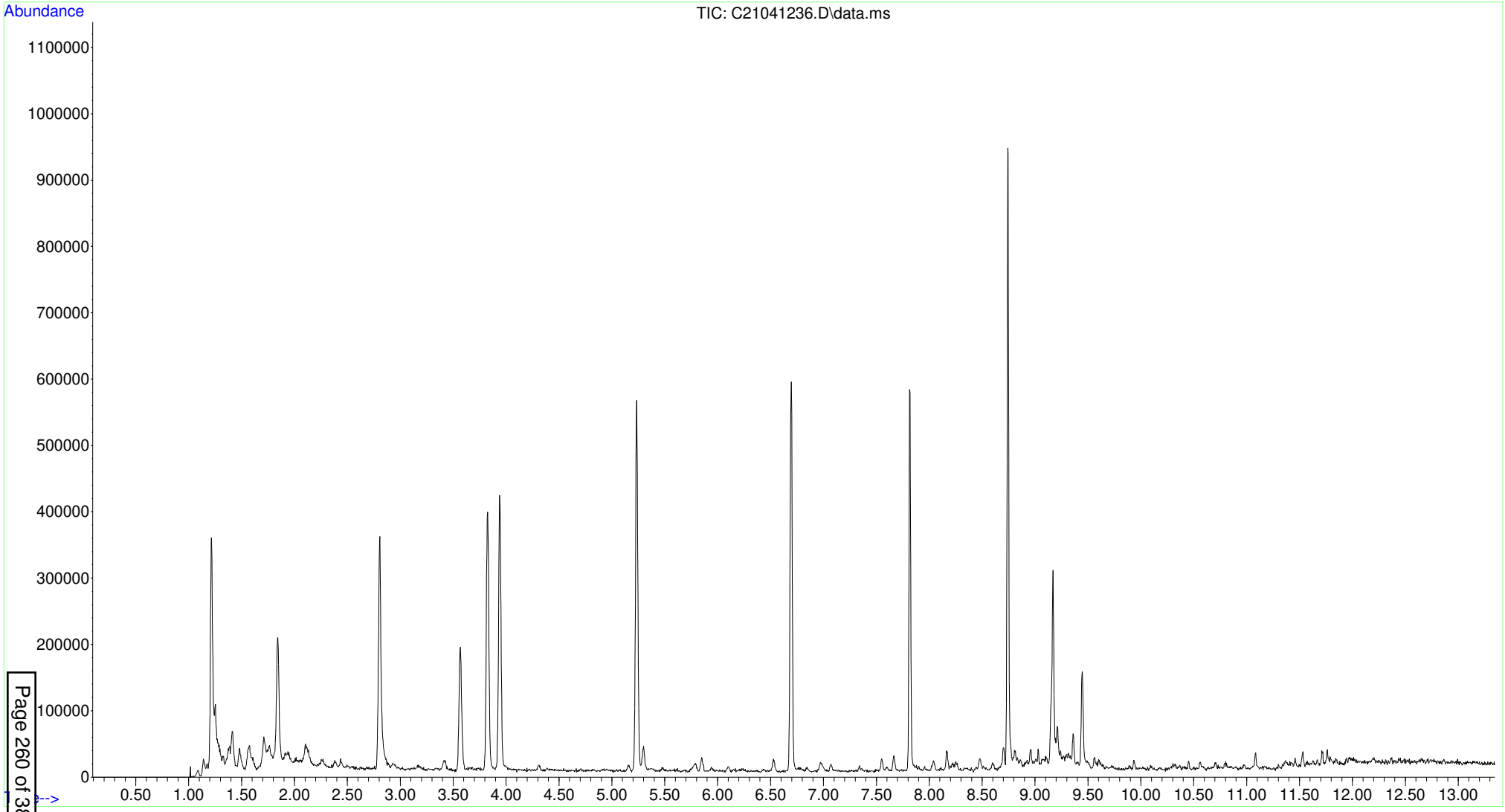
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	300063	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	266999	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.742	152	143508	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	104548	90.43	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 90.43%			
19) Toluene-d8	5.234	98	292624	86.29	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.29%			
31) Bromofluorobenzene	7.815	95	112842	86.77	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.77%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041236.D
Acq On : 13 Apr 2021 03:36 am
Operator : KAI
Sample : 0005717-32
Misc : NWP_PSG30-03242021
ALS Vial : 42 Sample Multiplier: 1

Quant Time: Apr 13 10:27:33 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis:	EPA 8260C	**Analyzed:**	4/13/2021 4:00:00AM	**FileID:**	C21041237.D	**DF:**	1.00
Lab Number:	0005717-33	**Sample Name:**	NWP_PSG31-03252021				

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041237.D
Acq On : 13 Apr 2021 04:00 am
Operator : KAI
Sample : 0005717-33
Misc : NWP_PSG31-03252021
ALS Vial : 43 Sample Multiplier: 1

Quant Time: Apr 13 10:27:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

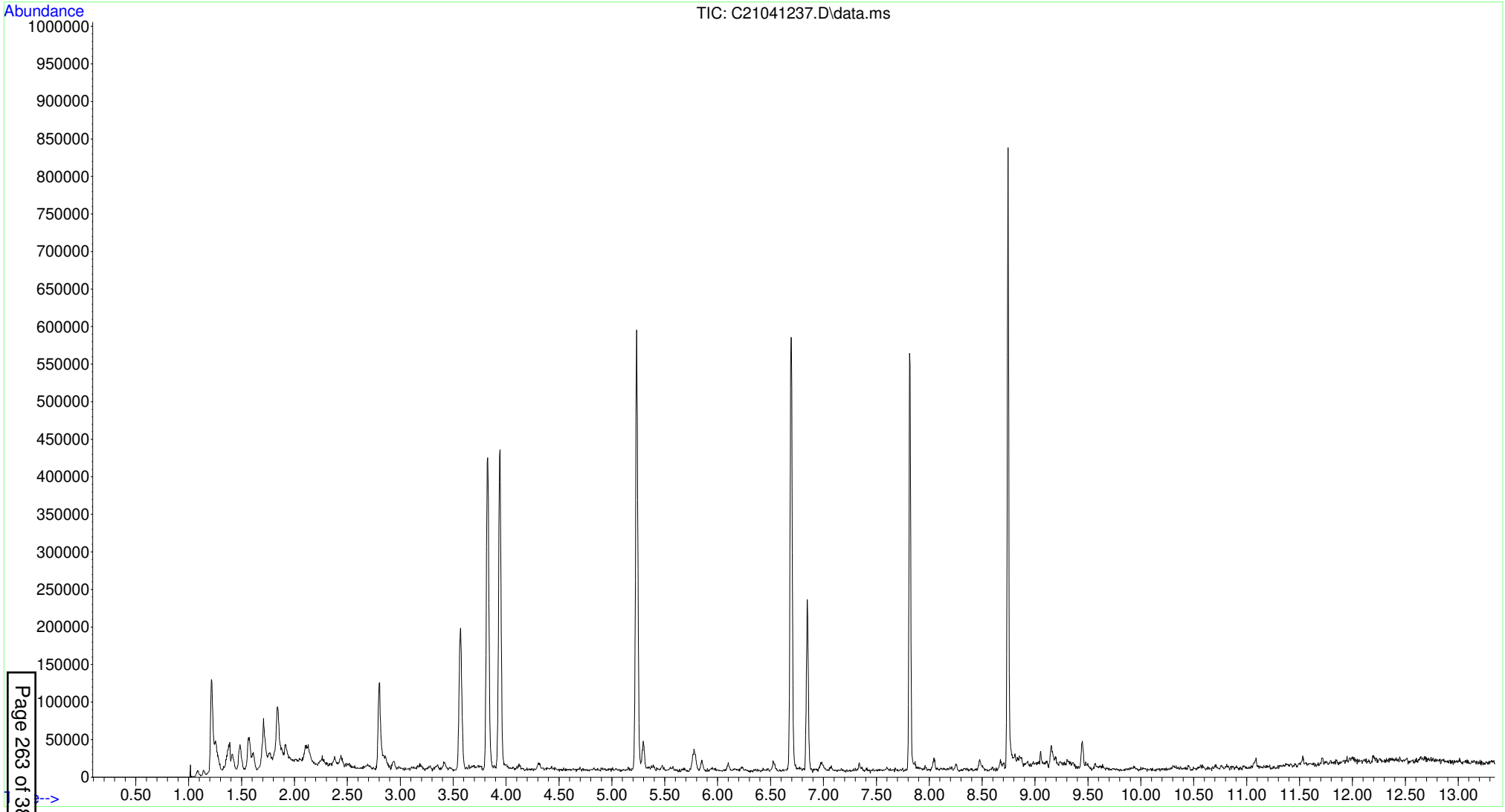
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	317597	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	266450	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	133272	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	99809	81.56	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 81.56%			
19) Toluene-d8	5.234	98	305792	90.36	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 90.36%			
31) Bromofluorobenzene	7.815	95	107878	83.13	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 83.13%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041237.D
Acq On : 13 Apr 2021 04:00 am
Operator : KAI
Sample : 0005717-33
Misc : NWP_PSG31-03252021
ALS Vial : 43 Sample Multiplier: 1

Quant Time: Apr 13 10:27:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 4:24:00AM **FileID:** C21041238.D **DF:** 1.00

Lab Number: 0005717-34 **Sample Name:** NWP_PSG32-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041238.D
Acq On : 13 Apr 2021 04:24 am
Operator : KAI
Sample : 0005717-34
Misc : NWP_PSG32-03252021
ALS Vial : 44 Sample Multiplier: 1

Quant Time: Apr 13 10:27:42 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

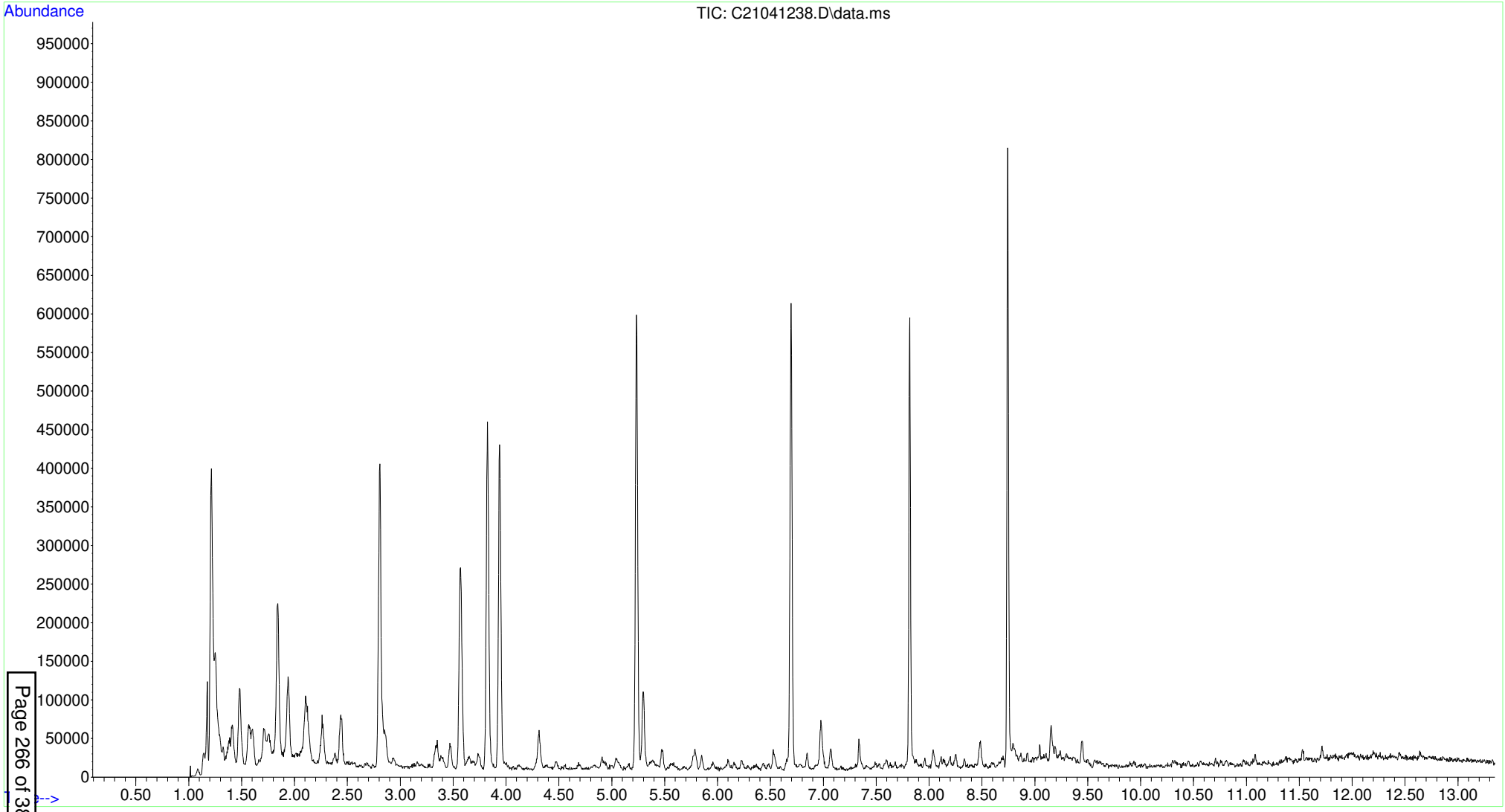
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	316857	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	268842	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.741	152	138326	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	114772	94.01	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 94.01%			
19) Toluene-d8	5.234	98	303691	88.94	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.94%			
31) Bromofluorobenzene	7.818	95	112166	85.66	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.66%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041238.D
Acq On : 13 Apr 2021 04:24 am
Operator : KAI
Sample : 0005717-34
Misc : NWP_PSG32-03252021
ALS Vial : 44 Sample Multiplier: 1

Quant Time: Apr 13 10:27:42 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 4:48:00AM **FileID:** C21041239.D **DF:** 1.00

Lab Number: 0005717-35 **Sample Name:** NWP_PSG33-03262021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041239.D
Acq On : 13 Apr 2021 04:48 am
Operator : KAI
Sample : 0005717-35
Misc : NWP_PSG33-03262021
ALS Vial : 45 Sample Multiplier: 1

Quant Time: Apr 13 10:27:46 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

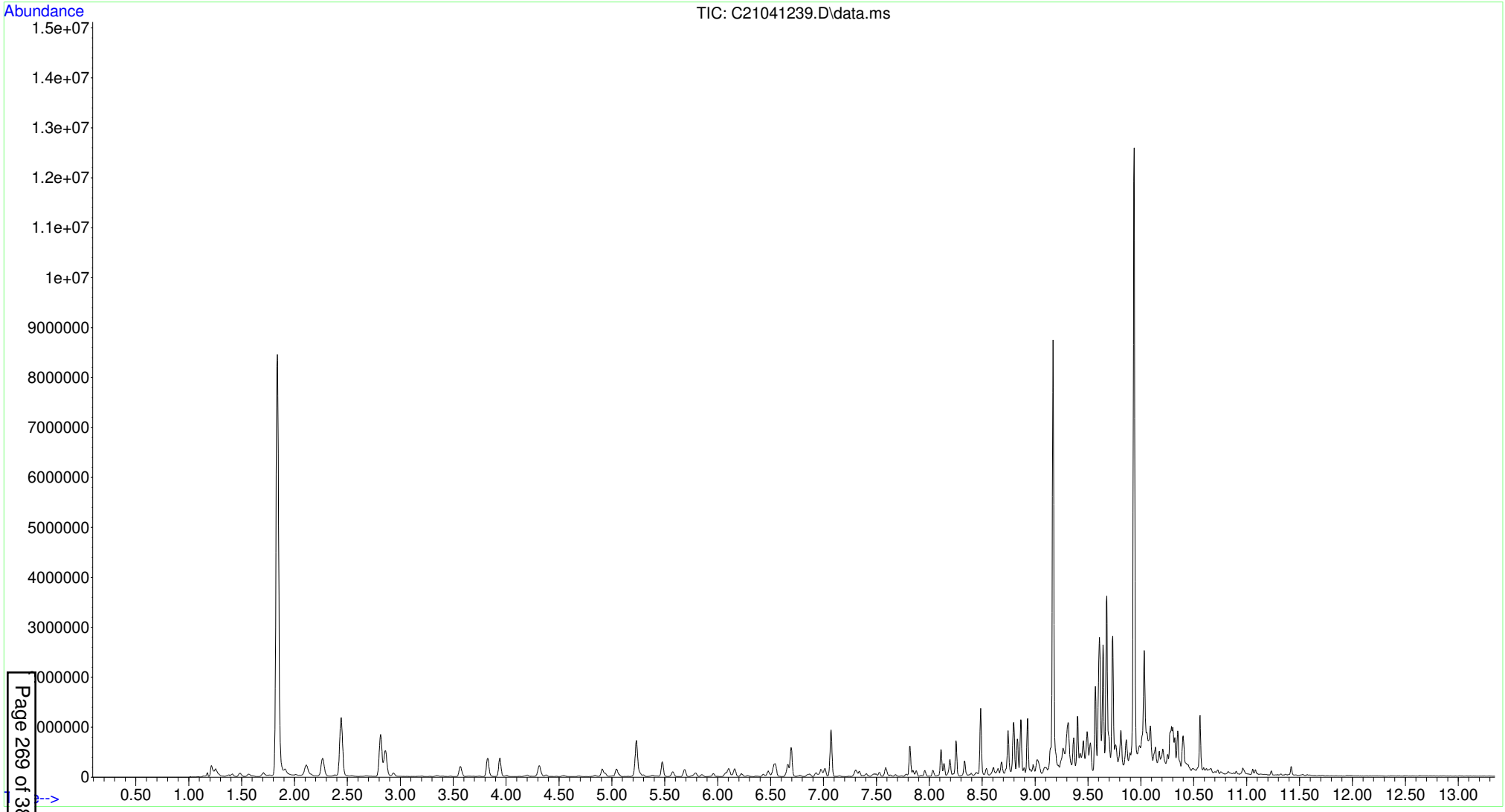
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	270628	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	262644	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	143642	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	107120	102.73	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 102.73%			
19) Toluene-d8	5.234	98	287471	86.17	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.17%			
31) Bromofluorobenzene	7.818	95	110724	86.56	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.56%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041239.D
Acq On : 13 Apr 2021 04:48 am
Operator : KAI
Sample : 0005717-35
Misc : NWP_PSG33-03262021
ALS Vial : 45 Sample Multiplier: 1

Quant Time: Apr 13 10:27:46 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 5:12:00AM **FileID:** C21041240.D **DF:** 1.00

Lab Number: 0005717-36 **Sample Name:** NWP_PSG34-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041240.D
Acq On : 13 Apr 2021 05:12 am
Operator : KAI
Sample : 0005717-36
Misc : NWP_PSG34-03252021
ALS Vial : 46 Sample Multiplier: 1

Quant Time: Apr 13 10:27:50 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

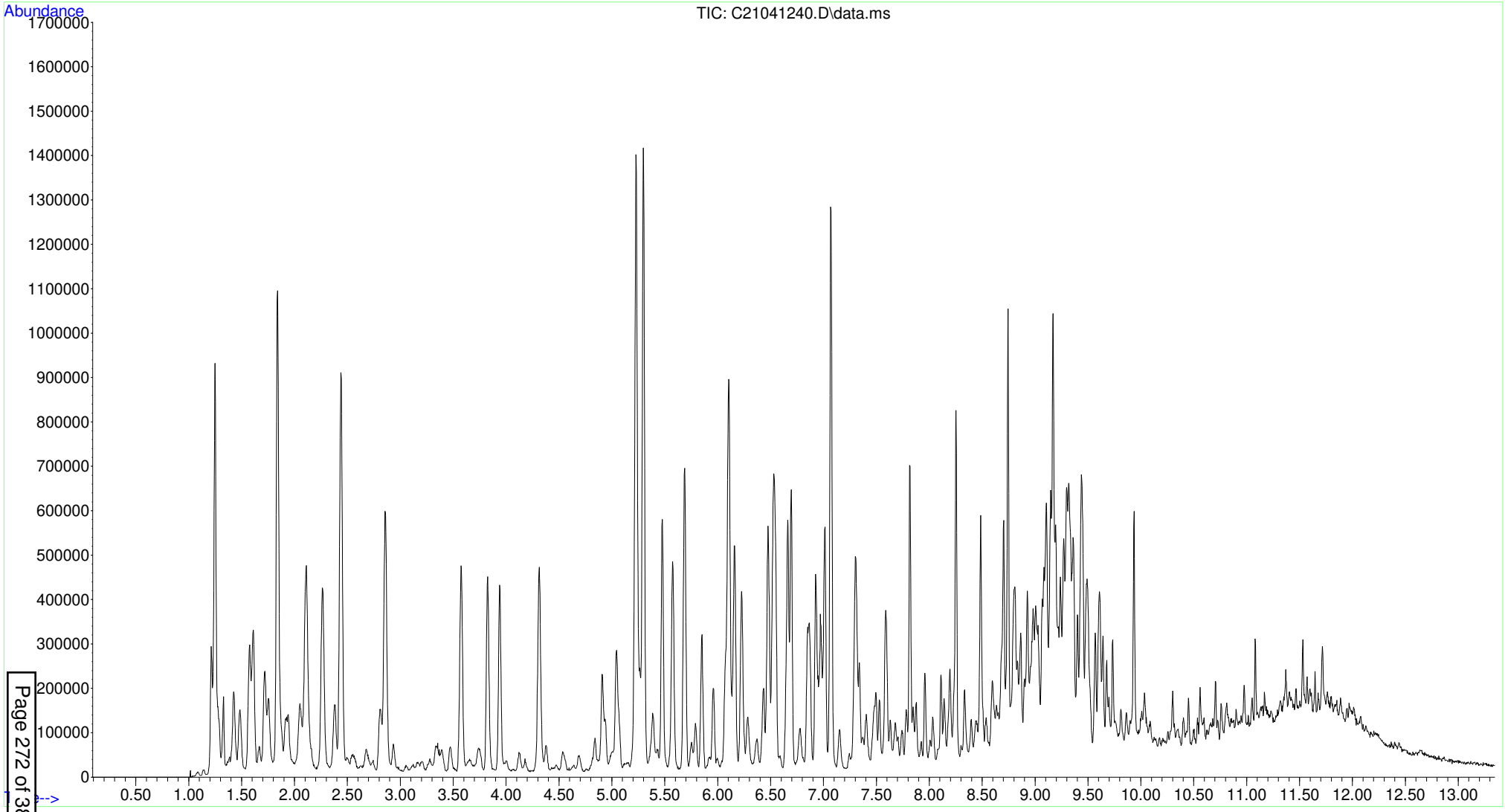
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	301789	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	277033	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	155234	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	77085	66.29	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 66.29%#			
19) Toluene-d8	5.231	98	345506	98.19	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 98.19%			
31) Bromofluorobenzene	7.815	95	118985	88.18	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.18%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041240.D
Acq On : 13 Apr 2021 05:12 am
Operator : KAI
Sample : 0005717-36
Misc : NWP_PSG34-03252021
ALS Vial : 46 Sample Multiplier: 1

Quant Time: Apr 13 10:27:50 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 5:36:00AM **FileID:** C21041241.D **DF:** 1.00

Lab Number: 0005717-37 **Sample Name:** NWP_PSG35-03252021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041241.D
Acq On : 13 Apr 2021 05:36 am
Operator : KAI
Sample : 0005717-37
Misc : NWP_PSG35-03252021
ALS Vial : 47 Sample Multiplier: 1

Quant Time: Apr 13 10:27:55 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

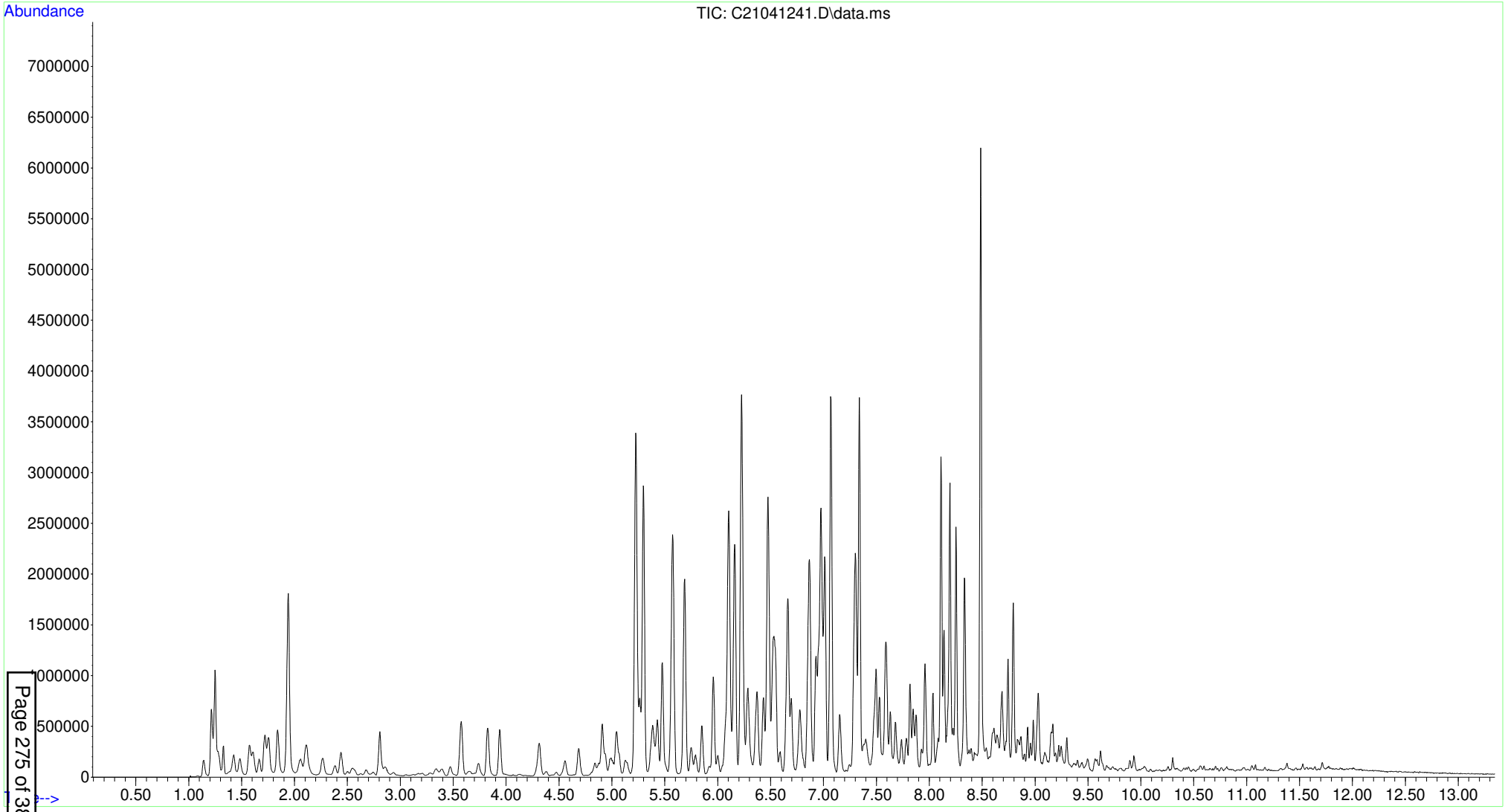
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	327207	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	285837	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	162554	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	103904	82.41	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 82.41%			
19) Toluene-d8	5.234	98	427657	117.80	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 117.80%			
31) Bromofluorobenzene	7.818	95	118712	85.27	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.27%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041241.D
Acq On : 13 Apr 2021 05:36 am
Operator : KAI
Sample : 0005717-37
Misc : NWP_PSG35-03252021
ALS Vial : 47 Sample Multiplier: 1

Quant Time: Apr 13 10:27:55 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 6:00:00AM **FileID:** C21041242.D **DF:** 1.00

Lab Number: 0005717-38 **Sample Name:** NWP_PSG36-03262021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041242.D
Acq On : 13 Apr 2021 06:00 am
Operator : KAI
Sample : 0005717-38
Misc : NWP_PSG36-03262021
ALS Vial : 48 Sample Multiplier: 1

Quant Time: Apr 13 10:27:59 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

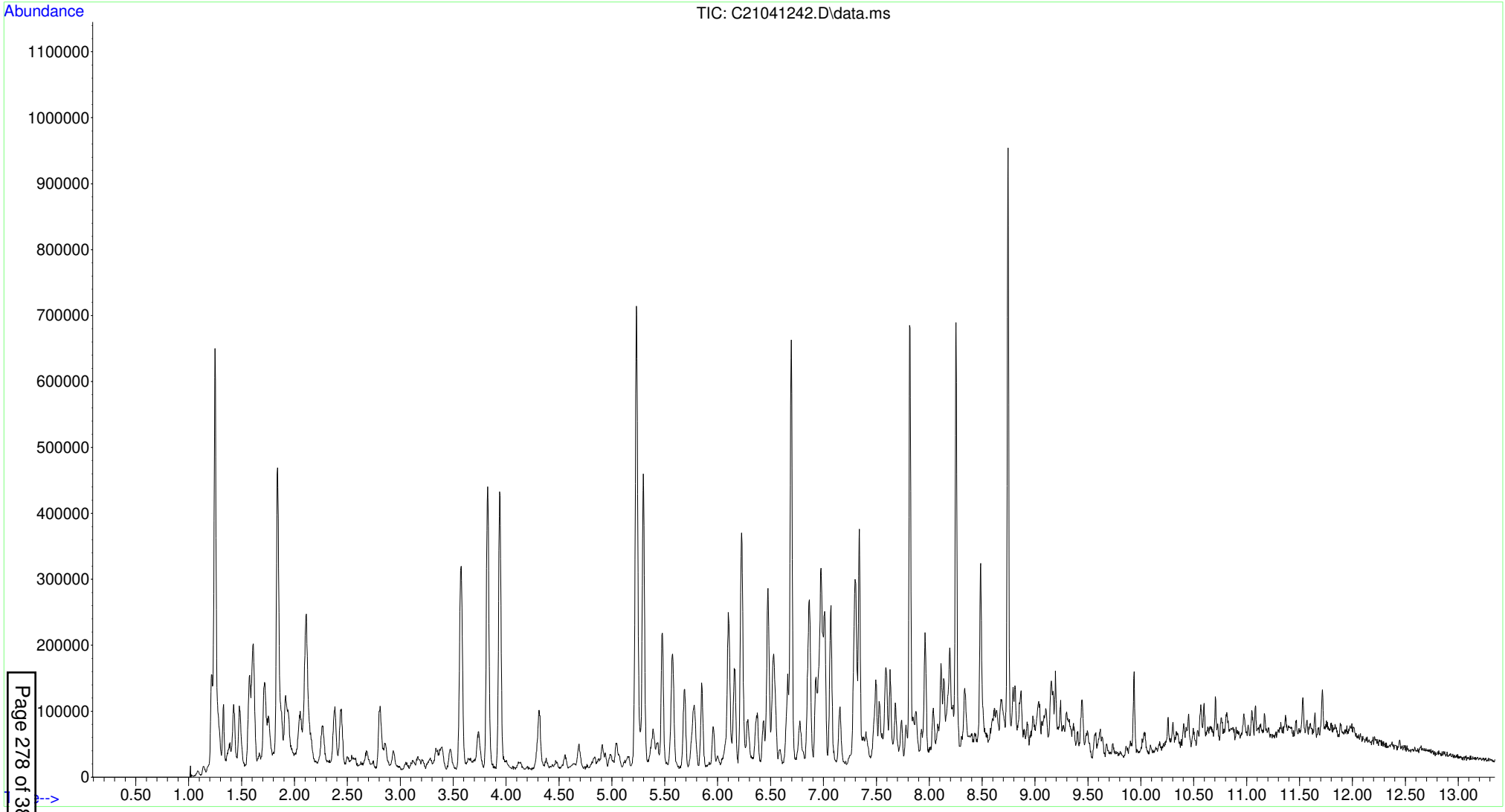
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	313841	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	280467	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	153512	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	80682	66.72	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 66.72%#			
19) Toluene-d8	5.234	98	311698	87.50	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.50%			
31) Bromofluorobenzene	7.815	95	123151	90.15	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 90.15%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041242.D
Acq On : 13 Apr 2021 06:00 am
Operator : KAI
Sample : 0005717-38
Misc : NWP_PSG36-03262021
ALS Vial : 48 Sample Multiplier: 1

Quant Time: Apr 13 10:27:59 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/13/2021 6:24:00AM **FileID:** C21041243.D **DF:** 1.00

Lab Number: 0005717-39 **Sample Name:** NWP_PSG37-03262021

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041243.D
Acq On : 13 Apr 2021 06:24 am
Operator : KAI
Sample : 0005717-39
Misc : NWP_PSG37-03262021
ALS Vial : 49 Sample Multiplier: 1

Quant Time: Apr 13 10:28:03 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

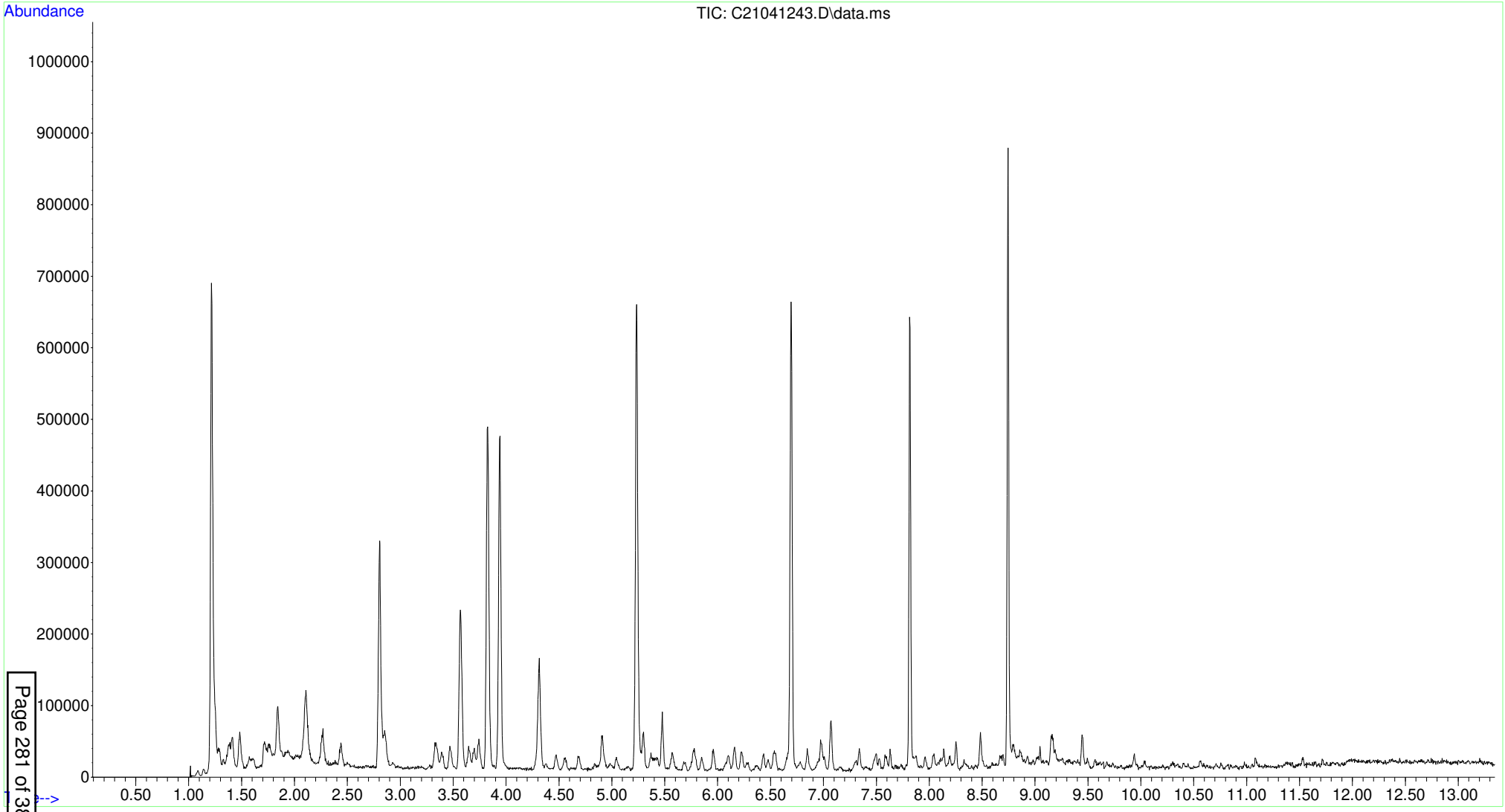
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	339648	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	294812	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	149051	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	105598	80.69	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 80.69%			
19) Toluene-d8	5.234	98	329689	88.05	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.05%			
31) Bromofluorobenzene	7.815	95	123014	85.67	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 85.67%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041243.D
Acq On : 13 Apr 2021 06:24 am
Operator : KAI
Sample : 0005717-39
Misc : NWP_PSG37-03262021
ALS Vial : 49 Sample Multiplier: 1

Quant Time: Apr 13 10:28:03 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/14/2021 10:43:00AM **FileID:** C21041355.D **DF:** 1.00

Lab Number: 0005717-40 **Sample Name:** NWP_PSG01-03262021-Dup

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210413\
Data File : C21041355.D
Acq On : 14 Apr 2021 10:43 am
Operator : KAI
Sample : 0005717-40
Misc : NWP_PSG01-03262021-Dup
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 14 11:51:19 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

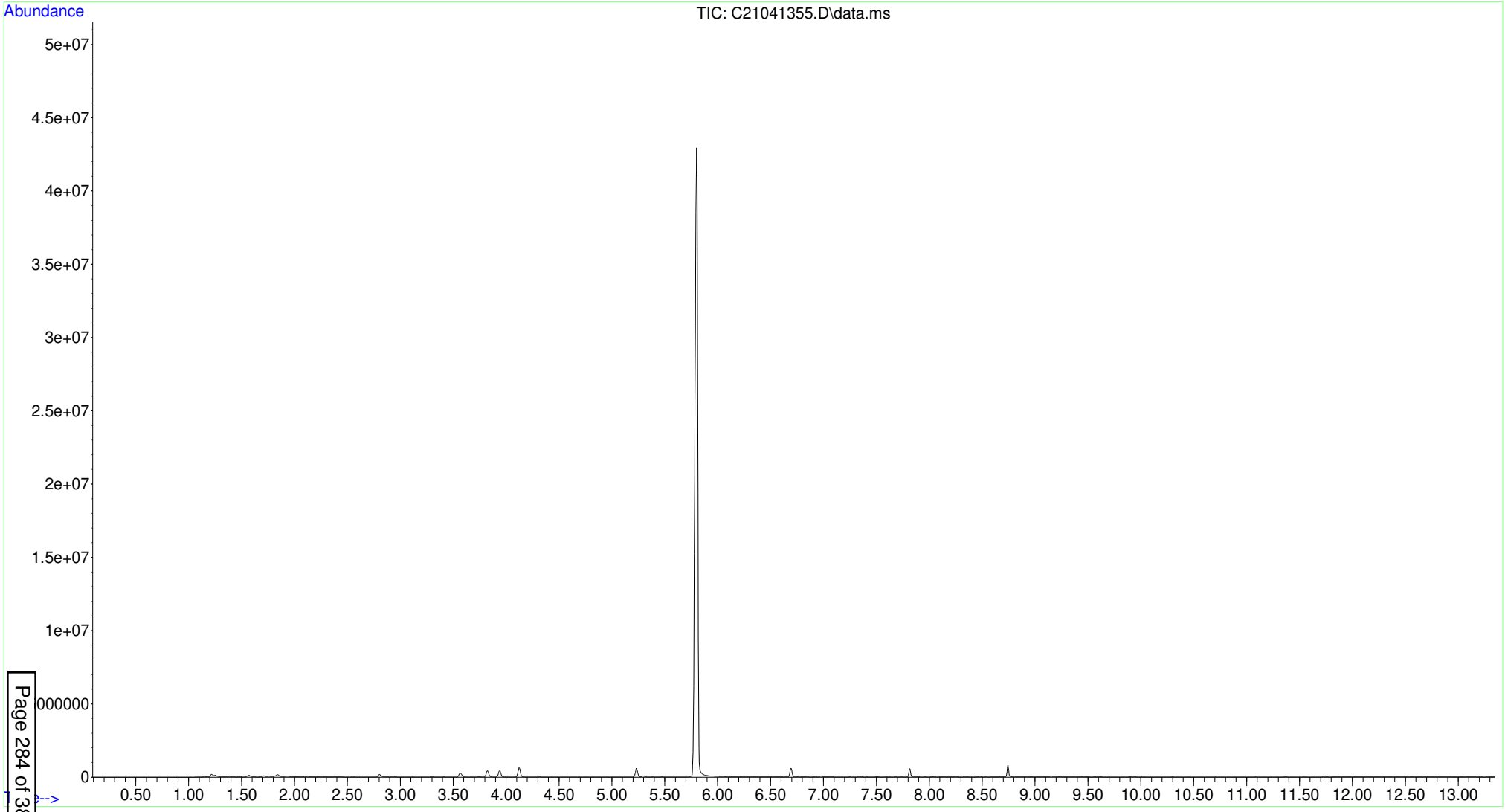
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	321978	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	276509	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.741	152	136115	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	133152	107.33	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 107.33%			
19) Toluene-d8	5.231	98	307232	87.48	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 87.48%			
31) Bromofluorobenzene	7.815	95	116307	86.36	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 86.36%			
Target Compounds						Qvalue
15) Trichloroethene	4.122	130	183873	170.23	ng	98
22) Tetrachloroethene	5.801	131	8974650	9948.80	ng	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210413\
Data File : C21041355.D
Acq On : 14 Apr 2021 10:43 am
Operator : KAI
Sample : 0005717-40
Misc : NWP_PSG01-03262021-Dup
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 14 11:51:19 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Raw Data

Analysis: EPA 8260C **Analyzed:** 4/14/2021 11:07:00AM **FileID:** C21041356.D **DF:** 1.00

Lab Number: 0005717-41 **Sample Name:** NWP_PSG16-03242021-Dup

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210413\
Data File : C21041356.D
Acq On : 14 Apr 2021 11:07 am
Operator : KAI
Sample : 0005717-41
Misc : NWP_PSG16-03242021-Dup
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 14 11:51:28 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

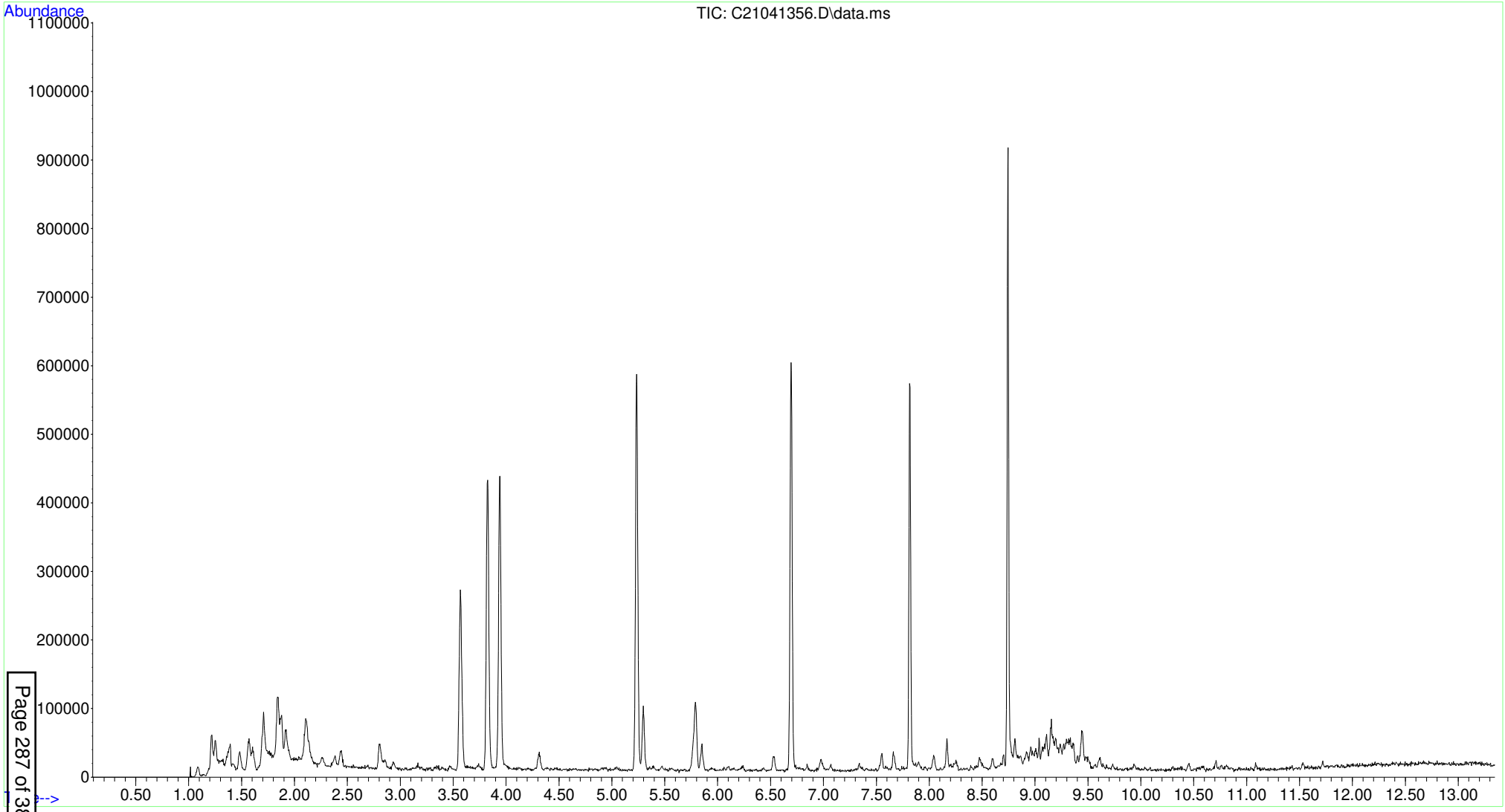
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	319848	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	272815	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	141814	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.564	65	123363	100.10	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 100.10%			
19) Toluene-d8	5.234	98	307411	88.72	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.72%			
31) Bromofluorobenzene	7.815	95	117867	88.71	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 88.71%			
Target Compounds						Qvalue
22) Tetrachloroethene	5.795	131	15442	17.35	ng	# 94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\GCMS\data\21\04\C210413\
Data File : C21041356.D
Acq On : 14 Apr 2021 11:07 am
Operator : KAI
Sample : 0005717-41
Misc : NWP_PSG16-03242021-Dup
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 14 11:51:28 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

4/11/2021

Batch and Sequence Raw Data

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sequence Raw Data

Analysis: EPA 8260C

Analyzed: 4/12/2021 1:57:00PM

Lab Number: 21D0032-BS1

QC Description: LCS, Calibration Source Verification

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041202.D
Acq On : 12 Apr 2021 01:57 pm
Operator : KAI
Sample : 21D0032-BS1
Misc : LCS
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Apr 13 10:25:12 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	395231	100.00	ng		0.00
18) Chlorobenzene-d5	6.693	117	297851	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	155320	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.564	65	82848	54.40	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 54.40%#				
19) Toluene-d8	5.234	98	181273	47.92	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 47.92%#				
31) Bromofluorobenzene	7.815	95	62659	43.19	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 43.19%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.264	62	42666	42.85	ng		97
3) 1,1-Dichloroethene	1.821	96	49697	51.95	ng		95
4) 1,1,2-Trichlorotrifluo...	1.821	101	61874	55.24	ng		95
5) trans-1,2-Dichloroethene	2.262	96	57685	53.09	ng		100
6) Methyl-t-butyl ether	2.259	73	157547	54.17	ng		98
7) 1,1-Dichloroethane	2.546	63	113487	52.92	ng		99
8) cis-1,2-Dichloroethene	2.943	96	63689	53.61	ng		100
9) Chloroform	3.189	85	67756	54.68	ng		98
11) 1,2-Dichloroethane	3.627	62	108044	54.15	ng	#	43
12) 1,1,1-Trichloroethane	3.305	97	91972	53.06	ng		98
13) Carbon Tetrachloride	3.419	117	94838	58.68	ng		98
14) Benzene	3.576	78	200223	49.22	ng		99
15) Trichloroethene	4.125	130	65865	49.68	ng		96
16) 1,4-Dioxane	4.415	88	41165	49.69	ng		93
17) 1,1,2-Trichloroethane	5.741	99	33622	51.73	ng		98
20) Toluene	5.297	92	125955	50.14	ng	#	95
21) 1,2-Dibromoethane (EDB)	6.198	107	57505	52.62	ng		96
22) Tetrachloroethene	5.795	131	50279	51.74	ng		96
23) 1,1,1,2-Tetrachloroethane	6.832	131	57261	54.31	ng		94
24) Chlorobenzene	6.725	112	151944	51.35	ng		99
25) Ethylbenzene	6.847	106	74020	49.44	ng		97
26) p & m-Xylene	6.983	106	85203	46.73	ng		96
27) 1,1,2,2-Tetrachloroethane	7.969	83	87221	49.42	ng		98
28) o-Xylene	7.339	106	85227	48.22	ng		96
29) 1,2,3-Trichloropropane	7.995	75	71775	47.12	ng		94
30) Isopropylbenzene	7.679	105	228479	49.23	ng		99
33) 1,3,5-Trimethylbenzene	8.196	120	96609	46.19	ng		98
34) 1,2,4-Trimethylbenzene	8.486	120	88662	47.18	ng		97
35) 1,3-Dichlorobenzene	8.682	146	122520	50.58	ng		99
36) 1,4-Dichlorobenzene	8.763	146	130014	52.52	ng		98
37) 1,2-Dichlorobenzene	9.022	146	112904	48.14	ng		97
38) 1,2,4-Trichlorobenzene	10.144	180	81761	50.40	ng		97
39) Naphthalene	10.301	128	240222	45.71	ng		98
40) 1,2,3-Trichlorobenzene	10.437	180	86976	51.66	ng		99
41) 2-Methylnaphthalene	10.963	142	137391	43.01	ng		99
42) TPH C4-C9	4.810	TIC	16216901m	2764.51	ng		
43) TPH C10-C15	9.810	TIC	13962261m	1957.06	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041202.D
Acq On : 12 Apr 2021 01:57 pm
Operator : KAI
Sample : 21D0032-BS1
Misc : LCS
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Apr 13 10:25:12 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

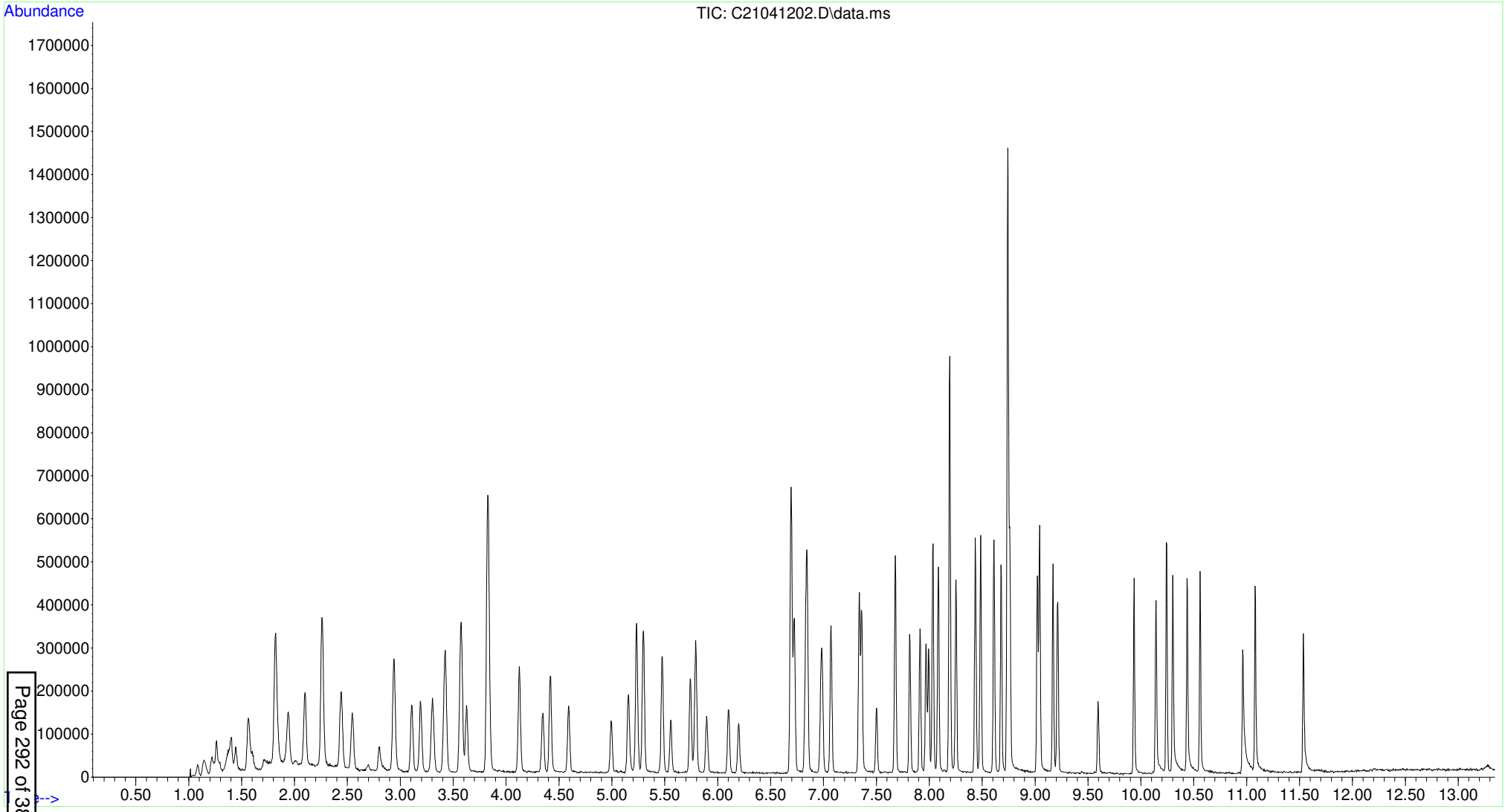
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041202.D
Acq On : 12 Apr 2021 01:57 pm
Operator : KAI
Sample : 21D0032-BS1
Misc : LCS
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Apr 13 10:25:12 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sequence Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 2:21:00PM

Lab Number: 21D0032-BLK1 **QC Description:** Lab Blank

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041203.D
Acq On : 12 Apr 2021 02:21 pm
Operator : KAI
Sample : 21D0032-BLK1
Misc : LB
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 13 10:25:17 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

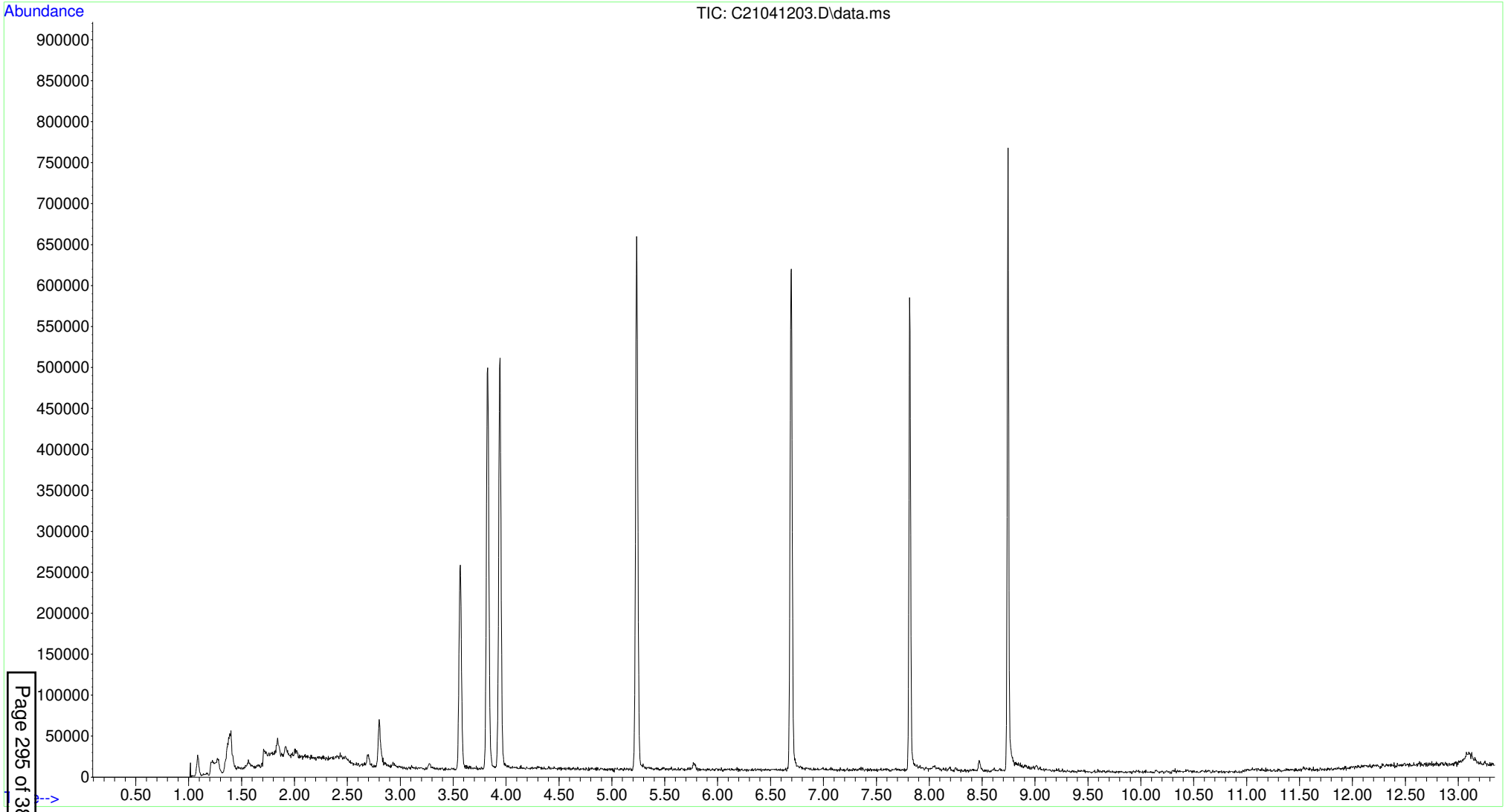
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	369387	100.00	ng	0.00
18) Chlorobenzene-d5	6.693	117	278382	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	125080	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	149627	105.13	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 105.13%			
19) Toluene-d8	5.234	98	339647	96.06	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 96.06%			
31) Bromofluorobenzene	7.815	95	110618	81.59	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 81.59%			
Target Compounds						Qvalue
42) TPH C4-C9	4.810	TIC	5378572m	1138.56	ng	
43) TPH C10-C15	9.810	TIC	2018115m	351.26	ng	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041203.D
Acq On : 12 Apr 2021 02:21 pm
Operator : KAI
Sample : 21D0032-BLK1
Misc : LB
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 13 10:25:17 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sequence Raw Data

Analysis: EPA 8260C **Analyzed:** 4/12/2021 2:45:00PM

Lab Number: B21D035-ICV1 **QC Description:** LCSD/Second Source Verification/CALV

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041204.D
Acq On : 12 Apr 2021 02:45 pm
Operator : KAI
Sample : B21D035-ICV1
Misc : LCSD
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 13 10:25:21 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.822	96	403719	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	307271	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	161098	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.560	65	81210	52.21	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 52.21%#			
19) Toluene-d8	5.237	98	186426	47.77	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 47.77%#			
31) Bromofluorobenzene	7.818	95	63434	42.39	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 42.39%#			
Target Compounds						Qvalue
2) Vinyl Chloride	1.261	62	44802	44.05	ng	98
3) 1,1-Dichloroethene	1.821	96	47313	48.41	ng	99
4) 1,1,2-Trichlorotrifluo...	1.821	101	63167	55.21	ng	96
5) trans-1,2-Dichloroethene	2.259	96	56843	51.21	ng	100
6) Methyl-t-butyl ether	2.256	73	145350	48.93	ng	99
7) 1,1-Dichloroethane	2.549	63	108906	49.71	ng	98
8) cis-1,2-Dichloroethene	2.940	96	59836	49.31	ng	93
9) Chloroform	3.192	85	67559	53.37	ng	99
11) 1,2-Dichloroethane	3.627	62	110248	54.09	ng	100
12) 1,1,1-Trichloroethane	3.305	97	92338	52.15	ng	99
13) Carbon Tetrachloride	3.419	117	94736	57.39	ng	99
14) Benzene	3.579	78	202132	48.64	ng	99
15) Trichloroethene	4.121	130	68283	50.42	ng	96
16) 1,4-Dioxane	4.421	88	42314	50.00	ng	91
17) 1,1,2-Trichloroethane	5.741	99	34061	51.31	ng	95
20) Toluene	5.297	92	125921	48.59	ng	97
21) 1,2-Dibromoethane (EDB)	6.195	107	58636	52.01	ng	100
22) Tetrachloroethene	5.795	131	51485	51.36	ng	97
23) 1,1,1,2-Tetrachloroethane	6.835	131	58677	53.95	ng	98
24) Chlorobenzene	6.724	112	157280	51.52	ng	99
25) Ethylbenzene	6.844	106	72655	47.04	ng	95
26) p & m-Xylene	6.983	106	87209	46.36	ng	97
27) 1,1,2,2-Tetrachloroethane	7.969	83	86174	47.33	ng	97
28) o-Xylene	7.339	106	87553	48.02	ng	97
29) 1,2,3-Trichloropropane	7.994	75	73973	47.07	ng	99
30) Isopropylbenzene	7.679	105	234296	48.93	ng	100
33) 1,3,5-Trimethylbenzene	8.196	120	102729	47.36	ng	98
34) 1,2,4-Trimethylbenzene	8.486	120	91882	47.14	ng	96
35) 1,3-Dichlorobenzene	8.681	146	129225	51.44	ng	98
36) 1,4-Dichlorobenzene	8.763	146	132334	51.54	ng	99
37) 1,2-Dichlorobenzene	9.022	146	121354	49.89	ng	100
38) 1,2,4-Trichlorobenzene	10.144	180	84273	50.09	ng	97
39) Naphthalene	10.301	128	253703	46.54	ng	99
40) 1,2,3-Trichlorobenzene	10.437	180	86920	49.77	ng	99
41) 2-Methylnaphthalene	10.963	142	142024	42.87	ng	99
42) TPH C4-C9	4.810	TIC	17295263m	2842.59	ng	
43) TPH C10-C15	9.810	TIC	14039193m	1897.27	ng	

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041204.D
Acq On : 12 Apr 2021 02:45 pm
Operator : KAI
Sample : B21D035-ICV1
Misc : LCSD
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 13 10:25:21 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration

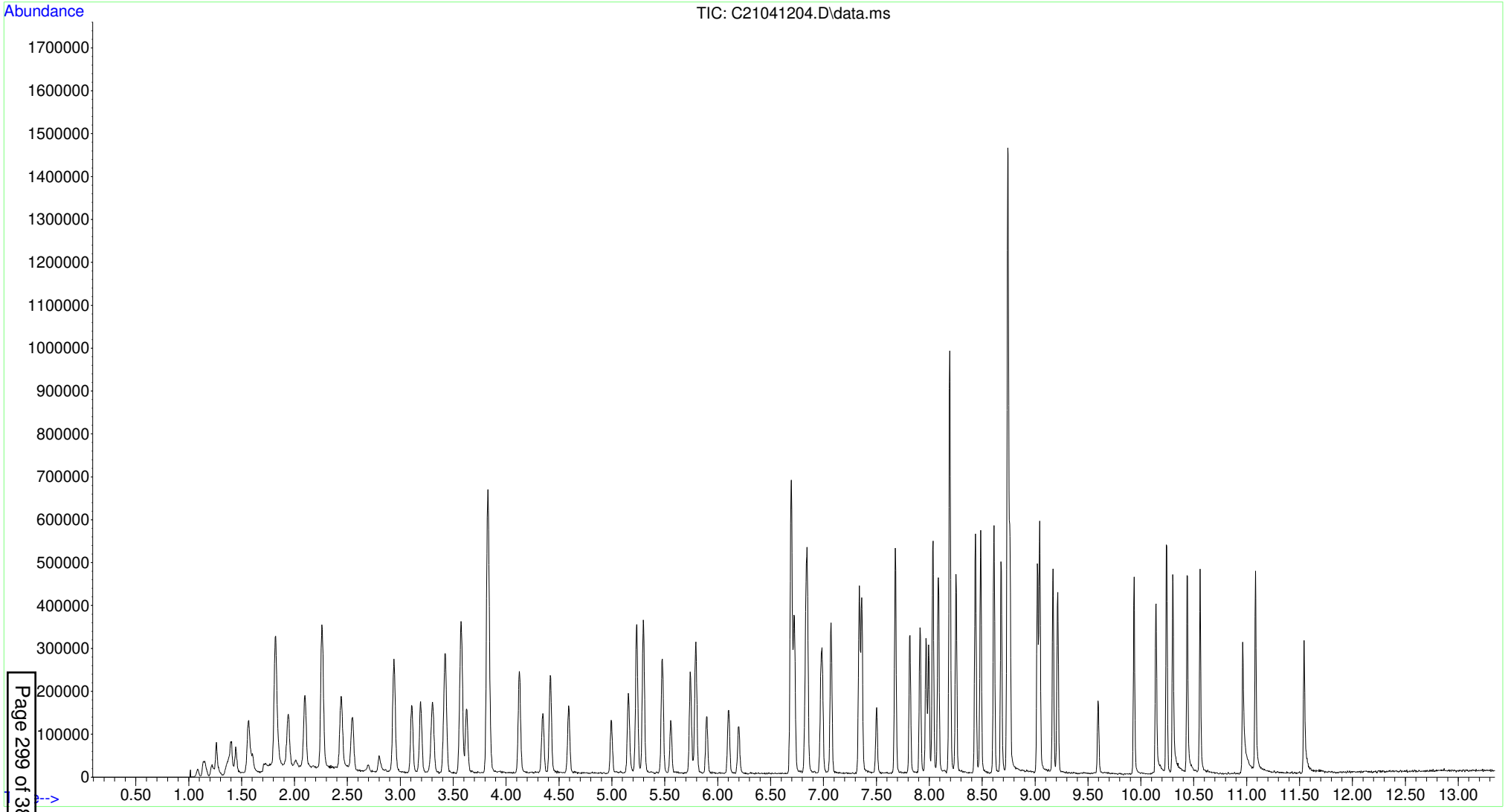
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210412\
Data File : C21041204.D
Acq On : 12 Apr 2021 02:45 pm
Operator : KAI
Sample : B21D035-ICV1
Misc : LCSD
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 13 10:25:21 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Tue Apr 06 12:09:06 2021
Response via : Initial Calibration



2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Organics.GCMS

Calibration Summaries

Response Factor Report C-System

Method Path : Z:\msdchem\C_system\
Method File : 5977c_210401_STD LIST_8260C.M
Title : SOURCE AREA VOA ANALYSIS
Last Update : Tue Apr 06 12:09:06 2021
Response Via : Initial Calibration

Calibration Files
2.5 =21040103.D 5 =21040104.D 10 =21040105.D 25 =21040106.D 50 =21040107.D 100 =21040108.D 200 =21040109.D 400 =210401
10.D 600 =21040111.D
800 =21040112.D 1000=21040113.D

		Compound	2.5	5	10	25	50	100	200	400	600	800	1000	Avg	%RSD
1)	I	Fluorobenzene	----------ISTD----------												
2)	T	Vinyl Chloride	0.286	0.255	0.262	0.231	0.228	0.242	0.287	0.215	0.225	0.283	0.258	0.252	10.21
3)	T	1,1-Dichloroet...	0.252	0.234	0.265	0.249	0.218	0.229	0.247	0.251	0.238	0.242	0.238	0.242	5.26
4)	T	1,1,2-Trichlor...	0.283	0.265	0.298	0.275	0.287	0.279	0.292	0.291	0.284	0.287	0.277	0.283	3.25
5)	T	trans-1,2-Dich...	0.297	0.288	0.274	0.279	0.265	0.266	0.285	0.269	0.269	0.268	0.264	0.275	4.05
6)	T	Methyl-t-butyl...	0.865	0.789	0.732	0.727	0.706	0.709	0.720	0.721	0.706	0.707	0.712	0.736	6.64
7)	P	1,1-Dichloroet...	0.574	0.549	0.550	0.535	0.520	0.548	0.560	0.532	0.531	0.533	0.537	0.543	2.81
8)	T	cis-1,2-Dichlo...	0.320	0.301	0.309	0.293	0.297	0.295	0.312	0.295	0.295	0.292	0.298	0.301	2.99
9)	C	Chloroform	0.325	0.325	0.328	0.320	0.302	0.322	0.321	0.299	0.301	0.301	0.304	0.314	3.76
10)	S	1,2-DCA-d4	0.360	0.421	0.399	0.398	0.371	0.388	0.393	0.380	0.381	0.375	0.373	0.385	4.36
11)	T	1,2-Dichloroet...	0.502	0.497	0.529	0.520	0.501	0.518	0.522	0.499	0.495	0.497	0.475	0.505	3.07
12)	T	1,1,1-Trichlor...	0.499	0.439	0.437	0.438	0.414	0.435	0.442	0.427	0.427	0.433	0.433	0.439	4.88
13)	T	Carbon Tetrach...	0.442	0.395	0.380	0.417	0.389	0.415	0.427	0.389	0.407	0.419	0.419	0.409	4.66
14)	T	Benzene	1.200	1.224	1.088	1.049	1.037	1.013	1.028	0.988	0.934	0.901	0.860	1.029	10.94
15)	T	Trichloroethene	0.407	0.392	0.330	0.323	0.323	0.320	0.327	0.334	0.310	0.312	0.312	0.335	9.74
16)	T	1,4-Dioxane	0.248	0.204	0.179	0.202	0.206	0.208	0.206	0.207	0.212	0.217	0.217	0.210	7.70
17)	T	1,1,2-Trichlor...	0.173	0.159	0.160	0.173	0.161	0.171	0.166	0.155	0.161	0.164	0.164	0.164	3.62
18)	I	Chlorobenzene-d5	----------ISTD----------												
19)	S	Toluene-d8	1.915	1.237	1.190	1.205	1.221	1.246	1.272	1.268	1.172	1.129	1.116	1.270	17.32
20)	T	Toluene	0.936	0.884	0.832	0.854	0.863	0.879	0.905	0.872	0.780	0.742	0.731	0.843	7.82
21)	T	1,2-Dibromoeth...	0.321	0.370	0.365	0.373	0.358	0.387	0.390	0.352	0.372	0.369	0.381	0.367	5.17
22)	T	Tetrachloroethene	0.382	0.337	0.322	0.328	0.333	0.329	0.325	0.317	0.307	0.300	0.309	0.326	6.65
23)	T	1,1,1,2-Tetrac...	0.393	0.338	0.336	0.360	0.352	0.366	0.362	0.334	0.353	0.347	0.352	0.354	4.67
24)	P	Chlorobenzene	1.073	1.038	0.991	1.013	1.031	1.027	1.022	0.976	0.945	0.911	0.902	0.994	5.49
25)	C	Ethylbenzene	0.484	0.504	0.512	0.512	0.525	0.542	0.551	0.488	0.483	0.468	0.463	0.503	5.72
26)	T	p & m-Xylene	0.637	0.616	0.592	0.601	0.600	0.647	0.670	0.590	0.613	0.589	0.579	0.612	4.63
27)	P	1,1,2,2-Tetrac...	0.652	0.611	0.592	0.601	0.580	0.614	0.607	0.519	0.575	0.577	0.589	0.593	5.55
28)	T	o-Xylene	0.563	0.609	0.582	0.600	0.615	0.639	0.642	0.568	0.581	0.568	0.561	0.593	5.01
29)	T	1,2,3-Trichlor...	0.552	0.504	0.501	0.515	0.508	0.529	0.531	0.495	0.506	0.495	0.490	0.511	3.69
30)	T	Isopropylbenzene	1.625	1.470	1.565	1.555	1.607	1.678	1.699	1.464	1.532	1.477	1.469	1.558	5.49
31)	S	Bromofluoroben...	0.744	0.535	0.464	0.442	0.445	0.476	0.474	0.433	0.456	0.446	0.442	0.487	18.43
32)		1,4-Dichlorobenzen...	----------ISTD----------												
33)		1,3,5-Trimethy...	1.295	1.325	1.406	1.303	1.430	1.400	1.420	1.402	1.322	1.259	1.250	1.347	4.95
34)		1,2,4-Trimethy...	1.174	1.157	1.201	1.221	1.277	1.294	1.307	1.214	1.183	1.133	1.146	1.210	4.96
35)		1,3-Dichlorobe...	1.506	1.596	1.563	1.529	1.666	1.596	1.609	1.557	1.545	1.480	1.508	1.560	3.47
36)		1,4-Dichlorobe...	1.711	1.582	1.689	1.625	1.626	1.595	1.619	1.546	1.541	1.485	1.512	1.594	4.41

Response Factor Report C-System

Method Path : Z:\msdchem\C_system\
Method File : 5977c_210401_STD LIST_8260C.M
Title : SOURCE AREA VOA ANALYSIS

37)	T	1,2-Dichlorobe...	1.743	1.550	1.443	1.446	1.578	1.502	1.543	1.481	1.465	1.417	1.440	1.510	6.16
38)	T	1,2,4-Trichlor...	0.828	0.883	0.935	1.015	1.054	1.113	1.181	1.085	1.137	1.108	1.148	1.044	11.09
39)	T	Naphthalene	2.818	2.800	3.048	3.290	3.418	3.764	3.960	3.593	3.667	3.470	3.393	3.384	11.03
40)	T	1,2,3-Trichlor...	0.972	0.954	1.060	1.115	1.106	1.124	1.173	1.092	1.118	1.088	1.122	1.084	6.11
41)	T	2-Methylnaphth...	1.389	1.663	1.673	1.835	1.911	2.262	2.441	2.323	2.449	2.343	2.335	2.057	18.15
42)	H	TPH C4-C9	1.130	0.916	0.682	0.482	0.427	0.365	0.391	0.459	0.386	0.361	0.369	0.543 E1	47.69
43)	H	TPH C10-C15	1.257	0.965	0.784	0.632	0.579	0.555	0.550	0.472	0.460	0.439	0.443	0.649 E1	39.78

(#) = Out of Range

GC/MS QA-QC Check Report

Tune File : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\21040101.D
Tune Time : 01 Apr 2021 10:11 am

Daily Calibration File : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\21040107.D

					385568	285496	137059	
File	Sample	Surrogate Recovery %			Internal Standard Responses			
21040102.D								
	LB	101	98	98	270128	204691	93007	
21040103.D								
	SEQ-CAL1	4*	4*	4*	381167	283968	131938	
21040104.D								
	SEQ-CAL2	5*	5*	5*	386949	291553	138538	
21040105.D								
	SEQ-CAL3	10*	10*	10*	380864	287949	136848	
21040106.D								
	SEQ-CAL4	25*	24*	23*	377214	282871	141954	
21040107.D								
	SEQ-CAL5	47*	50*	46*	385568	285496	137059	
21040108.D								
	SEQ-CAL6	98	101	98	372672	280405	145406	
21040109.D								
	SEQ-CAL7	199*	207*	194*	377730	278939	139490	
21040110.D								
	SEQ-CAL8	384*	412*	355*	380561	269239	119883	
21040111.D								
	SEQ-CAL9	578*	572*	561*	386448	291410	144709	
21040112.D								
	SEQ-CALA	759*	734*	731*	356889	274538	140267	
21040113.D								
	SEQ-CALB	944*	907*	905*	362407	274772	137702	
21040114.D								
	LB	99	99	96	355631	274241	132771	
21040115.D								
	LB	101	100	94	359238	272710	128988	
21040116.D								
	SEQ-ICV1	51*	53*	48*	371984	277883	136626	
21040117.D								
	SEQ-ICB1	100	97	91	352463	271339	125325	
21040118.D								
	DL 2.5	3*	3*	4*	383657	283103	135666	
21040119.D								
	LOD 5	5*	5*	5*	386802	283322	135211	
21040120.D								
	LOD 5	5*	5*	5*	378839	278202	131053	
21040121.D								

	LOD 5	5*	5*	5*	363060	264400	125234
21040122.D							
	LOD 5	5*	5*	5*	369327	262662	120261
21040123.D							
	LOQ 10	10*	10*	9*	369799	260349	117811
21040124.D							
	LOQ 10	11*	10*	10*	376121	265747	131064
21040125.D							
	LOQ 10	10*	10*	10*	376021	281112	135705
21040126.D							
	LOQ 10	10*	10*	9*	368197	273247	130665

(fails) - fails 24hr time check * - fails criteria

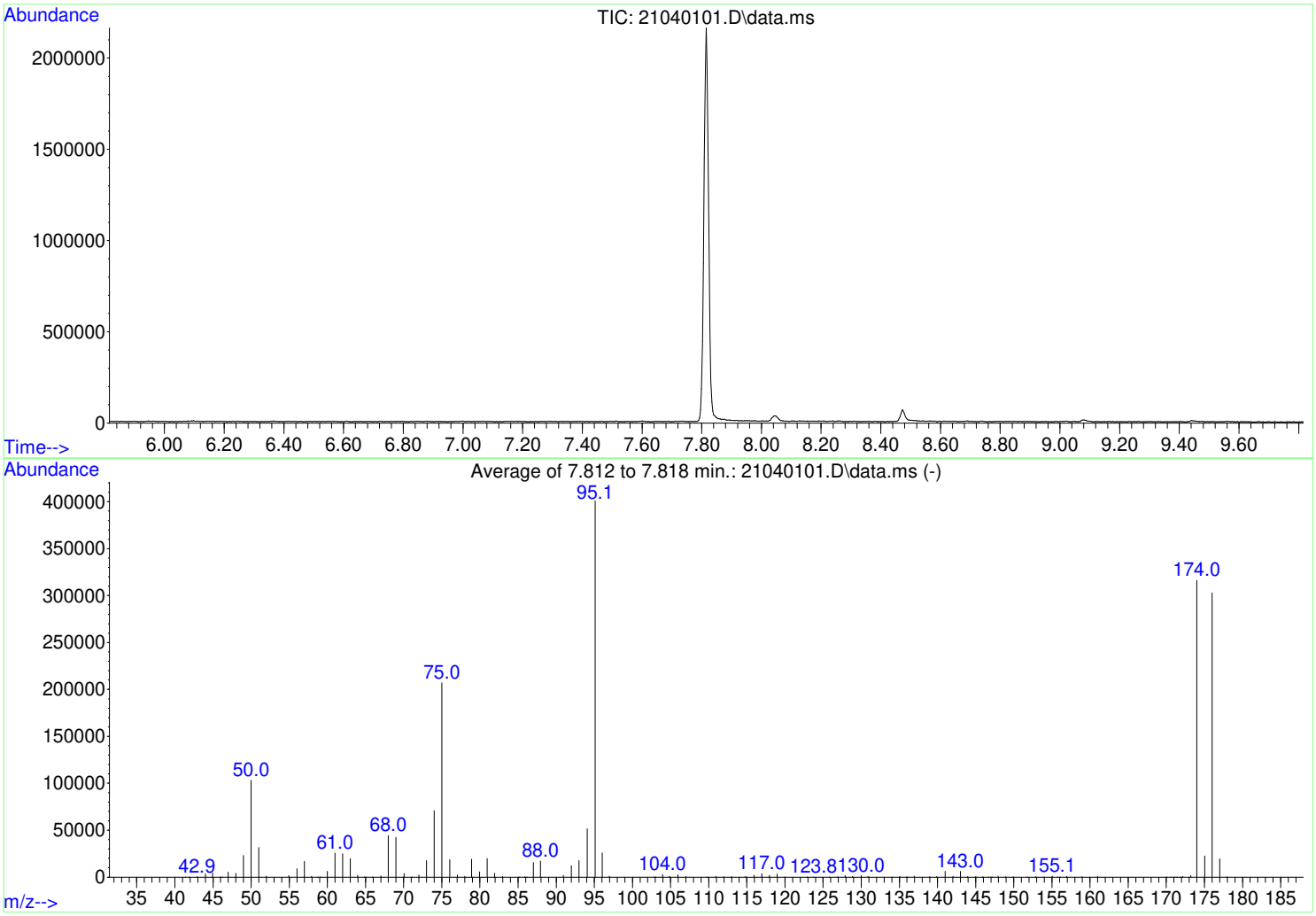
Created: Mon Apr 05 13:01:03 2021 C-System

BFB

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040101.D
Acq On : 01 Apr 2021 10:11 am
Operator : KAI
Sample : bfb
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: ALI9.P

Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Title : SOURCE AREA VOA ANALYSIS
Last Update : Thu Apr 01 15:44:17 2021



AutoFind: Scans 2465, 2466, 2467; Background Corrected with Scan 2455

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	25.7	103075	PASS
75	95	30	60	51.6	207040	PASS
95	95	100	100	100.0	401045	PASS
96	95	5	9	6.4	25859	PASS
173	174	0.00	2	0.5	1525	PASS
174	95	50	200	78.9	316224	PASS
175	174	5	9	7.1	22421	PASS
176	174	95	101	95.8	302955	PASS
177	176	5	9	6.4	19499	PASS

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040103.D
Acq On : 01 Apr 2021 10:59 am
Operator : KAI
Sample : SEQ-CAL1
Misc : _2.5
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 05 12:57:17 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	381167	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	283968	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	131938	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.561	65	6383	4.24	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 4.24%#				
19) Toluene-d8	5.240	98	13597	3.89	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 3.89%#				
31) Bromofluorobenzene	7.818	95	5764	4.16	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 4.16%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.258	62	3068	3.19	ng	#	93
3) 1,1-Dichloroethene	1.827	96	2400	2.60	ng		92
4) 1,1,2-Trichlorotrifluo...	1.827	101	2695	2.49	ng	#	29
5) trans-1,2-Dichloroethene	2.265	96	2832	2.70	ng		85
6) Methyl-t-butyl ether	2.259	73	8242	2.94	ng	#	53
7) 1,1-Dichloroethane	2.546	63	5465	2.64	ng	#	54
8) cis-1,2-Dichloroethene	2.933	96	3045	2.66	ng		97
9) Chloroform	3.195	85	3097	2.59	ng		92
11) 1,2-Dichloroethane	3.627	62	4787	2.49	ng	#	69
12) 1,1,1-Trichloroethane	3.308	97	4754	2.84	ng	#	76
13) Carbon Tetrachloride	3.416	117	4216	2.70	ng	#	80
14) Benzene	3.579	78	11437	2.92	ng	#	89
15) Trichloroethene	4.131	130	3880	3.03	ng		97
16) 1,4-Dioxane	4.424	88	2360	2.95	ng	#	73
17) 1,1,2-Trichloroethane	5.748	99	1652	2.64	ng	#	70
20) Toluene	5.294	92	3830	2.27	ng	#	92
21) 1,2-Dibromoethane (EDB)	6.195	107	2279	2.19	ng	#	66
22) Tetrachloroethene	5.789	131	2709	2.92	ng	#	90
23) 1,1,1,2-Tetrachloroethane	6.835	131	2787	2.77	ng	#	1
24) Chlorobenzene	6.724	112	7615	2.70	ng		98
25) Ethylbenzene	6.847	106	3434	2.41	ng		81
26) p & m-Xylene	6.983	106	4522	2.60	ng		96
27) 1,1,2,2-Tetrachloroethane	7.969	83	4631	2.75	ng		98
28) o-Xylene	7.342	106	3994	2.37	ng		87
29) 1,2,3-Trichloropropane	8.001	75	3917	2.70	ng		99
30) Isopropylbenzene	7.673	105	11539	2.61	ng		95
33) 1,3,5-Trimethylbenzene	8.190	120	4270	2.40	ng		98
34) 1,2,4-Trimethylbenzene	8.486	120	3872	2.43	ng		94
35) 1,3-Dichlorobenzene	8.681	146	4967	2.41	ng		99
36) 1,4-Dichlorobenzene	8.760	146	5645	2.68	ng	#	80
37) 1,2-Dichlorobenzene	9.025	146	5748	2.89	ng		89
38) 1,2,4-Trichlorobenzene	10.147	180	2731	1.98	ng		95
39) Naphthalene	10.311	128	9295	2.08	ng	#	83
40) 1,2,3-Trichlorobenzene	10.440	180	3205	2.24	ng		95
41) 2-Methylnaphthalene	10.976	142	4580	1.73	ng		95
42) TPH C4-C9	4.810	TIC	4753050m	953.10	ng		
43) TPH C10-C15	9.810	TIC	2985857m	492.69	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040103.D
Acq On : 01 Apr 2021 10:59 am
Operator : KAI
Sample : SEQ-CAL1
Misc : _2.5
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 05 12:57:17 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

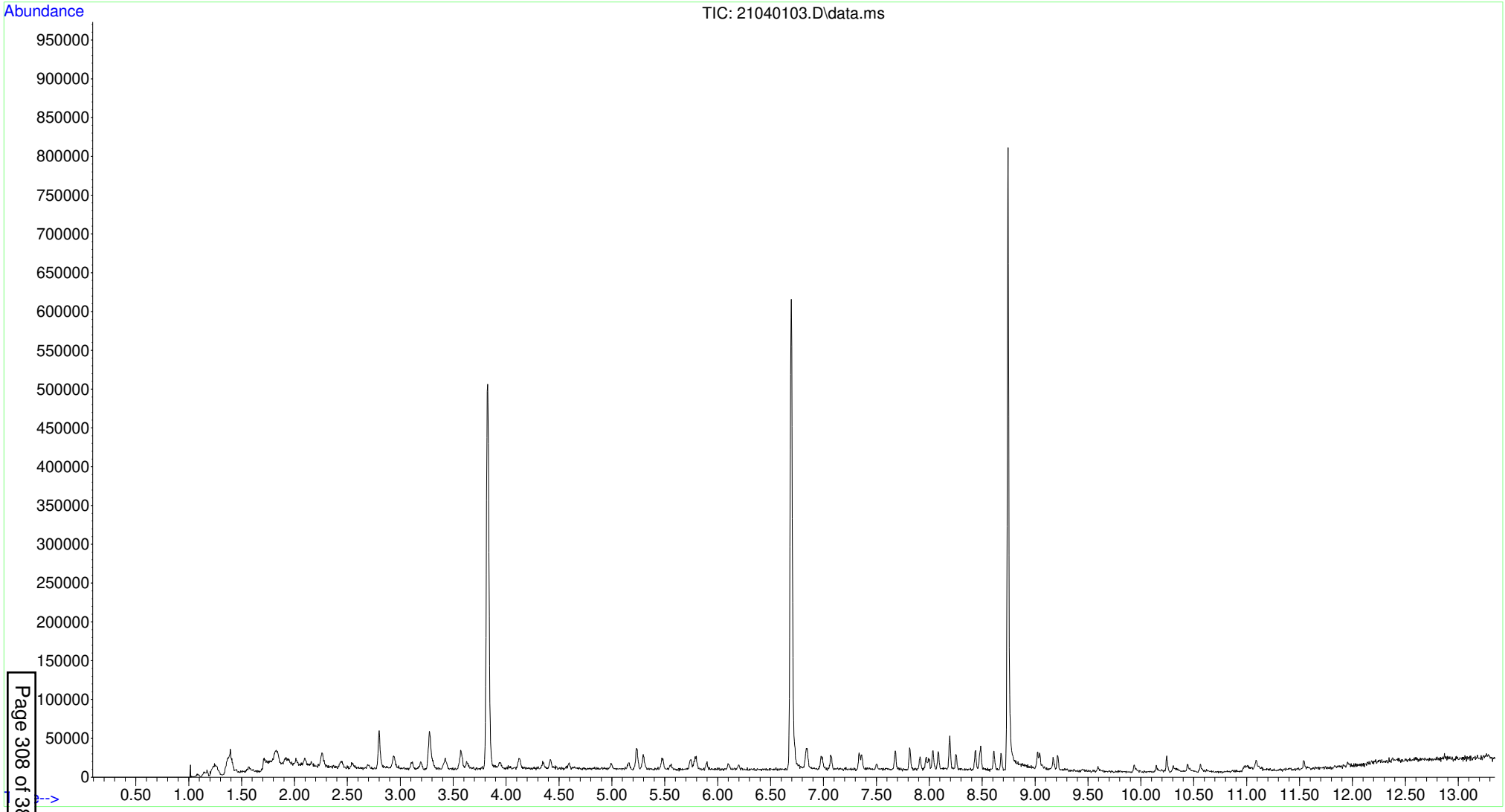
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040103.D
Acq On : 01 Apr 2021 10:59 am
Operator : KAI
Sample : SEQ-CAL1
Misc : _2.5
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 05 12:57:17 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040104.D
Acq On : 01 Apr 2021 11:23 am
Operator : KAI
Sample : SEQ-CAL2
Misc : _5
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 05 12:57:21 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	386949	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	291553	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	138538	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.564	65	8137	5.32	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.32%#				
19) Toluene-d8	5.234	98	18028	5.02	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.02%#				
31) Bromofluorobenzene	7.815	95	7798	5.48	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.48%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.267	62	4940	5.07	ng	#	92
3) 1,1-Dichloroethene	1.821	96	4533	4.84	ng		95
4) 1,1,2-Trichlorotrifluo...	1.830	101	5129	4.68	ng	#	65
5) trans-1,2-Dichloroethene	2.265	96	5579	5.24	ng		98
6) Methyl-t-butyl ether	2.253	73	15262	5.36	ng		98
7) 1,1-Dichloroethane	2.546	63	10629	5.06	ng		94
8) cis-1,2-Dichloroethene	2.940	96	5816	5.00	ng		97
9) Chloroform	3.198	85	6297	5.19	ng		99
11) 1,2-Dichloroethane	3.630	62	9623	4.93	ng		96
12) 1,1,1-Trichloroethane	3.302	97	8492	5.00	ng		88
13) Carbon Tetrachloride	3.425	117	7637	4.83	ng		96
14) Benzene	3.576	78	23673	5.94	ng		96
15) Trichloroethene	4.131	130	7581	5.84	ng	#	88
16) 1,4-Dioxane	4.424	88	3949	4.87	ng		91
17) 1,1,2-Trichloroethane	5.744	99	3082	4.84	ng		96
20) Toluene	5.297	92	7614	4.40	ng	#	87
21) 1,2-Dibromoethane (EDB)	6.201	107	5390	5.04	ng		93
22) Tetrachloroethene	5.792	131	4912	5.16	ng	#	94
23) 1,1,1,2-Tetrachloroethane	6.832	131	4933	4.78	ng	#	40
24) Chlorobenzene	6.724	112	15125	5.22	ng		97
25) Ethylbenzene	6.847	106	7340	5.01	ng		96
26) p & m-Xylene	6.983	106	8980	5.03	ng		99
27) 1,1,2,2-Tetrachloroethane	7.969	83	8909	5.16	ng	#	97
28) o-Xylene	7.342	106	8878	5.13	ng		96
29) 1,2,3-Trichloropropane	7.998	75	7354	4.93	ng	#	86
30) Isopropylbenzene	7.682	105	21424	4.72	ng		91
33) 1,3,5-Trimethylbenzene	8.196	120	9177	4.92	ng		99
34) 1,2,4-Trimethylbenzene	8.486	120	8017	4.78	ng		92
35) 1,3-Dichlorobenzene	8.678	146	11054	5.12	ng		94
36) 1,4-Dichlorobenzene	8.760	146	10961	4.96	ng		86
37) 1,2-Dichlorobenzene	9.025	146	10737	5.14	ng		99
38) 1,2,4-Trichlorobenzene	10.144	180	6118	4.23	ng		97
39) Naphthalene	10.304	128	19392	4.14	ng	#	96
40) 1,2,3-Trichlorobenzene	10.440	180	6608	4.40	ng		91
41) 2-Methylnaphthalene	10.976	142	11521	4.15	ng	#	85
42) TPH C4-C9	4.810	TIC	5582768m	1066.15	ng		
43) TPH C10-C15	9.810	TIC	3476089m	546.26	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040104.D
Acq On : 01 Apr 2021 11:23 am
Operator : KAI
Sample : SEQ-CAL2
Misc : _5
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 05 12:57:21 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

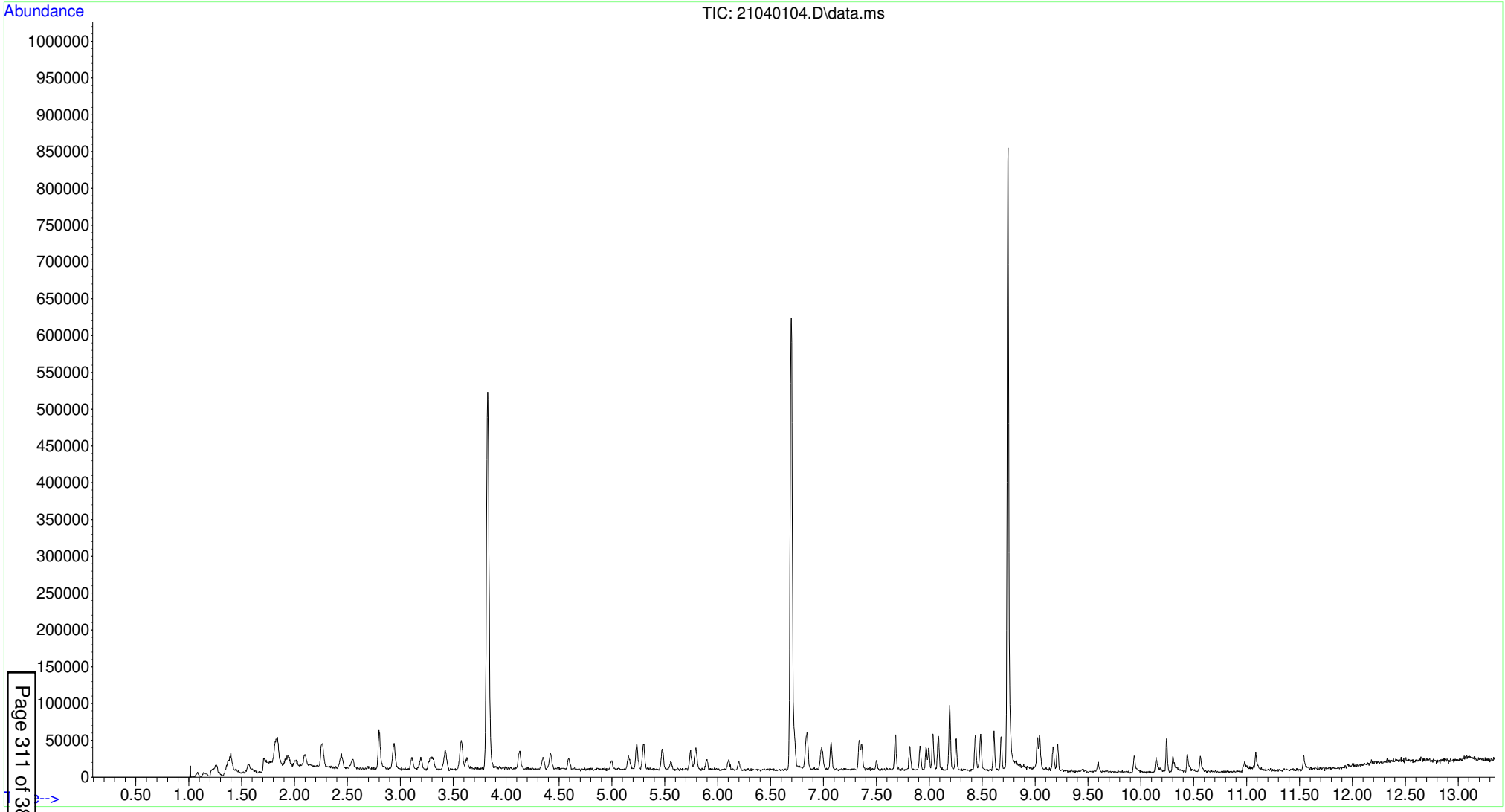
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040104.D
Acq On : 01 Apr 2021 11:23 am
Operator : KAI
Sample : SEQ-CAL2
Misc : _5
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 05 12:57:21 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040105.D
Acq On : 01 Apr 2021 11:48 am
Operator : KAI
Sample : SEQ-CAL3
Misc : _10
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Apr 05 12:57:25 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	380864	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	287949	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	136848	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.564	65	15202	10.10	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 10.10%#				
19) Toluene-d8	5.234	98	34272	9.67	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 9.67%#				
31) Bromofluorobenzene	7.818	95	13368	9.51	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 9.51%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.262	62	9970	10.39	ng	#	93
3) 1,1-Dichloroethene	1.824	96	10109	10.97	ng		92
4) 1,1,2-Trichlorotrifluo...	1.821	101	11365	10.53	ng		94
5) trans-1,2-Dichloroethene	2.269	96	10417	9.95	ng		97
6) Methyl-t-butyl ether	2.256	73	27880	9.95	ng		97
7) 1,1-Dichloroethane	2.543	63	20937	10.13	ng		98
8) cis-1,2-Dichloroethene	2.940	96	11786	10.29	ng		98
9) Chloroform	3.195	85	12477	10.45	ng		94
11) 1,2-Dichloroethane	3.627	62	20144	10.48	ng	#	78
12) 1,1,1-Trichloroethane	3.305	97	16640	9.96	ng		92
13) Carbon Tetrachloride	3.419	117	14454	9.28	ng		96
14) Benzene	3.576	78	41428	10.57	ng		98
15) Trichloroethene	4.128	130	12551	9.82	ng		99
16) 1,4-Dioxane	4.421	88	6825	8.55	ng		99
17) 1,1,2-Trichloroethane	5.745	99	6104	9.75	ng		95
20) Toluene	5.297	92	18448	10.80	ng	#	91
21) 1,2-Dibromoethane (EDB)	6.202	107	10506	9.94	ng		94
22) Tetrachloroethene	5.795	131	9261	9.86	ng		93
23) 1,1,1,2-Tetrachloroethane	6.832	131	9689	9.51	ng	#	62
24) Chlorobenzene	6.725	112	28544	9.98	ng		94
25) Ethylbenzene	6.848	106	14740	10.18	ng		90
26) p & m-Xylene	6.983	106	17043	9.67	ng		98
27) 1,1,2,2-Tetrachloroethane	7.966	83	17035	9.98	ng		98
28) o-Xylene	7.339	106	16762	9.81	ng		97
29) 1,2,3-Trichloropropane	7.998	75	14438	9.80	ng		93
30) Isopropylbenzene	7.680	105	45074	10.05	ng		99
33) 1,3,5-Trimethylbenzene	8.193	120	19244	10.44	ng		93
34) 1,2,4-Trimethylbenzene	8.486	120	16434	9.93	ng		97
35) 1,3-Dichlorobenzene	8.682	146	21390	10.02	ng		99
36) 1,4-Dichlorobenzene	8.760	146	23109	10.60	ng		99
37) 1,2-Dichlorobenzene	9.025	146	19748	9.58	ng		94
38) 1,2,4-Trichlorobenzene	10.147	180	12800	8.96	ng		98
39) Naphthalene	10.305	128	41705	9.01	ng	#	97
40) 1,2,3-Trichlorobenzene	10.437	180	14505	9.78	ng		92
41) 2-Methylnaphthalene	10.966	142	22895	8.35	ng		99
42) TPH C4-C9	4.810	TIC	6345995m	1226.87	ng		
43) TPH C10-C15	9.810	TIC	4503981m	716.53	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040105.D
Acq On : 01 Apr 2021 11:48 am
Operator : KAI
Sample : SEQ-CAL3
Misc : _10
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Apr 05 12:57:25 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

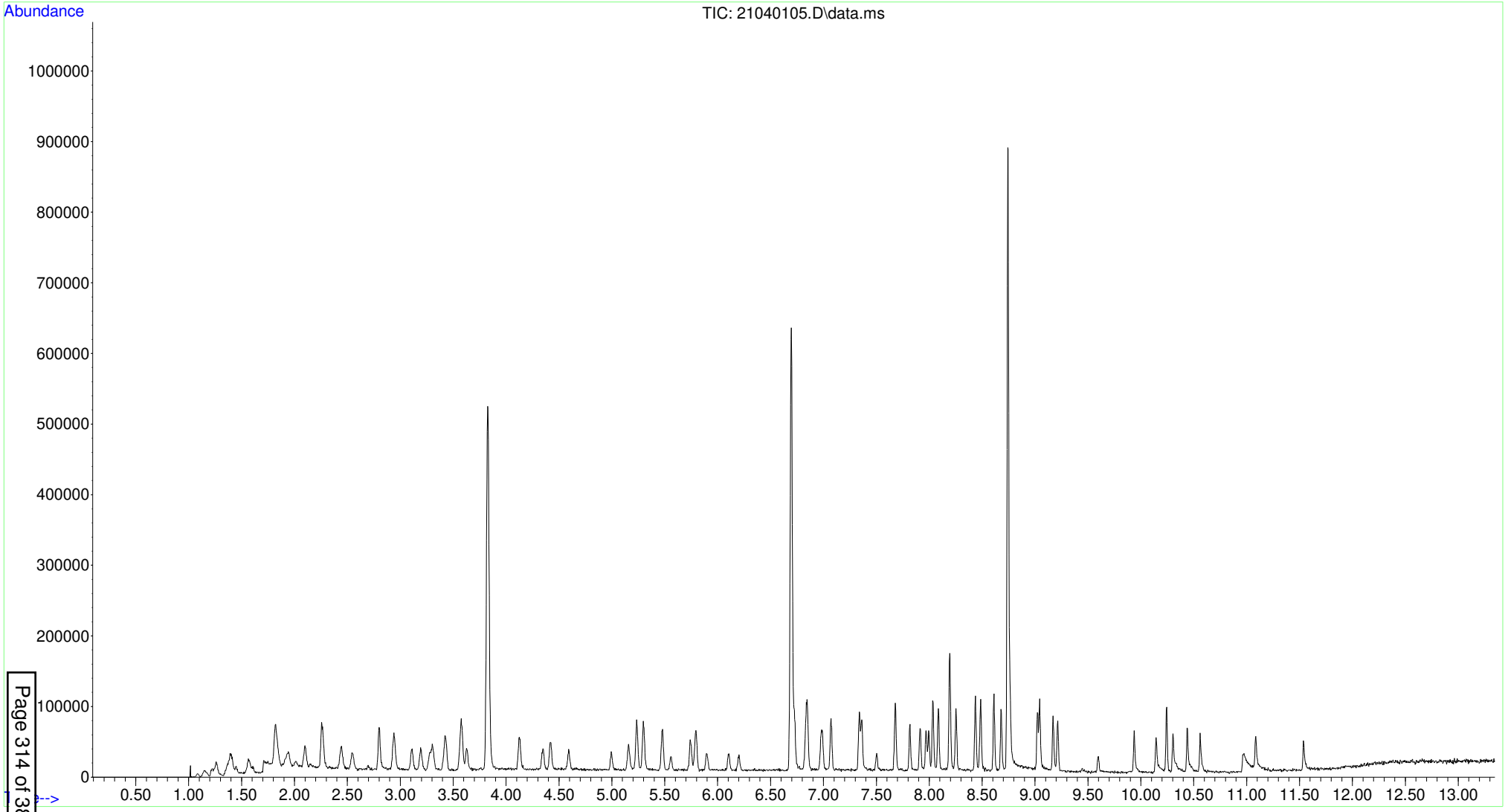
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040105.D
Acq On : 01 Apr 2021 11:48 am
Operator : KAI
Sample : SEQ-CAL3
Misc : _10
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Apr 05 12:57:25 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040106.D
Acq On : 01 Apr 2021 12:12 pm
Operator : KAI
Sample : SEQ-CAL4
Misc : _25
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Apr 05 12:57:29 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	377214	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	282871	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	141954	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	37493	25.14	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 25.14%#				
19) Toluene-d8	5.234	98	85232	24.48	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 24.48%#				
31) Bromofluorobenzene	7.818	95	31251	22.64	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 22.64%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.264	62	21741	22.88	ng		99
3) 1,1-Dichloroethene	1.818	96	23447	25.68	ng		100
4) 1,1,2-Trichlorotrifluo...	1.821	101	25919	24.25	ng		88
5) trans-1,2-Dichloroethene	2.265	96	26352	25.41	ng		97
6) Methyl-t-butyl ether	2.259	73	68528	24.69	ng		99
7) 1,1-Dichloroethane	2.546	63	50491	24.67	ng		100
8) cis-1,2-Dichloroethene	2.943	96	27591	24.33	ng		94
9) Chloroform	3.189	85	30192	25.53	ng		95
11) 1,2-Dichloroethane	3.627	62	48996	25.73	ng		99
12) 1,1,1-Trichloroethane	3.308	97	41312	24.97	ng		95
13) Carbon Tetrachloride	3.419	117	39315	25.49	ng		98
14) Benzene	3.579	78	98967	25.49	ng		99
15) Trichloroethene	4.128	130	30488	24.09	ng		96
16) 1,4-Dioxane	4.418	88	19055	24.10	ng		97
17) 1,1,2-Trichloroethane	5.744	99	16319	26.31	ng		100
20) Toluene	5.297	92	43094	25.69	ng		98
21) 1,2-Dibromoethane (EDB)	6.198	107	26345	25.38	ng		98
22) Tetrachloroethene	5.795	131	23201	25.14	ng	#	93
23) 1,1,1,2-Tetrachloroethane	6.835	131	25459	25.43	ng		99
24) Chlorobenzene	6.721	112	71611	25.48	ng		96
25) Ethylbenzene	6.847	106	36225	25.48	ng		100
26) p & m-Xylene	6.989	106	42486	24.53	ng		98
27) 1,1,2,2-Tetrachloroethane	7.972	83	42509	25.36	ng		99
28) o-Xylene	7.339	106	42451	25.29	ng		96
29) 1,2,3-Trichloropropane	7.994	75	36430	25.18	ng		95
30) Isopropylbenzene	7.679	105	109966	24.95	ng		99
33) 1,3,5-Trimethylbenzene	8.196	120	46229	24.19	ng		97
34) 1,2,4-Trimethylbenzene	8.489	120	43344	25.24	ng		99
35) 1,3-Dichlorobenzene	8.681	146	54261	24.51	ng		99
36) 1,4-Dichlorobenzene	8.763	146	57671	25.49	ng		95
37) 1,2-Dichlorobenzene	9.022	146	51315	24.00	ng		97
38) 1,2,4-Trichlorobenzene	10.144	180	36018	24.29	ng		98
39) Naphthalene	10.301	128	116772	24.31	ng		98
40) 1,2,3-Trichlorobenzene	10.440	180	39586	25.73	ng		96
41) 2-Methylnaphthalene	10.966	142	65111	22.88	ng		100
42) TPH C4-C9	4.810	TIC	9586956m	1786.77	ng		
43) TPH C10-C15	9.810	TIC	8074828m	1238.40	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040106.D
Acq On : 01 Apr 2021 12:12 pm
Operator : KAI
Sample : SEQ-CAL4
Misc : _25
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Apr 05 12:57:29 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

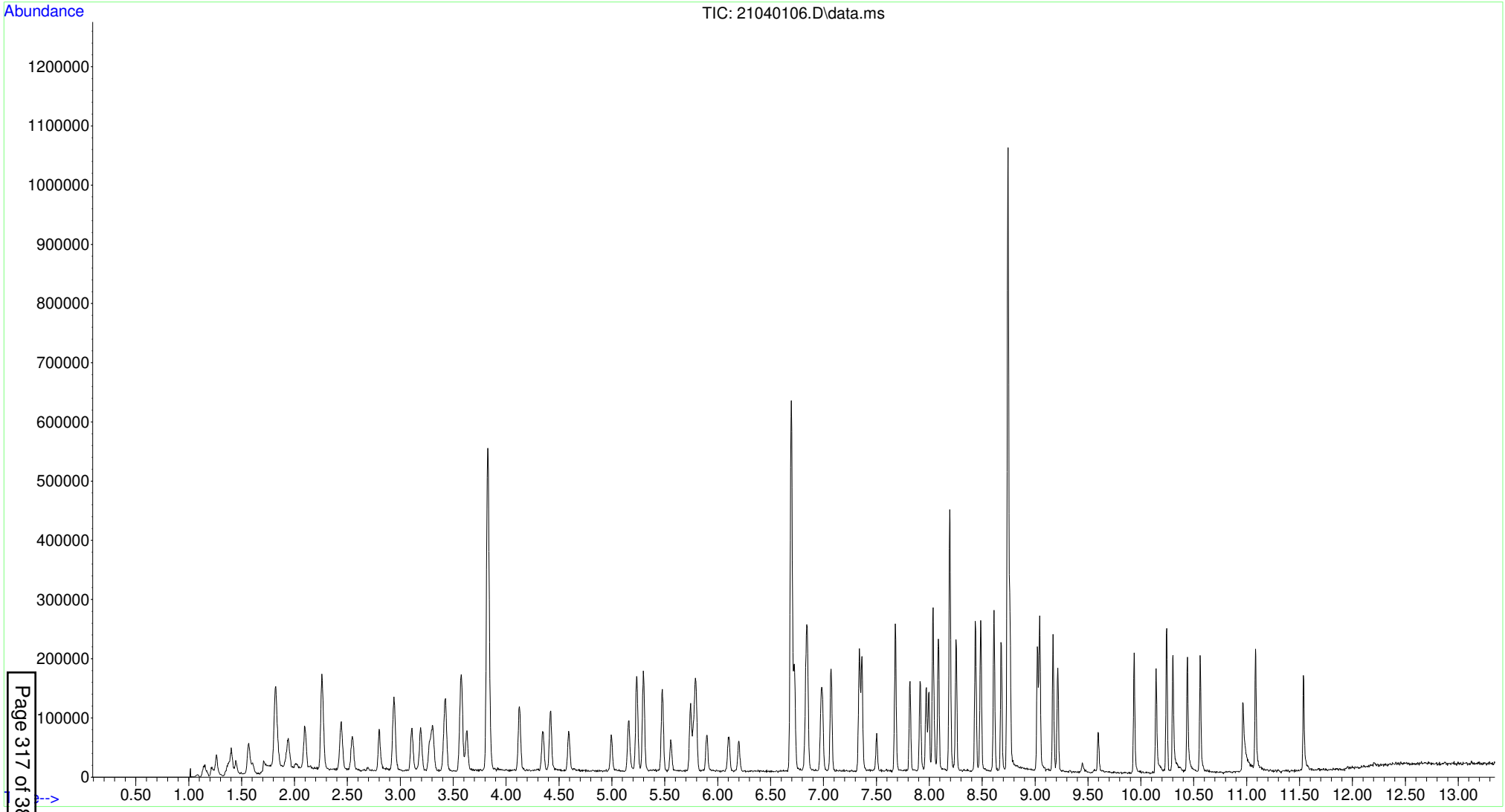
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040106.D
Acq On : 01 Apr 2021 12:12 pm
Operator : KAI
Sample : SEQ-CAL4
Misc : _25
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Apr 05 12:57:29 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



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Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040107.D
Acq On : 01 Apr 2021 12:36 pm
Operator : KAI
Sample : SEQ-CAL5
Misc : _50
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Apr 05 12:57:34 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.825	96	385568	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	285496	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	137059	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	71574	46.96	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 46.96%#			
19) Toluene-d8	5.234	98	174243	49.59	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 49.59%#			
31) Bromofluorobenzene	7.815	95	63507	45.58	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 45.58%#			
Target Compounds						Qvalue
2) Vinyl Chloride	1.262	62	44018	45.31	ng	100
3) 1,1-Dichloroethene	1.821	96	42048	45.05	ng	100
4) 1,1,2-Trichlorotrifluo...	1.824	101	55305	50.61	ng	100
5) trans-1,2-Dichloroethene	2.262	96	51010	48.12	ng	100
6) Methyl-t-butyl ether	2.259	73	136189	48.00	ng	100
7) 1,1-Dichloroethane	2.546	63	100202	47.89	ng	100
8) cis-1,2-Dichloroethene	2.943	96	57324	49.46	ng	100
9) Chloroform	3.195	85	58196	48.14	ng	100
11) 1,2-Dichloroethane	3.627	62	96519	49.58	ng	100
12) 1,1,1-Trichloroethane	3.309	97	79874	47.24	ng	100
13) Carbon Tetrachloride	3.419	117	74899	47.51	ng	100
14) Benzene	3.580	78	199846	50.36	ng	100
15) Trichloroethene	4.125	130	62208	48.09	ng	100
16) 1,4-Dioxane	4.421	88	39750	49.18	ng	100
17) 1,1,2-Trichloroethane	5.745	99	31089	49.03	ng	100
20) Toluene	5.297	92	90805	53.63	ng	100
21) 1,2-Dibromoethane (EDB)	6.198	107	51038	48.73	ng	100
22) Tetrachloroethene	5.795	131	47544	51.05	ng	100
23) 1,1,1,2-Tetrachloroethane	6.835	131	50247	49.72	ng	100
24) Chlorobenzene	6.725	112	147216	51.90	ng	100
25) Ethylbenzene	6.848	106	74894	52.18	ng	100
26) p & m-Xylene	6.983	106	85663	49.01	ng	100
27) 1,1,2,2-Tetrachloroethane	7.969	83	82780	48.94	ng	100
28) o-Xylene	7.339	106	87756	51.80	ng	100
29) 1,2,3-Trichloropropane	7.995	75	72457	49.63	ng	100
30) Isopropylbenzene	7.680	105	229399	51.56	ng	100
33) 1,3,5-Trimethylbenzene	8.196	120	98012	53.11	ng	100
34) 1,2,4-Trimethylbenzene	8.486	120	87486	52.76	ng	100
35) 1,3-Dichlorobenzene	8.679	146	114152	53.41	ng	100
36) 1,4-Dichlorobenzene	8.760	146	111432	51.02	ng	100
37) 1,2-Dichlorobenzene	9.022	146	108139	52.38	ng	100
38) 1,2,4-Trichlorobenzene	10.144	180	72241	50.47	ng	100
39) Naphthalene	10.301	128	234232	50.51	ng	100
40) 1,2,3-Trichlorobenzene	10.437	180	75822	51.03	ng	100
41) 2-Methylnaphthalene	10.963	142	130961	47.66	ng	100
42) TPH C4-C9	4.810	TIC	15202381m	2934.54	ng	
43) TPH C10-C15	9.810	TIC	13481403m	2141.43	ng	

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040107.D
Acq On : 01 Apr 2021 12:36 pm
Operator : KAI
Sample : SEQ-CAL5
Misc : _50
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Apr 05 12:57:34 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

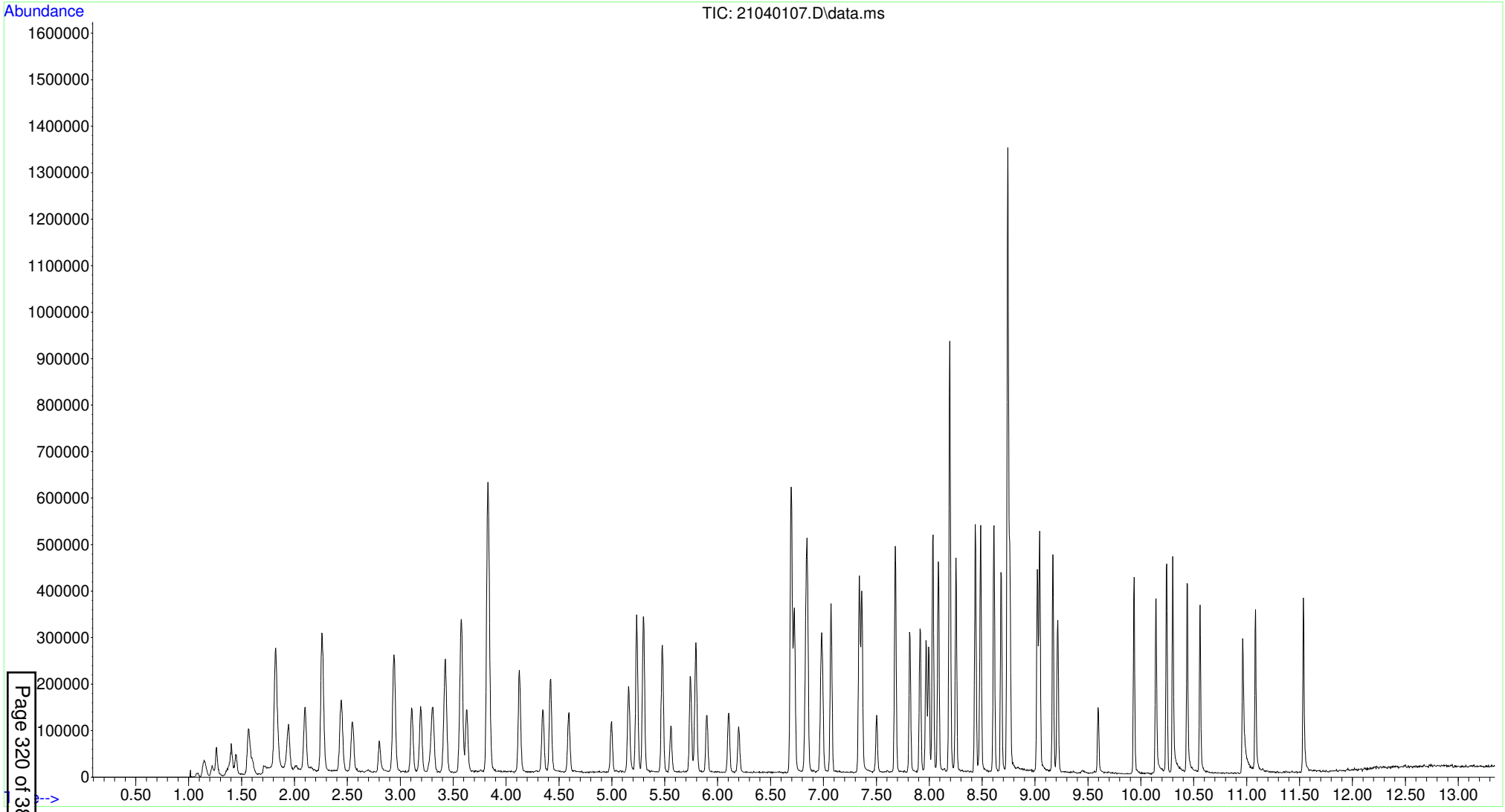
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040107.D
Acq On : 01 Apr 2021 12:36 pm
Operator : KAI
Sample : SEQ-CAL5
Misc : _50
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Apr 05 12:57:34 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040108.D
Acq On : 01 Apr 2021 01:00 pm
Operator : KAI
Sample : SEQ-CAL6
Misc : _100
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Apr 05 12:57:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.829	96	372672	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	280405	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	145406	100.00	ng	0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	144755	98.25	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 98.25%			
19) Toluene-d8	5.234	98	349494	101.27	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 101.27%			
31) Bromofluorobenzene	7.818	95	133504	97.55	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 97.55%			
Target Compounds						Qvalue
2) Vinyl Chloride	1.265	62	90355	96.23	ng	98
3) 1,1-Dichloroethene	1.821	96	85328	94.59	ng	94
4) 1,1,2-Trichlorotrifluo...	1.824	101	103837	98.32	ng	98
5) trans-1,2-Dichloroethene	2.262	96	99237	96.86	ng	100
6) Methyl-t-butyl ether	2.259	73	264239	96.36	ng	98
7) 1,1-Dichloroethane	2.549	63	204374	101.07	ng	98
8) cis-1,2-Dichloroethene	2.943	96	109992	98.19	ng	95
9) Chloroform	3.192	85	120142	102.82	ng	96
11) 1,2-Dichloroethane	3.627	62	192948	102.55	ng	100
12) 1,1,1-Trichloroethane	3.305	97	162240	99.27	ng	99
13) Carbon Tetrachloride	3.422	117	154787	101.57	ng	96
14) Benzene	3.580	78	377384	98.38	ng	99
15) Trichloroethene	4.128	130	119318	95.44	ng	97
16) 1,4-Dioxane	4.418	88	77437	99.13	ng	97
17) 1,1,2-Trichloroethane	5.745	99	63815	104.13	ng	100
20) Toluene	5.300	92	179044	107.66	ng	99
21) 1,2-Dibromoethane (EDB)	6.202	107	108444	105.41	ng	99
22) Tetrachloroethene	5.792	131	92297	100.89	ng	99
23) 1,1,1,2-Tetrachloroethane	6.832	131	102501	103.28	ng	99
24) Chlorobenzene	6.725	112	287899	103.34	ng	99
25) Ethylbenzene	6.848	106	151875	107.75	ng	99
26) p & m-Xylene	6.986	106	181452	105.70	ng	100
27) 1,1,2,2-Tetrachloroethane	7.969	83	172183	103.64	ng	99
28) o-Xylene	7.342	106	179157	107.67	ng	99
29) 1,2,3-Trichloropropane	7.995	75	148414	103.49	ng	96
30) Isopropylbenzene	7.680	105	470466	107.67	ng	100
33) 1,3,5-Trimethylbenzene	8.196	120	203575	103.97	ng	99
34) 1,2,4-Trimethylbenzene	8.486	120	188130	106.94	ng	98
35) 1,3-Dichlorobenzene	8.679	146	232053	102.33	ng	98
36) 1,4-Dichlorobenzene	8.764	146	231902	100.07	ng	98
37) 1,2-Dichlorobenzene	9.022	146	218427	99.72	ng	100
38) 1,2,4-Trichlorobenzene	10.144	180	161866	106.58	ng	98
39) Naphthalene	10.301	128	547334	111.25	ng	99
40) 1,2,3-Trichlorobenzene	10.437	180	163439	103.69	ng	100
41) 2-Methylnaphthalene	10.963	142	328855	112.81	ng	99
42) TPH C4-C9	4.810	TIC 26563786m		4833.30	ng	
43) TPH C10-C15	9.810	TIC 26639416m		3988.59	ng	

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040108.D
Acq On : 01 Apr 2021 01:00 pm
Operator : KAI
Sample : SEQ-CAL6
Misc : _100
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Apr 05 12:57:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

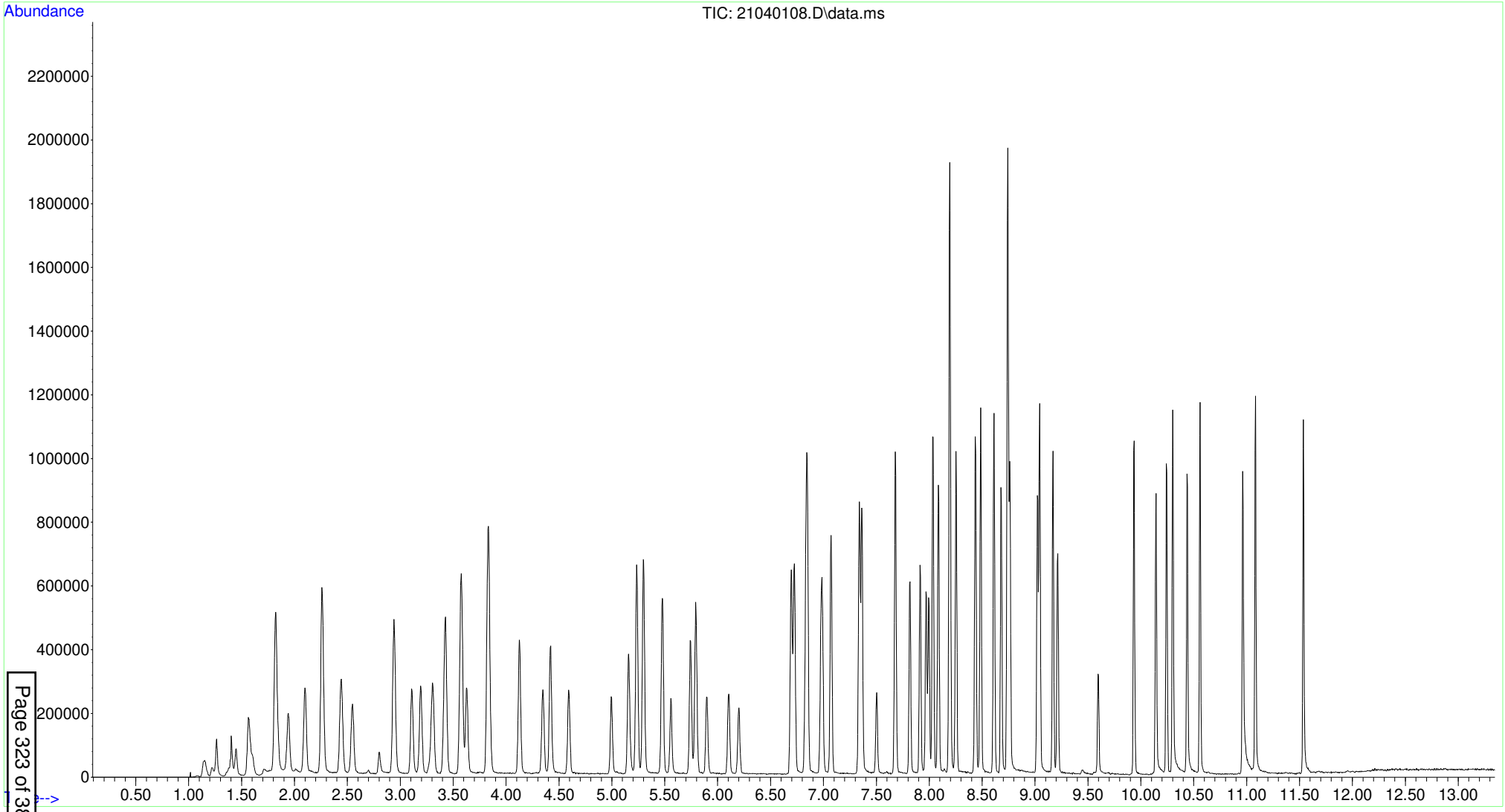
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040108.D
Acq On : 01 Apr 2021 01:00 pm
Operator : KAI
Sample : SEQ-CAL6
Misc : _100
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Apr 05 12:57:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040109.D
Acq On : 01 Apr 2021 01:25 pm
Operator : KAI
Sample : SEQ-CAL7
Misc : _200
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Apr 05 12:57:40 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Fluorobenzene	3.829	96	377730	100.00	ng	0.00
18) Chlorobenzene-d5	6.696	117	278939	100.00	ng	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	139490	100.00	ng	# 0.00
System Monitoring Compounds						
10) 1,2-DCA-d4	3.567	65	297166	199.00	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 199.00%#			
19) Toluene-d8	5.234	98	709415	206.64	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 206.64%#			
31) Bromofluorobenzene	7.815	95	264448	194.25	ng	0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 194.25%#			
Target Compounds						Qvalue
2) Vinyl Chloride	1.262	62	216544	227.55	ng	98
3) 1,1-Dichloroethene	1.821	96	186475	203.95	ng	96
4) 1,1,2-Trichlorotrifluo...	1.818	101	220720	206.19	ng	97
5) trans-1,2-Dichloroethene	2.262	96	215665	207.67	ng	98
6) Methyl-t-butyl ether	2.256	73	543881	195.68	ng	97
7) 1,1-Dichloroethane	2.546	63	422694	206.23	ng	99
8) cis-1,2-Dichloroethene	2.940	96	235523	207.43	ng	97
9) Chloroform	3.192	85	242498	204.76	ng	98
11) 1,2-Dichloroethane	3.627	62	394025	206.62	ng	99
12) 1,1,1-Trichloroethane	3.305	97	333964	201.60	ng	99
13) Carbon Tetrachloride	3.422	117	322426	208.75	ng	97
14) Benzene	3.580	78	776323	199.67	ng	100
15) Trichloroethene	4.125	130	247009	194.93	ng	98
16) 1,4-Dioxane	4.418	88	155557	196.47	ng	96
17) 1,1,2-Trichloroethane	5.741	99	125710	202.39	ng	100
20) Toluene	5.297	92	372825	225.35	ng	99
21) 1,2-Dibromoethane (EDB)	6.202	107	217414	212.44	ng	97
22) Tetrachloroethene	5.792	131	181537	199.49	ng	98
23) 1,1,1,2-Tetrachloroethane	6.832	131	202095	204.69	ng	96
24) Chlorobenzene	6.725	112	570149	205.73	ng	99
25) Ethylbenzene	6.848	106	307302	219.16	ng	100
26) p & m-Xylene	6.986	106	373953	218.98	ng	97
27) 1,1,2,2-Tetrachloroethane	7.973	83	338642	204.90	ng	99
28) o-Xylene	7.339	106	358348	216.50	ng	98
29) 1,2,3-Trichloropropane	7.995	75	296121	207.58	ng	97
30) Isopropylbenzene	7.680	105	948038	218.11	ng	100
33) 1,3,5-Trimethylbenzene	8.196	120	396070	210.87	ng	100
34) 1,2,4-Trimethylbenzene	8.486	120	364723	216.12	ng	98
35) 1,3-Dichlorobenzene	8.682	146	448916	206.36	ng	100
36) 1,4-Dichlorobenzene	8.760	146	451566	203.13	ng	99
37) 1,2-Dichlorobenzene	9.022	146	430565	204.90	ng	99
38) 1,2,4-Trichlorobenzene	10.144	180	329417	226.11	ng	100
39) Naphthalene	10.301	128	1104685	234.06	ng	99
40) 1,2,3-Trichlorobenzene	10.437	180	327259	216.43	ng	100
41) 2-Methylnaphthalene	10.963	142	681072	243.55	ng	99
42) TPH C4-C9	4.810	TIC	53458414m	10139.33	ng	
43) TPH C10-C15	9.810	TIC	49840120m	7778.80	ng	

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040109.D
Acq On : 01 Apr 2021 01:25 pm
Operator : KAI
Sample : SEQ-CAL7
Misc : _200
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Apr 05 12:57:40 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

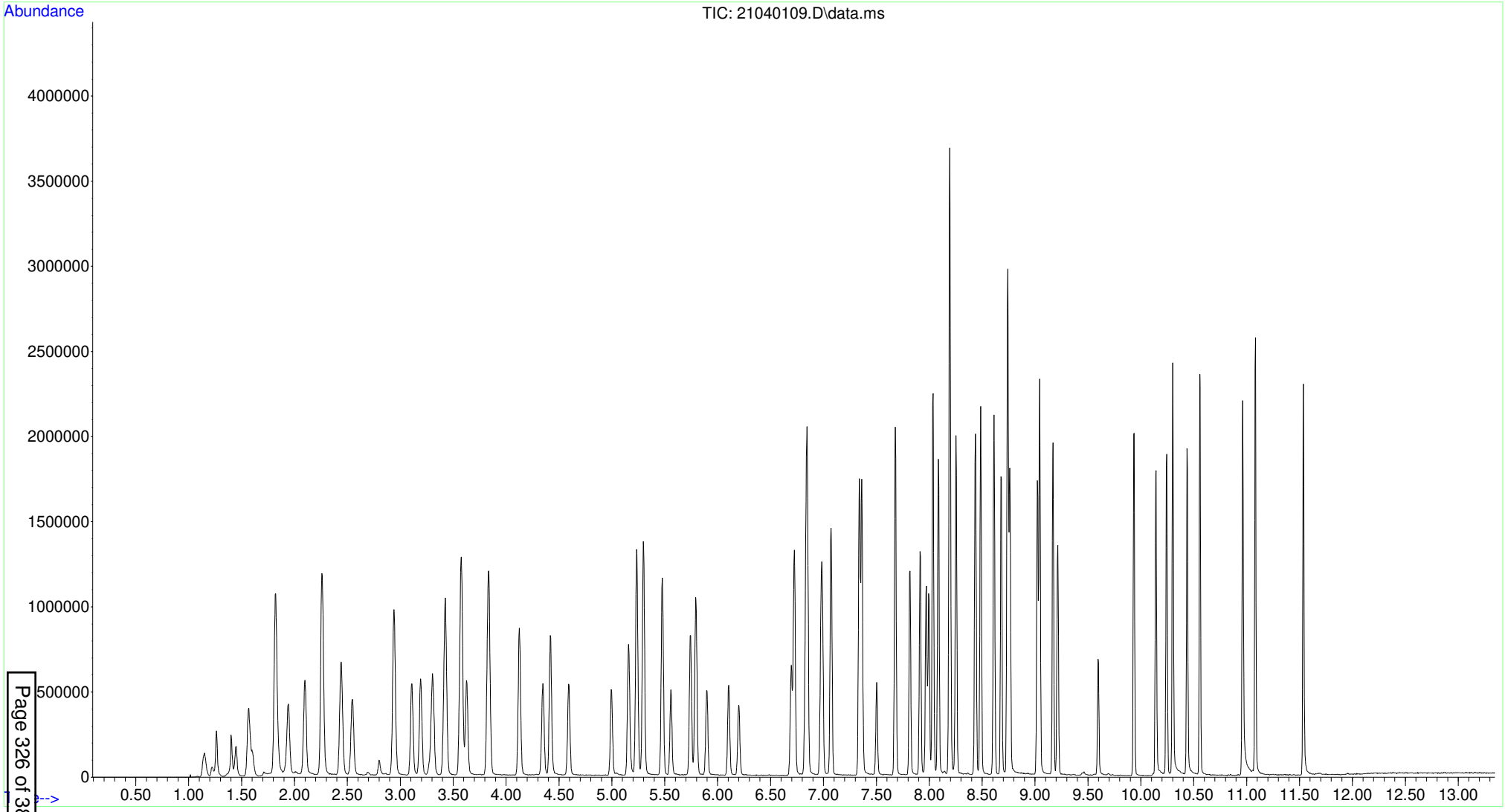
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040109.D
Acq On : 01 Apr 2021 01:25 pm
Operator : KAI
Sample : SEQ-CAL7
Misc : _200
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Apr 05 12:57:40 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040110.D
Acq On : 01 Apr 2021 01:49 pm
Operator : KAI
Sample : SEQ-CAL8
Misc : _400
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 05 12:57:44 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	380561	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	269239	100.00	ng	#	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	119883	100.00	ng	#	0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	577964	384.16	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 384.16%#				
19) Toluene-d8	5.234	98	1365523	412.08	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 412.08%#				
31) Bromofluorobenzene	7.818	95	466666	355.15	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 355.15%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.265	62	327420	341.50	ng		99
3) 1,1-Dichloroethene	1.821	96	381672	414.32	ng		98
4) 1,1,2-Trichlorotrifluo...	1.821	101	442565	410.36	ng		96
5) trans-1,2-Dichloroethene	2.266	96	408834	390.76	ng		99
6) Methyl-t-butyl ether	2.259	73	1097742	392.01	ng		97
7) 1,1-Dichloroethane	2.546	63	809775	392.15	ng		99
8) cis-1,2-Dichloroethene	2.943	96	448570	392.12	ng		98
9) Chloroform	3.192	85	455558	381.79	ng		99
11) 1,2-Dichloroethane	3.627	62	759093	395.09	ng		99
12) 1,1,1-Trichloroethane	3.305	97	649730	389.30	ng		99
13) Carbon Tetrachloride	3.422	117	591885	380.35	ng		97
14) Benzene	3.580	78	1504665	384.13	ng		99
15) Trichloroethene	4.125	130	507917	397.85	ng		97
16) 1,4-Dioxane	4.418	88	315399	395.39	ng		96
17) 1,1,2-Trichloroethane	5.741	99	236279	377.57	ng		99
20) Toluene	5.300	92	680194	425.96	ng		99
21) 1,2-Dibromoethane (EDB)	6.198	107	378708	383.38	ng		99
22) Tetrachloroethene	5.795	131	341441	388.72	ng		98
23) 1,1,1,2-Tetrachloroethane	6.835	131	359671	377.42	ng		95
24) Chlorobenzene	6.725	112	1051544	393.11	ng		99
25) Ethylbenzene	6.848	106	525070	387.95	ng		99
26) p & m-Xylene	6.986	106	635584	385.59	ng		100
27) 1,1,2,2-Tetrachloroethane	7.969	83	558921	350.37	ng		100
28) o-Xylene	7.339	106	611205	382.56	ng	#	96
29) 1,2,3-Trichloropropane	7.995	75	532581	386.79	ng		97
30) Isopropylbenzene	7.680	105	1576166	375.68	ng		100
33) 1,3,5-Trimethylbenzene	8.196	120	672155	416.38	ng		99
34) 1,2,4-Trimethylbenzene	8.486	120	582331	401.50	ng		97
35) 1,3-Dichlorobenzene	8.679	146	746584	399.33	ng		99
36) 1,4-Dichlorobenzene	8.760	146	741247	387.98	ng		99
37) 1,2-Dichlorobenzene	9.022	146	710076	393.19	ng		98
38) 1,2,4-Trichlorobenzene	10.141	180	520469	415.68	ng		99
39) Naphthalene	10.301	128	1722721	424.70	ng		99
40) 1,2,3-Trichlorobenzene	10.437	180	523692	402.98	ng		98
41) 2-Methylnaphthalene	10.963	142	1114148	463.58	ng		98
42) TPH C4-C9	4.810	TIC	58347193m	12876.52	ng		
43) TPH C10-C15	9.810	TIC	32232007m	5853.38	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040110.D
Acq On : 01 Apr 2021 01:49 pm
Operator : KAI
Sample : SEQ-CAL8
Misc : _400
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 05 12:57:44 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

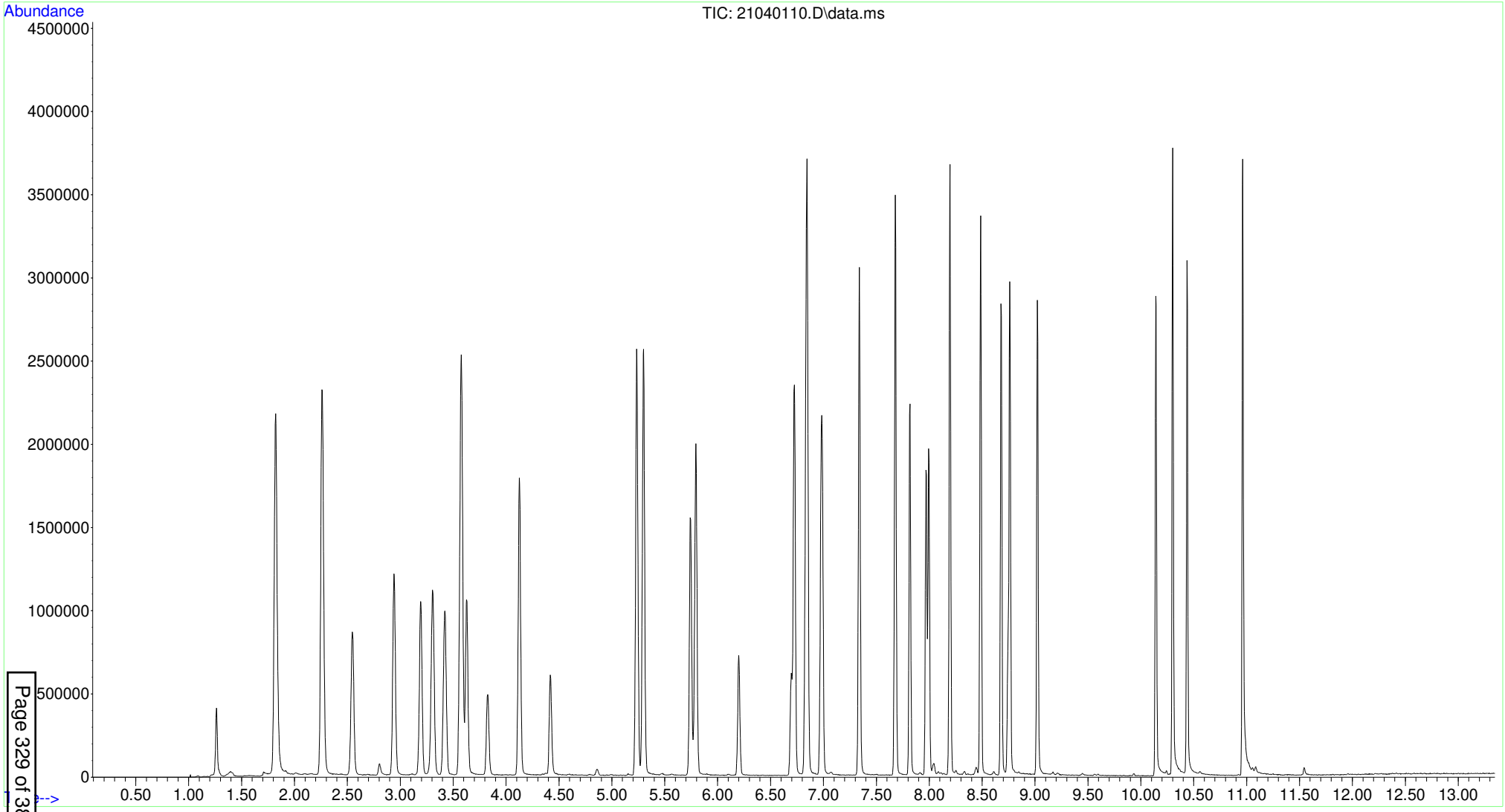
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040110.D
Acq On : 01 Apr 2021 01:49 pm
Operator : KAI
Sample : SEQ-CAL8
Misc : _400
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 05 12:57:44 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040111.D
Acq On : 01 Apr 2021 02:14 pm
Operator : KAI
Sample : SEQ-CAL9
Misc : _600
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 05 12:57:47 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.822	96	386448	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	291410	100.00	ng	#	0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	144709	100.00	ng	#	0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.564	65	882489	577.63	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 577.63%#				
19) Toluene-d8	5.234	98	2049778	571.51	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 571.51%#				
31) Bromofluorobenzene	7.815	95	798012	561.11	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 561.11%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.262	62	521590	535.73	ng		99
3) 1,1-Dichloroethene	1.821	96	551881	589.97	ng		98
4) 1,1,2-Trichlorotrifluo...	1.821	101	658163	600.97	ng		97
5) trans-1,2-Dichloroethene	2.262	96	623355	586.72	ng		100
6) Methyl-t-butyl ether	2.259	73	1636574	575.52	ng		98
7) 1,1-Dichloroethane	2.546	63	1230717	586.92	ng		99
8) cis-1,2-Dichloroethene	2.940	96	683442	588.33	ng		97
9) Chloroform	3.192	85	699025	576.91	ng		98
11) 1,2-Dichloroethane	3.627	62	1147070	587.93	ng		100
12) 1,1,1-Trichloroethane	3.309	97	990478	584.42	ng		99
13) Carbon Tetrachloride	3.422	117	944857	597.92	ng		96
14) Benzene	3.580	78	2166812	544.74	ng		99
15) Trichloroethene	4.125	130	719648	555.11	ng		98
16) 1,4-Dioxane	4.418	88	491294	606.52	ng		97
17) 1,1,2-Trichloroethane	5.745	99	373530	587.80	ng		99
20) Toluene	5.300	92	975233	564.25	ng		99
21) 1,2-Dibromoethane (EDB)	6.198	107	650191	608.14	ng		98
22) Tetrachloroethene	5.795	131	536660	564.49	ng		99
23) 1,1,1,2-Tetrachloroethane	6.832	131	617264	598.45	ng		96
24) Chlorobenzene	6.725	112	1652489	570.77	ng		99
25) Ethylbenzene	6.848	106	844408	576.43	ng		98
26) p & m-Xylene	6.983	106	1071179	600.42	ng		97
27) 1,1,2,2-Tetrachloroethane	7.969	83	1005368	582.28	ng		100
28) o-Xylene	7.339	106	1016700	587.95	ng	#	96
29) 1,2,3-Trichloropropane	7.995	75	885014	593.84	ng		98
30) Isopropylbenzene	7.680	105	2678673	589.89	ng		100
33) 1,3,5-Trimethylbenzene	8.196	120	1148224	589.27	ng		100
34) 1,2,4-Trimethylbenzene	8.486	120	1027576	586.93	ng		99
35) 1,3-Dichlorobenzene	8.682	146	1341782	594.56	ng		100
36) 1,4-Dichlorobenzene	8.764	146	1337940	580.16	ng		99
37) 1,2-Dichlorobenzene	9.022	146	1271980	583.50	ng		98
38) 1,2,4-Trichlorobenzene	10.144	180	987605	653.45	ng		99
39) Naphthalene	10.301	128	3183457	650.17	ng		100
40) 1,2,3-Trichlorobenzene	10.437	180	970334	618.57	ng		100
41) 2-Methylnaphthalene	10.960	142	2126004	732.83	ng		98
42) TPH C4-C9	4.810	TIC 88214990m		16128.09	ng		
43) TPH C10-C15	9.810	TIC 56623655m		8518.81	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040111.D
Acq On : 01 Apr 2021 02:14 pm
Operator : KAI
Sample : SEQ-CAL9
Misc : _600
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 05 12:57:47 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

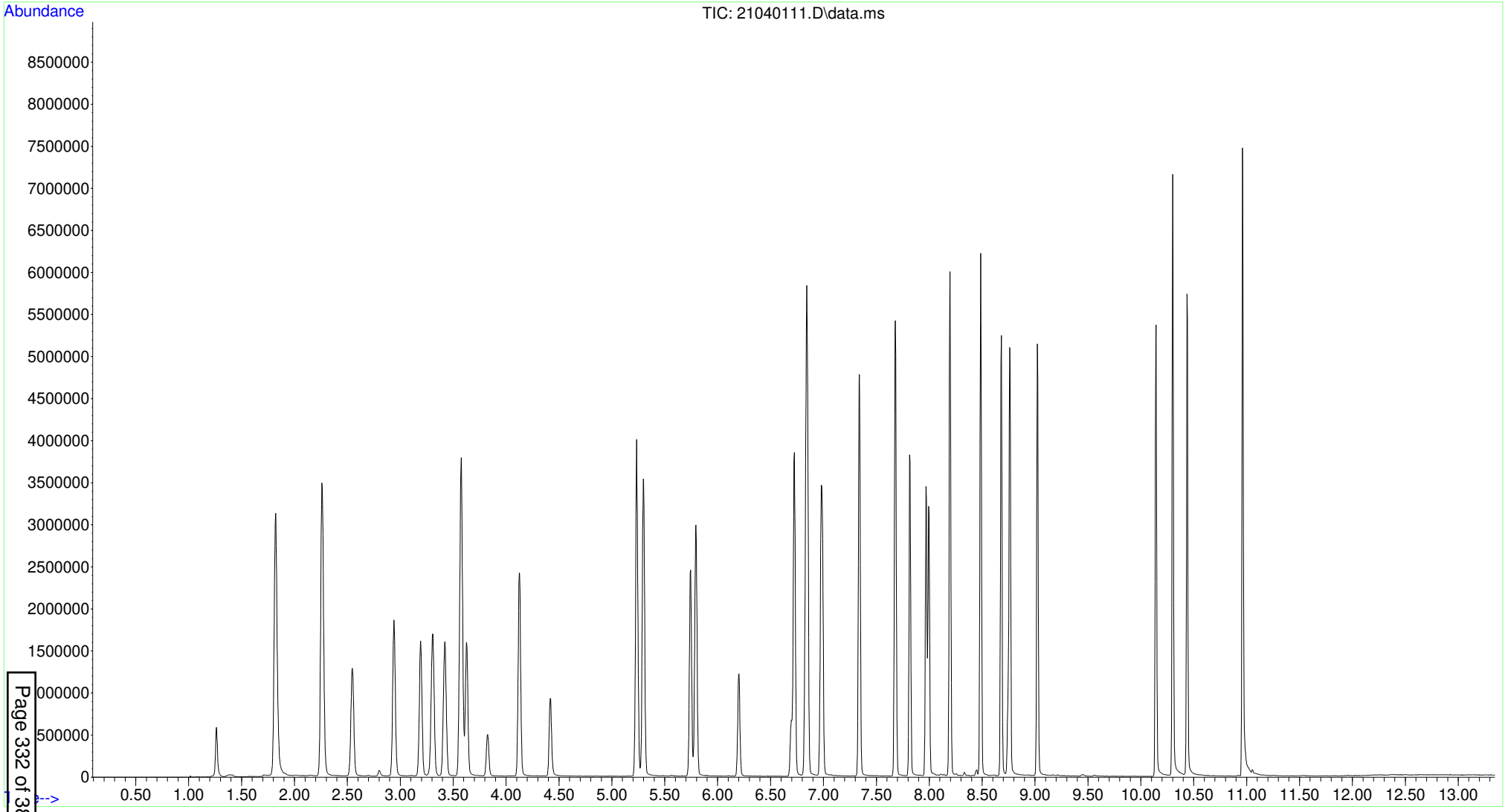
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040111.D
Acq On : 01 Apr 2021 02:14 pm
Operator : KAI
Sample : SEQ-CAL9
Misc : _600
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Apr 05 12:57:47 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040112.D
Acq On : 01 Apr 2021 02:38 pm
Operator : KAI
Sample : SEQ-CALA
Misc : _800
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 05 12:57:51 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	356889	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	274538	100.00	ng		# 0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	140267	100.00	ng		# 0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.570	65	1070351	758.63	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 758.63%#				
19) Toluene-d8	5.234	98	2480299	734.05	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 734.05%#				
31) Bromofluorobenzene	7.818	95	979273	730.87	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 730.87%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.264	62	807211	897.76	ng		99
3) 1,1-Dichloroethene	1.821	96	690066	798.79	ng		99
4) 1,1,2-Trichlorotrifluo...	1.824	101	818494	809.27	ng		96
5) trans-1,2-Dichloroethene	2.265	96	765990	780.68	ng		99
6) Methyl-t-butyl ether	2.262	73	2019940	769.17	ng		98
7) 1,1-Dichloroethane	2.549	63	1521700	785.80	ng		99
8) cis-1,2-Dichloroethene	2.943	96	834572	777.93	ng		96
9) Chloroform	3.195	85	859463	768.07	ng		98
11) 1,2-Dichloroethane	3.630	62	1418082	787.04	ng		99
12) 1,1,1-Trichloroethane	3.308	97	1236515	790.02	ng		99
13) Carbon Tetrachloride	3.425	117	1195390	819.12	ng		97
14) Benzene	3.579	78	2573547	700.58	ng		99
15) Trichloroethene	4.128	130	891274	744.44	ng		98
16) 1,4-Dioxane	4.418	88	618276	826.50	ng		96
17) 1,1,2-Trichloroethane	5.744	99	467298	796.27	ng		100
20) Toluene	5.300	92	1201393	737.82	ng	#	98
21) 1,2-Dibromoethane (EDB)	6.201	107	811462	805.62	ng		97
22) Tetrachloroethene	5.795	131	659267	736.07	ng		99
23) 1,1,1,2-Tetrachloroethane	6.835	131	761909	784.08	ng		95
24) Chlorobenzene	6.724	112	2001350	733.75	ng		99
25) Ethylbenzene	6.850	106	1027644	744.63	ng		98
26) p & m-Xylene	6.986	106	1294431	770.15	ng		97
27) 1,1,2,2-Tetrachloroethane	7.972	83	1267365	779.13	ng		100
28) o-Xylene	7.339	106	1246665	765.25	ng	#	96
29) 1,2,3-Trichloropropane	7.997	75	1086902	774.13	ng		98
30) Isopropylbenzene	7.679	105	3243239	758.12	ng		99
33) 1,3,5-Trimethylbenzene	8.196	120	1413184	748.21	ng		99
34) 1,2,4-Trimethylbenzene	8.486	120	1271419	749.21	ng		99
35) 1,3-Dichlorobenzene	8.681	146	1661305	759.45	ng		99
36) 1,4-Dichlorobenzene	8.763	146	1666086	745.32	ng		99
37) 1,2-Dichlorobenzene	9.022	146	1590344	752.65	ng		98
38) 1,2,4-Trichlorobenzene	10.144	180	1243497	848.81	ng		99
39) Naphthalene	10.301	128	3893615	820.39	ng		99
40) 1,2,3-Trichlorobenzene	10.440	180	1220587	802.74	ng		100
41) 2-Methylnaphthalene	10.963	142	2628829	934.85	ng		97
42) TPH C4-C9	4.810	TIC 106398710m		20068.60	ng		
43) TPH C10-C15	9.810	TIC 69536946m		10792.87	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040112.D
Acq On : 01 Apr 2021 02:38 pm
Operator : KAI
Sample : SEQ-CALA
Misc : _800
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 05 12:57:51 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

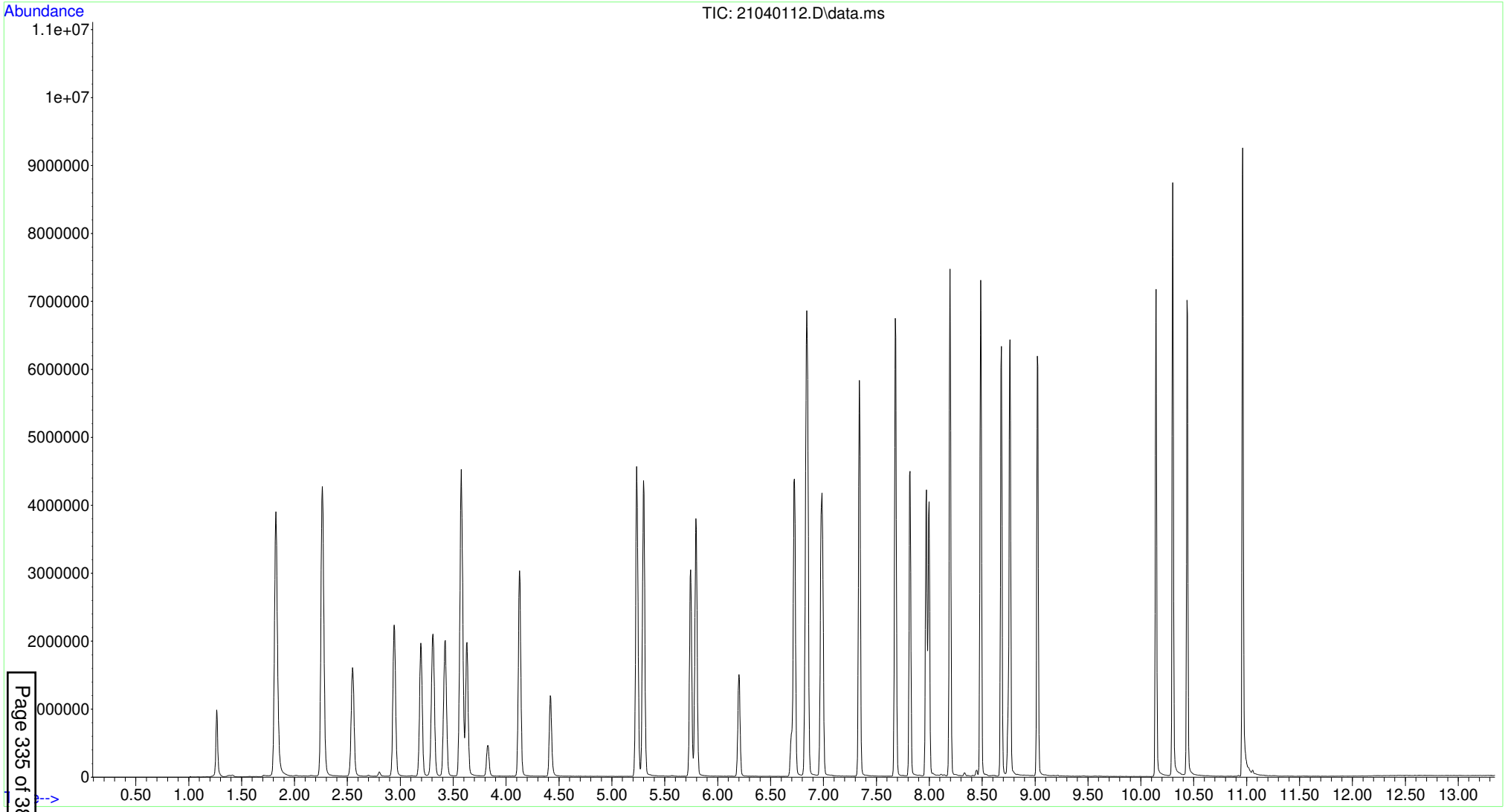
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040112.D
Acq On : 01 Apr 2021 02:38 pm
Operator : KAI
Sample : SEQ-CALA
Misc : _800
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 05 12:57:51 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040113.D
Acq On : 01 Apr 2021 03:02 pm
Operator : KAI
Sample : SEQ-CALB
Misc : _1000
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Apr 05 12:57:55 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	362407	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	274772	100.00	ng		# 0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	137702	100.00	ng		# 0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	1351792	943.51	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 943.51%#				
19) Toluene-d8	5.234	98	3065678	906.52	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 906.52%#				
31) Bromofluorobenzene	7.818	95	1213457	904.88	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 904.88%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.264	62	933696	1022.62	ng		99
3) 1,1-Dichloroethene	1.824	96	862956	983.71	ng		97
4) 1,1,2-Trichlorotrifluo...	1.824	101	1004695	978.25	ng		97
5) trans-1,2-Dichloroethene	2.262	96	955411	958.91	ng		99
6) Methyl-t-butyl ether	2.259	73	2580000	967.48	ng		98
7) 1,1-Dichloroethane	2.546	63	1947104	990.16	ng		99
8) cis-1,2-Dichloroethene	2.940	96	1081504	992.76	ng		97
9) Chloroform	3.195	85	1100597	968.59	ng		98
11) 1,2-Dichloroethane	3.627	62	1722446	941.40	ng		99
12) 1,1,1-Trichloroethane	3.308	97	1567531	986.26	ng		99
13) Carbon Tetrachloride	3.422	117	1517804	1024.21	ng		96
14) Benzene	3.579	78	3117023	835.61	ng		98
15) Trichloroethene	4.128	130	1131704	930.87	ng		97
16) 1,4-Dioxane	4.418	88	786935	1035.94	ng		97
17) 1,1,2-Trichloroethane	5.744	99	594180	997.06	ng		100
20) Toluene	5.300	92	1464499	898.64	ng		98
21) 1,2-Dibromoethane (EDB)	6.201	107	1045864	1037.46	ng		99
22) Tetrachloroethene	5.795	131	848022	946.01	ng		99
23) 1,1,1,2-Tetrachloroethane	6.835	131	967934	995.25	ng		95
24) Chlorobenzene	6.725	112	2477628	907.59	ng		98
25) Ethylbenzene	6.847	106	1271443	920.50	ng		96
26) p & m-Xylene	6.986	106	1590989	945.78	ng		98
27) 1,1,2,2-Tetrachloroethane	7.969	83	1619327	994.66	ng		100
28) o-Xylene	7.339	106	1540618	944.88	ng	#	96
29) 1,2,3-Trichloropropane	7.995	75	1345174	957.26	ng		98
30) Isopropylbenzene	7.679	105	4036609	942.76	ng		99
33) 1,3,5-Trimethylbenzene	8.196	120	1721455	928.41	ng		100
34) 1,2,4-Trimethylbenzene	8.486	120	1578273	947.35	ng		99
35) 1,3-Dichlorobenzene	8.682	146	2076020	966.71	ng		100
36) 1,4-Dichlorobenzene	8.763	146	2081756	948.62	ng		99
37) 1,2-Dichlorobenzene	9.022	146	1982972	955.94	ng		97
38) 1,2,4-Trichlorobenzene	10.144	180	1580986	1099.28	ng		99
39) Naphthalene	10.301	128	4672551	1002.85	ng		99
40) 1,2,3-Trichlorobenzene	10.437	180	1545396	1035.29	ng		99
41) 2-Methylnaphthalene	10.963	142	3214161	1164.30	ng		98
42) TPH C4-C9	4.810	TIC	133230245m	25597.57	ng		
43) TPH C10-C15	9.810	TIC	85954070m	13589.48	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040113.D
Acq On : 01 Apr 2021 03:02 pm
Operator : KAI
Sample : SEQ-CALB
Misc : _1000
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Apr 05 12:57:55 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

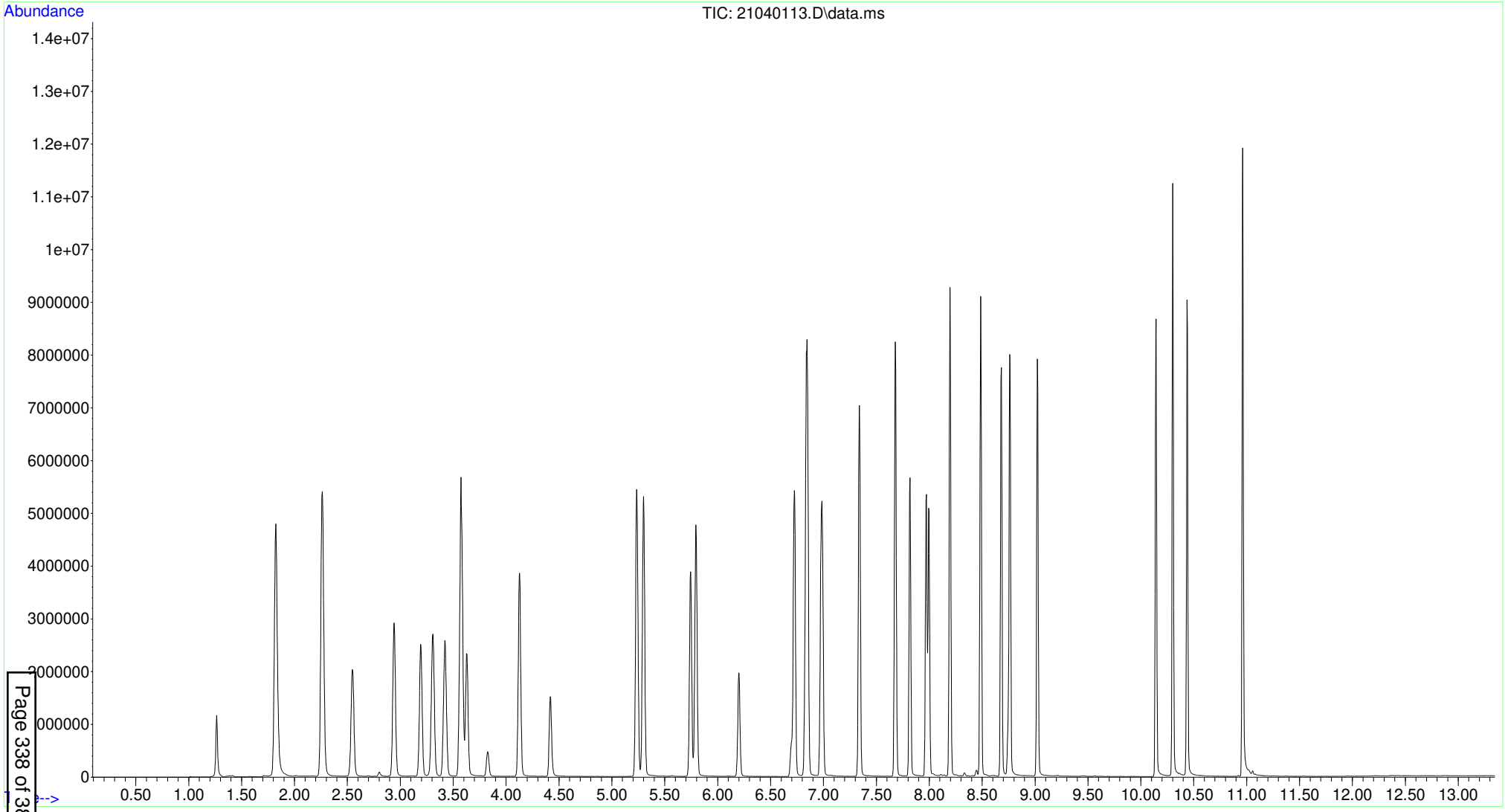
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040113.D
Acq On : 01 Apr 2021 03:02 pm
Operator : KAI
Sample : SEQ-CALB
Misc : _1000
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Apr 05 12:57:55 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



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Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040114.D
Acq On : 01 Apr 2021 03:26 pm
Operator : KAI
Sample : LB
Misc :
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Apr 05 12:57:59 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	355631	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	274241	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	132771	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	139846	99.47	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 99.47%				
19) Toluene-d8	5.234	98	333288	98.74	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 98.74%				
31) Bromofluorobenzene	7.815	95	128042	95.67	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 95.67%				
Target Compounds							Qvalue
2) Vinyl Chloride	1.271	62	1432	1.60	ng	#	91
3) 1,1-Dichloroethene	1.834	96	199	0.23	ng	#	17
4) 1,1,2-Trichlorotrifluo...	1.818	101	1041	1.03	ng	#	1
5) trans-1,2-Dichloroethene	2.269	96	530	0.54	ng	#	71
6) Methyl-t-butyl ether	2.259	73	3755	1.43	ng	#	16
7) 1,1-Dichloroethane	2.555	63	932	0.48	ng	#	67
8) cis-1,2-Dichloroethene	2.930	96	593	0.55	ng	#	60
9) Chloroform	3.189	85	570	0.51	ng	#	82
11) 1,2-Dichloroethane	3.636	62	1486	0.83	ng	#	52
12) 1,1,1-Trichloroethane	3.308	97	1955	1.25	ng	#	41
13) Carbon Tetrachloride	3.422	117	1685	1.16	ng	#	71
14) Benzene	3.583	78	5928	1.62	ng	#	80
15) Trichloroethene	4.125	130	1065	0.89	ng	#	16
16) 1,4-Dioxane	4.415	88	1196	1.60	ng	#	66
17) 1,1,2-Trichloroethane	5.744	99	887	1.52	ng		96
20) Toluene	5.297	92	2257	1.39	ng	#	92
21) 1,2-Dibromoethane (EDB)	6.205	107	1057	1.05	ng	#	77
22) Tetrachloroethene	5.795	131	1298	1.45	ng	#	82
23) 1,1,1,2-Tetrachloroethane	6.825	131	2164	2.23	ng	#	1
24) Chlorobenzene	6.721	112	5692	2.09	ng		100
25) Ethylbenzene	6.847	106	2694	1.95	ng	#	98
26) p & m-Xylene	6.980	106	4192	2.50	ng	#	83
27) 1,1,2,2-Tetrachloroethane	7.972	83	4367	2.69	ng		93
28) o-Xylene	7.336	106	3739	2.30	ng		87
29) 1,2,3-Trichloropropane	7.995	75	3832	2.73	ng		98
30) Isopropylbenzene	7.683	105	10525	2.46	ng		96
33) 1,3,5-Trimethylbenzene	8.193	120	5284	2.96	ng		86
34) 1,2,4-Trimethylbenzene	8.486	120	5016	3.12	ng		99
35) 1,3-Dichlorobenzene	8.678	146	7751	3.74	ng		95
36) 1,4-Dichlorobenzene	8.763	146	9532	4.50	ng		100
37) 1,2-Dichlorobenzene	9.022	146	8718	4.36	ng		99
38) 1,2,4-Trichlorobenzene	10.144	180	15528	11.20	ng		99
39) Naphthalene	10.304	128	78476	17.47	ng	#	97
40) 1,2,3-Trichlorobenzene	10.437	180	23637	16.42	ng		98
41) 2-Methylnaphthalene	10.963	142	82840	31.12	ng		98
42) TPH C4-C9	4.810	TIC	5519598m	1099.87	ng		
43) TPH C10-C15	9.810	TIC	3586164m	588.04	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040114.D
Acq On : 01 Apr 2021 03:26 pm
Operator : KAI
Sample : LB
Misc :
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Apr 05 12:57:59 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

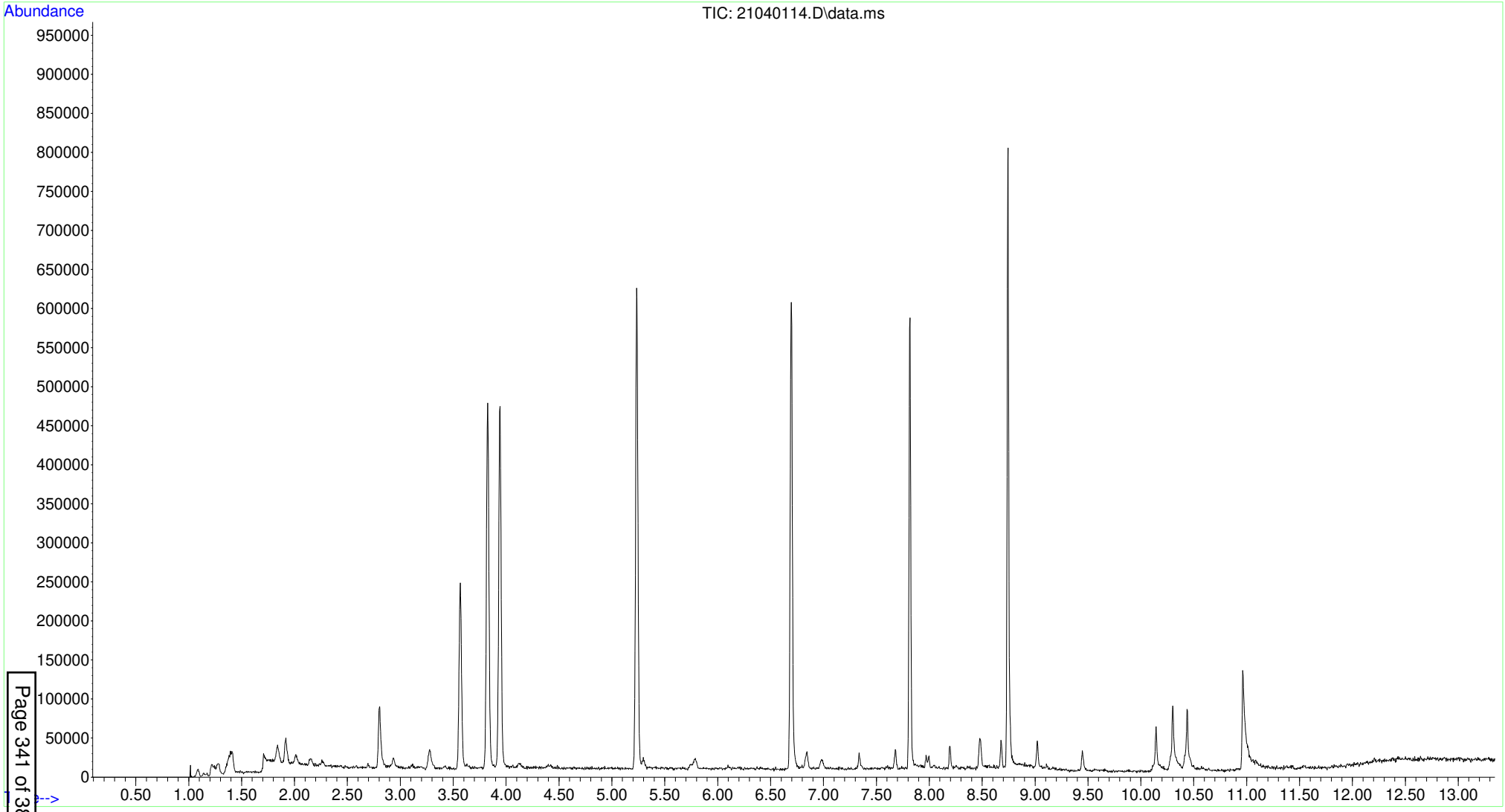
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040114.D
Acq On : 01 Apr 2021 03:26 pm
Operator : KAI
Sample : LB
Misc :
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Apr 05 12:57:59 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040115.D
Acq On : 01 Apr 2021 03:51 pm
Operator : KAI
Sample : LB
Misc :
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Apr 05 12:58:03 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

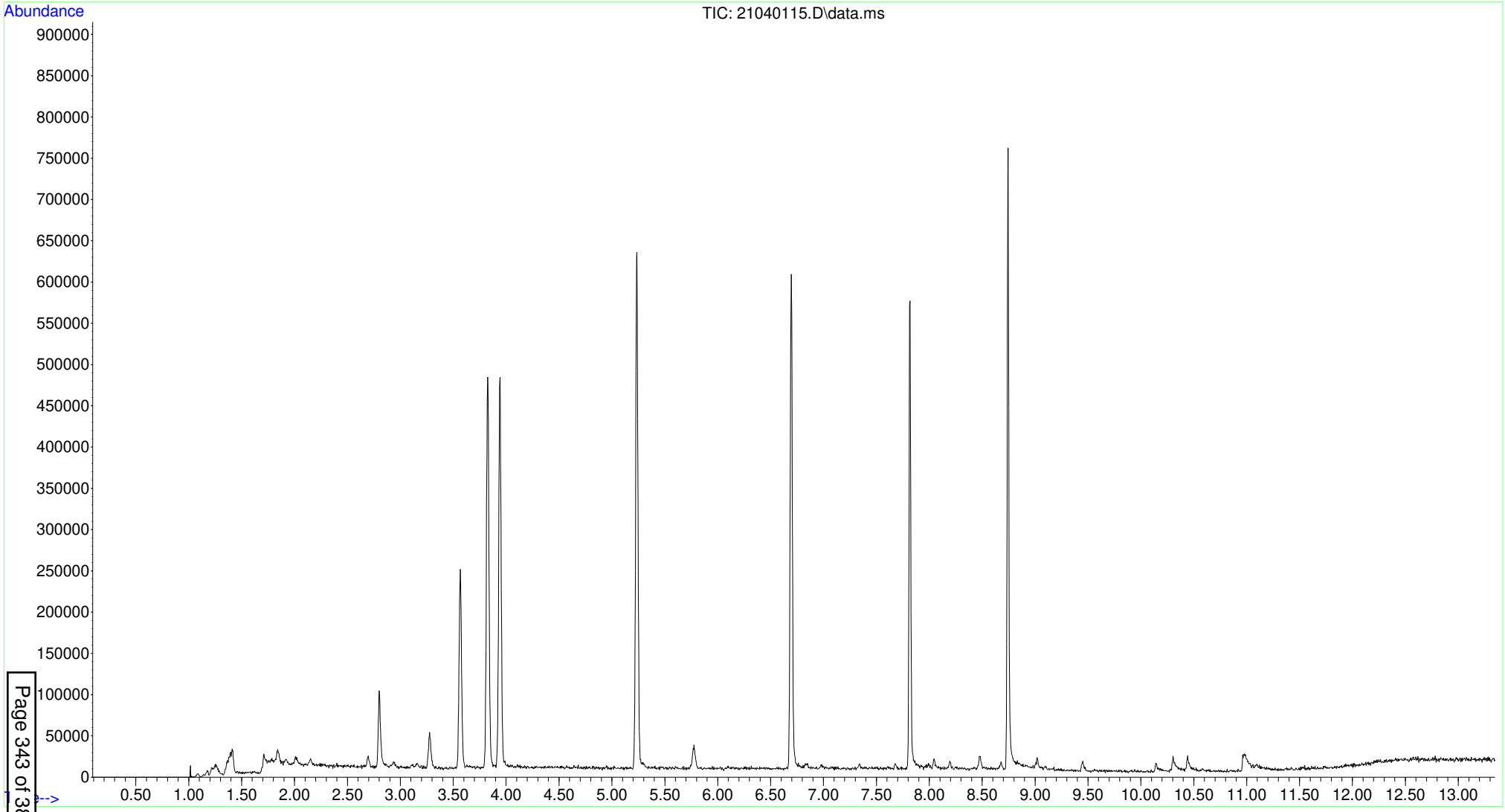
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.828	96	359238	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	272710	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	128988	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	143797	101.25	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 101.25%				
19) Toluene-d8	5.237	98	334943	99.79	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 99.79%				
31) Bromofluorobenzene	7.815	95	125143	94.03	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 94.03%				
Target Compounds							Qvalue
2) Vinyl Chloride	1.270	62	727	0.80	ng	#	84
4) 1,1,2-Trichlorotrifluo...	1.830	101	236	0.23	ng	#	1
6) Methyl-t-butyl ether	2.275	73	1829	0.69	ng	#	1
7) 1,1-Dichloroethane	2.542	63	158	0.08	ng	#	51
11) 1,2-Dichloroethane	3.630	62	189	0.10	ng	#	56
12) 1,1,1-Trichloroethane	3.308	97	147	0.09	ng	#	34
13) Carbon Tetrachloride	3.425	117	296	0.20	ng	#	20
14) Benzene	3.582	78	2869	0.78	ng	#	52
15) Trichloroethene	4.121	130	119	0.10	ng	#	44
16) 1,4-Dioxane	4.421	88	122	0.16	ng	#	4
20) Toluene	5.300	92	902	0.56	ng	#	91
22) Tetrachloroethene	5.788	131	535	0.60	ng	#	68
23) 1,1,1,2-Tetrachloroethane	6.828	131	445	0.46	ng	#	1
24) Chlorobenzene	6.727	112	1372	0.51	ng		94
25) Ethylbenzene	6.841	106	534	0.39	ng	#	28
26) p & m-Xylene	6.980	106	906	0.54	ng	#	79
27) 1,1,2,2-Tetrachloroethane	7.966	83	893	0.55	ng	#	40
28) o-Xylene	7.339	106	961	0.59	ng	#	74
29) 1,2,3-Trichloropropane	7.979	75	97	0.07	ng		99
30) Isopropylbenzene	7.676	105	3002	0.71	ng		99
33) 1,3,5-Trimethylbenzene	8.199	120	1658	0.95	ng	#	95
34) 1,2,4-Trimethylbenzene	8.483	120	1255	0.80	ng	#	83
35) 1,3-Dichlorobenzene	8.681	146	2495	1.24	ng		84
36) 1,4-Dichlorobenzene	8.760	146	3191	1.55	ng	#	81
37) 1,2-Dichlorobenzene	9.022	146	2143	1.10	ng	#	68
38) 1,2,4-Trichlorobenzene	10.143	180	3669	2.72	ng		91
39) Naphthalene	10.304	128	18700	4.28	ng	#	94
40) 1,2,3-Trichlorobenzene	10.437	180	5584	3.99	ng		97
41) 2-Methylnaphthalene	10.972	142	21730	8.40	ng		94
42) TPH C4-C9	4.810	TIC	5378567m	1103.20	ng		
43) TPH C10-C15	9.810	TIC	2484653m	419.37	ng		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040115.D
Acq On : 01 Apr 2021 03:51 pm
Operator : KAI
Sample : LB
Misc :
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Apr 05 12:58:03 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040116.D
Acq On : 01 Apr 2021 04:15 pm
Operator : KAI
Sample : SEQ-ICV1
Misc :
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 05 12:58:06 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	371984	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	277883	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	136626	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	75084	51.06	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 51.06%#				
19) Toluene-d8	5.234	98	181007	52.92	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 52.92%#				
31) Bromofluorobenzene	7.815	95	65592	48.36	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 48.36%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.264	62	57025	60.85	ng		99
3) 1,1-Dichloroethene	1.818	96	43570	48.39	ng		92
4) 1,1,2-Trichlorotrifluo...	1.821	101	56473	53.57	ng		100
5) trans-1,2-Dichloroethene	2.262	96	50809	49.68	ng		98
6) Methyl-t-butyl ether	2.256	73	137497	50.23	ng		97
7) 1,1-Dichloroethane	2.546	63	100378	49.73	ng		99
8) cis-1,2-Dichloroethene	2.937	96	55410	49.55	ng		95
9) Chloroform	3.192	85	58943	50.54	ng		99
11) 1,2-Dichloroethane	3.624	62	99830	53.16	ng	#	43
12) 1,1,1-Trichloroethane	3.305	97	80532	49.36	ng		99
13) Carbon Tetrachloride	3.419	117	74680	49.10	ng		95
14) Benzene	3.579	78	198409	51.82	ng		99
15) Trichloroethene	4.128	130	60027	48.10	ng		98
16) 1,4-Dioxane	4.421	88	40963	52.54	ng		98
17) 1,1,2-Trichloroethane	5.741	99	31678	51.79	ng		99
20) Toluene	5.300	92	92396	56.06	ng		98
21) 1,2-Dibromoethane (EDB)	6.198	107	52275	51.27	ng		97
22) Tetrachloroethene	5.792	131	47025	51.87	ng		99
23) 1,1,1,2-Tetrachloroethane	6.832	131	50312	51.15	ng		99
24) Chlorobenzene	6.724	112	147215	53.32	ng		100
25) Ethylbenzene	6.847	106	73697	52.76	ng		94
26) p & m-Xylene	6.986	106	91574	53.83	ng		92
27) 1,1,2,2-Tetrachloroethane	7.969	83	87846	53.35	ng		98
28) o-Xylene	7.342	106	88118	53.44	ng		93
29) 1,2,3-Trichloropropane	7.994	75	72166	50.78	ng		96
30) Isopropylbenzene	7.679	105	237706	54.90	ng		100
33) 1,3,5-Trimethylbenzene	8.196	120	100195	54.46	ng		99
34) 1,2,4-Trimethylbenzene	8.486	120	90163	54.55	ng		100
35) 1,3-Dichlorobenzene	8.678	146	116625	54.73	ng		100
36) 1,4-Dichlorobenzene	8.763	146	116652	53.57	ng		99
37) 1,2-Dichlorobenzene	9.022	146	110934	53.90	ng		99
38) 1,2,4-Trichlorobenzene	10.144	180	76258	53.44	ng		96
39) Naphthalene	10.304	128	259745	56.19	ng		98
40) 1,2,3-Trichlorobenzene	10.440	180	84684	57.18	ng		96
41) 2-Methylnaphthalene	10.963	142	161133	58.83	ng		98
42) TPH C4-C9	4.810	TIC	15212709m	2945.84	ng		
43) TPH C10-C15	9.810	TIC	14084493m	2244.32	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040116.D
Acq On : 01 Apr 2021 04:15 pm
Operator : KAI
Sample : SEQ-ICV1
Misc :
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 05 12:58:06 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

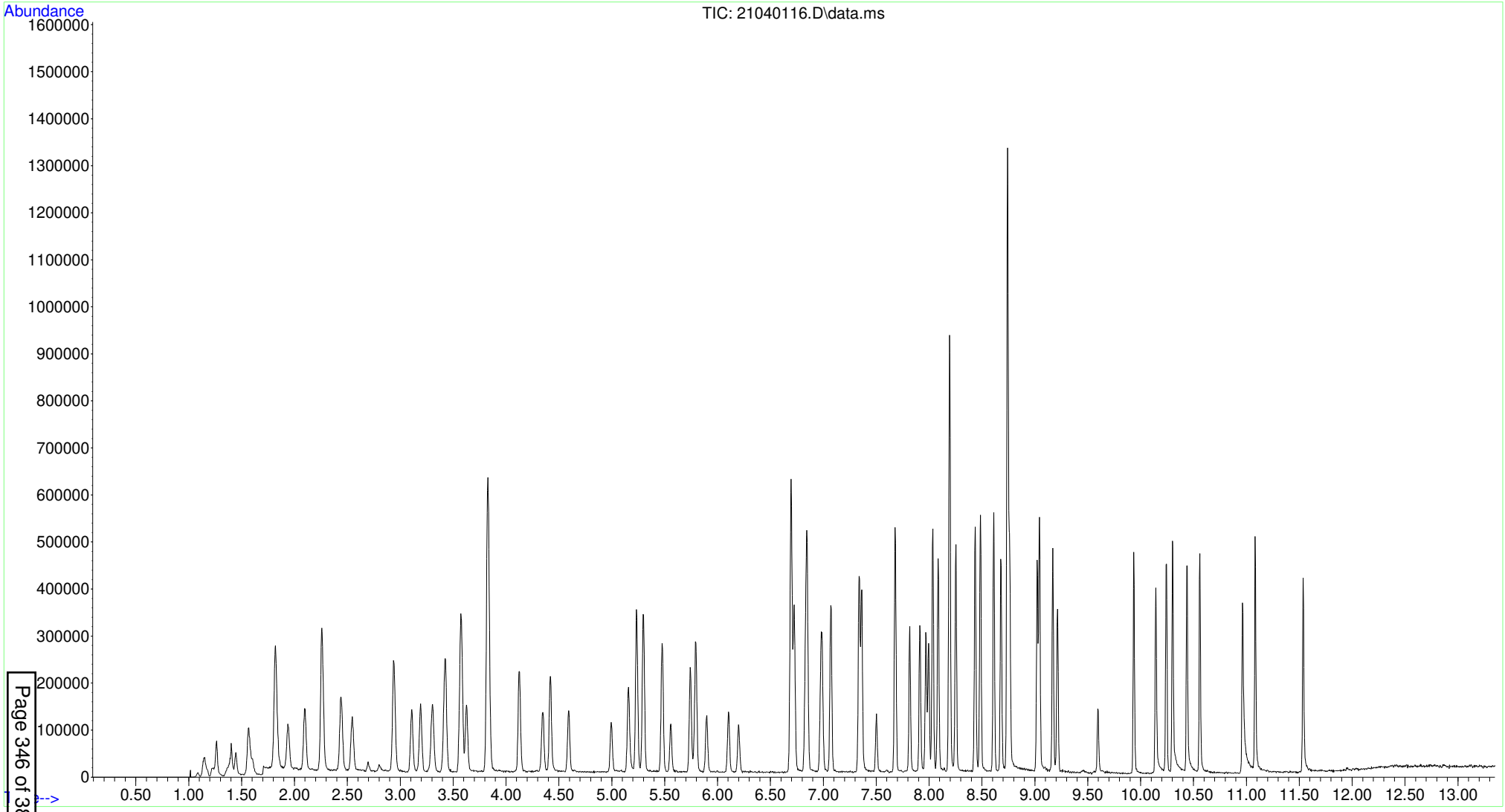
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040116.D
Acq On : 01 Apr 2021 04:15 pm
Operator : KAI
Sample : SEQ-ICV1
Misc :
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 05 12:58:06 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040117.D
Acq On : 01 Apr 2021 04:39 pm
Operator : KAI
Sample : SEQ-ICB1
Misc :
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Apr 05 12:58:10 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

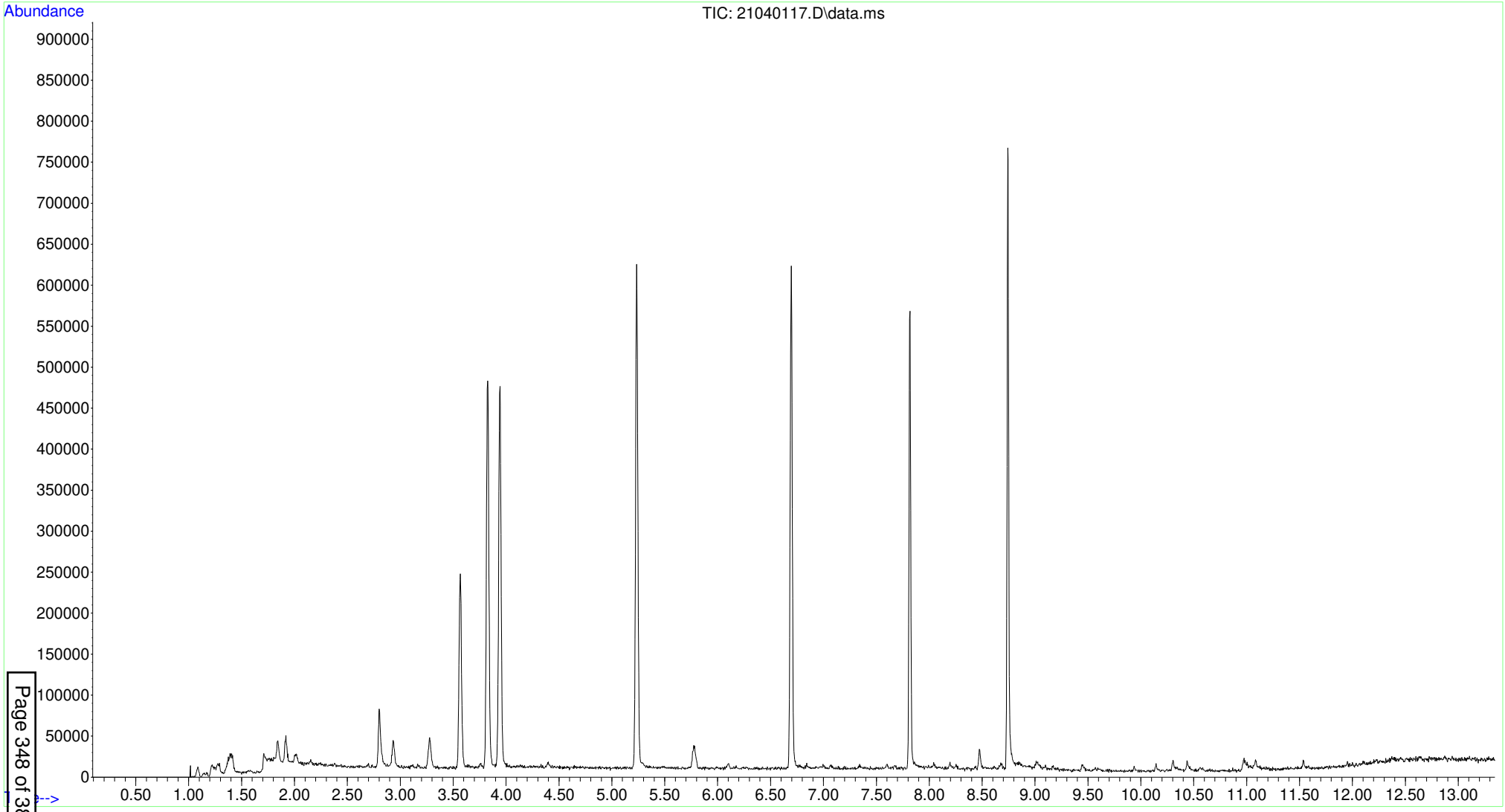
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.826	96	352463	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	271339	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	125325	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	139714	100.27	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 100.27%				
19) Toluene-d8	5.234	98	323548	96.88	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 96.88%				
31) Bromofluorobenzene	7.818	95	121160	91.49	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 91.49%				
Target Compounds							Qvalue
2) Vinyl Chloride	1.265	62	501	0.56	ng	#	68
6) Methyl-t-butyl ether	2.272	73	2152	0.83	ng	#	1
7) 1,1-Dichloroethane	2.540	63	111	0.06	ng	#	9
11) 1,2-Dichloroethane	3.589	62	208	0.12	ng	#	43
12) 1,1,1-Trichloroethane	3.306	97	140	0.09	ng	#	49
13) Carbon Tetrachloride	3.416	117	94	0.07	ng	#	75
14) Benzene	3.580	78	4744	1.31	ng	#	73
16) 1,4-Dioxane	4.412	88	84	0.11	ng	#	1
20) Toluene	5.294	92	916	0.57	ng	#	57
22) Tetrachloroethene	5.792	131	1618	1.83	ng	#	61
23) 1,1,1,2-Tetrachloroethane	6.841	131	90	0.09	ng	#	64
24) Chlorobenzene	6.728	112	855	0.32	ng	#	61
25) Ethylbenzene	6.841	106	326	0.24	ng	#	64
26) p & m-Xylene	6.986	106	457	0.28	ng	#	1
27) 1,1,2,2-Tetrachloroethane	7.966	83	690	0.43	ng	#	59
28) o-Xylene	7.339	106	631	0.39	ng	#	77
29) 1,2,3-Trichloropropane	7.982	75	858	0.62	ng	#	60
30) Isopropylbenzene	7.683	105	1743	0.41	ng	#	76
33) 1,3,5-Trimethylbenzene	8.196	120	822	0.49	ng	#	76
34) 1,2,4-Trimethylbenzene	8.483	120	742	0.49	ng	#	71
35) 1,3-Dichlorobenzene	8.675	146	1169	0.60	ng	#	71
36) 1,4-Dichlorobenzene	8.764	146	1763	0.88	ng	#	67
37) 1,2-Dichlorobenzene	9.025	146	1599	0.85	ng		99
38) 1,2,4-Trichlorobenzene	10.147	180	2774	2.12	ng		95
39) Naphthalene	10.298	128	12271	2.89	ng	#	86
40) 1,2,3-Trichlorobenzene	10.437	180	3533	2.60	ng		92
41) 2-Methylnaphthalene	10.973	142	9832	3.91	ng		92
42) TPH C4-C9	4.810	TIC	5580824m	1178.14	ng		
43) TPH C10-C15	9.810	TIC	2449133m	425.45	ng		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040117.D
Acq On : 01 Apr 2021 04:39 pm
Operator : KAI
Sample : SEQ-ICB1
Misc :
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Apr 05 12:58:10 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



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Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040118.D
Acq On : 01 Apr 2021 05:03 pm
Operator : KAI
Sample : DL 2.5
Misc :
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Apr 05 12:58:14 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	383657	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	283103	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	135666	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.573	65	4883	3.22	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 3.22%#				
19) Toluene-d8	5.237	98	11629	3.34	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 3.34%#				
31) Bromofluorobenzene	7.815	95	4899	3.55	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 3.55%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.264	62	2646	2.74	ng	#	89
3) 1,1-Dichloroethene	1.827	96	2770	2.98	ng		86
4) 1,1,2-Trichlorotrifluo...	1.824	101	3294	3.03	ng	#	61
5) trans-1,2-Dichloroethene	2.262	96	2821	2.67	ng		94
6) Methyl-t-butyl ether	2.262	73	6815	2.41	ng	#	77
7) 1,1-Dichloroethane	2.552	63	5858	2.81	ng	#	92
8) cis-1,2-Dichloroethene	2.943	96	3384	2.93	ng		98
9) Chloroform	3.189	85	3141	2.61	ng	#	1
11) 1,2-Dichloroethane	3.623	62	4967	2.56	ng		89
12) 1,1,1-Trichloroethane	3.302	97	4070	2.42	ng	#	68
13) Carbon Tetrachloride	3.419	117	3438	2.19	ng	#	94
14) Benzene	3.579	78	12717	3.22	ng		96
15) Trichloroethene	4.128	130	3335	2.59	ng		95
16) 1,4-Dioxane	4.414	88	2053	2.55	ng		91
17) 1,1,2-Trichloroethane	5.751	99	1800	2.85	ng		90
20) Toluene	5.300	92	3658	2.18	ng	#	82
21) 1,2-Dibromoethane (EDB)	6.201	107	2574	2.48	ng		89
22) Tetrachloroethene	5.792	131	2882	3.12	ng	#	71
23) 1,1,1,2-Tetrachloroethane	6.832	131	2964	2.96	ng	#	53
24) Chlorobenzene	6.728	112	7666	2.73	ng		93
25) Ethylbenzene	6.850	106	3357	2.36	ng		99
26) p & m-Xylene	6.983	106	4659	2.69	ng		92
27) 1,1,2,2-Tetrachloroethane	7.972	83	4500	2.68	ng		99
28) o-Xylene	7.336	106	3883	2.31	ng		84
29) 1,2,3-Trichloropropane	7.991	75	3689	2.55	ng	#	78
30) Isopropylbenzene	7.676	105	10544	2.39	ng		92
33) 1,3,5-Trimethylbenzene	8.196	120	3886	2.13	ng	#	82
34) 1,2,4-Trimethylbenzene	8.489	120	4380	2.67	ng	#	77
35) 1,3-Dichlorobenzene	8.685	146	6493	3.07	ng		97
36) 1,4-Dichlorobenzene	8.763	146	6335	2.93	ng	#	79
37) 1,2-Dichlorobenzene	9.022	146	5749	2.81	ng		99
38) 1,2,4-Trichlorobenzene	10.147	180	4214	2.97	ng		98
39) Naphthalene	10.304	128	13513	2.94	ng	#	91
40) 1,2,3-Trichlorobenzene	10.437	180	4846	3.30	ng		99
41) 2-Methylnaphthalene	10.976	142	9407	3.46	ng		95
42) TPH C4-C9	4.810	TIC	5345957m	1042.54	ng		
43) TPH C10-C15	9.810	TIC	2659230m	426.74	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040118.D
Acq On : 01 Apr 2021 05:03 pm
Operator : KAI
Sample : DL 2.5
Misc :
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Apr 05 12:58:14 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

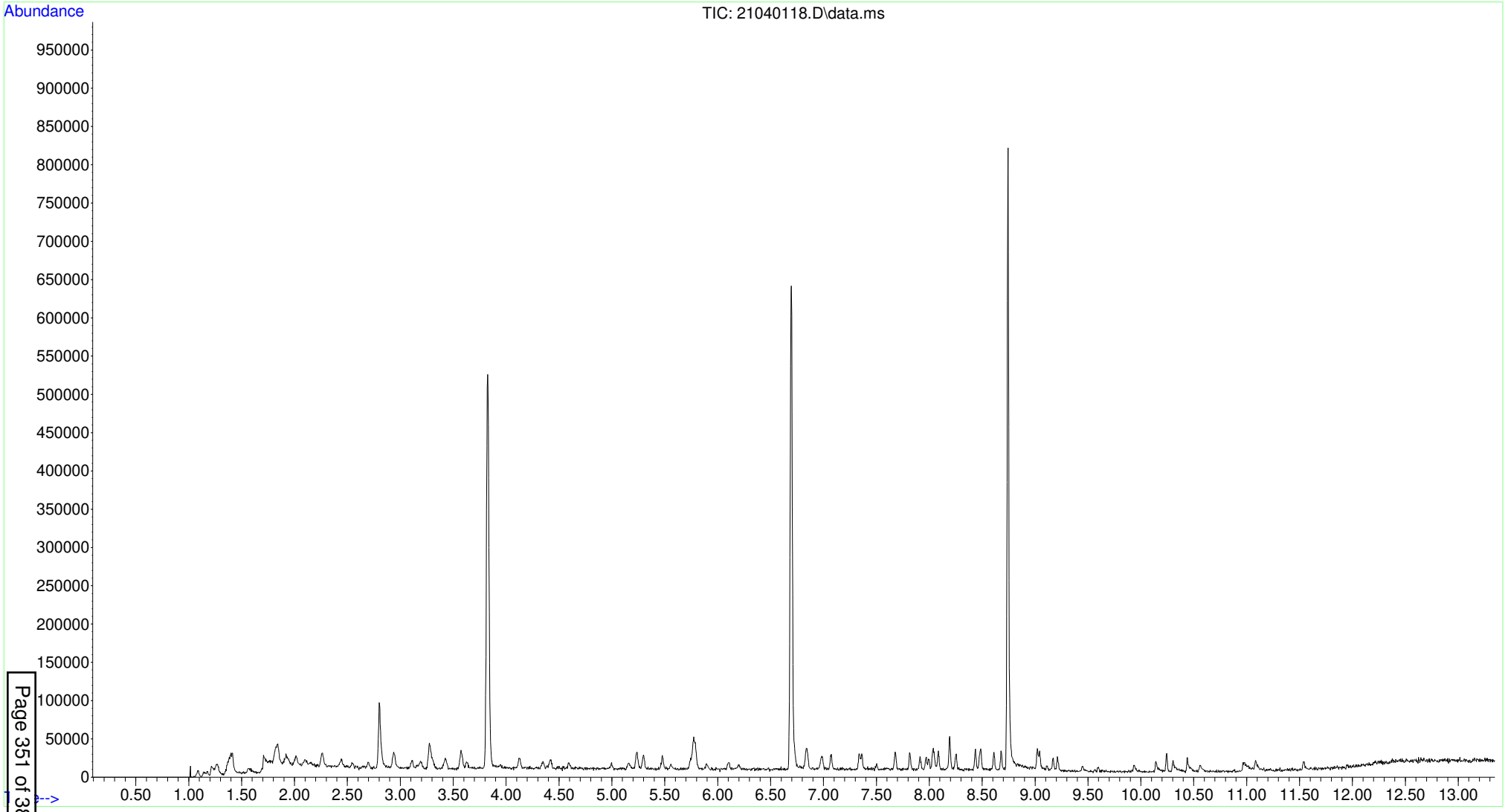
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040118.D
Acq On : 01 Apr 2021 05:03 pm
Operator : KAI
Sample : DL 2.5
Misc :
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Apr 05 12:58:14 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040119.D
Acq On : 01 Apr 2021 05:28 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Apr 05 12:58:18 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	386802	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	283322	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	135211	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	8081	5.28	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.28%#				
19) Toluene-d8	5.231	98	17897	5.13	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.13%#				
31) Bromofluorobenzene	7.812	95	6692	4.84	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 4.84%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.265	62	4631	4.75	ng	#	90
3) 1,1-Dichloroethene	1.821	96	4413	4.71	ng		97
4) 1,1,2-Trichlorotrifluo...	1.821	101	5486	5.00	ng		85
5) trans-1,2-Dichloroethene	2.259	96	5433	5.11	ng		88
6) Methyl-t-butyl ether	2.266	73	14357	5.04	ng	#	69
7) 1,1-Dichloroethane	2.546	63	10806	5.15	ng		94
8) cis-1,2-Dichloroethene	2.940	96	6092	5.24	ng		89
9) Chloroform	3.189	85	5782	4.77	ng		93
11) 1,2-Dichloroethane	3.630	62	10358	5.30	ng	#	43
12) 1,1,1-Trichloroethane	3.302	97	7899	4.66	ng	#	68
13) Carbon Tetrachloride	3.416	117	7383	4.67	ng		88
14) Benzene	3.576	78	23129	5.81	ng		97
15) Trichloroethene	4.125	130	6086	4.69	ng		90
16) 1,4-Dioxane	4.415	88	4043	4.99	ng		91
17) 1,1,2-Trichloroethane	5.745	99	3212	5.05	ng	#	79
20) Toluene	5.303	92	9235	5.50	ng	#	99
21) 1,2-Dibromoethane (EDB)	6.202	107	5178	4.98	ng		90
22) Tetrachloroethene	5.798	131	5142	5.56	ng	#	93
23) 1,1,1,2-Tetrachloroethane	6.835	131	5178	5.16	ng	#	54
24) Chlorobenzene	6.728	112	14837	5.27	ng		95
25) Ethylbenzene	6.848	106	6940	4.87	ng		92
26) p & m-Xylene	6.977	106	8228	4.74	ng		94
27) 1,1,2,2-Tetrachloroethane	7.969	83	8494	5.06	ng		96
28) o-Xylene	7.339	106	7707	4.58	ng		88
29) 1,2,3-Trichloropropane	7.992	75	7644	5.28	ng		90
30) Isopropylbenzene	7.680	105	19552	4.43	ng		98
33) 1,3,5-Trimethylbenzene	8.196	120	9318	5.12	ng		86
34) 1,2,4-Trimethylbenzene	8.486	120	7781	4.76	ng	#	82
35) 1,3-Dichlorobenzene	8.682	146	10995	5.21	ng		98
36) 1,4-Dichlorobenzene	8.760	146	11365	5.27	ng		88
37) 1,2-Dichlorobenzene	9.022	146	11299	5.55	ng		99
38) 1,2,4-Trichlorobenzene	10.144	180	7194	5.09	ng		87
39) Naphthalene	10.305	128	22591	4.94	ng	#	93
40) 1,2,3-Trichlorobenzene	10.437	180	7099	4.84	ng		92
41) 2-Methylnaphthalene	10.970	142	13710	5.06	ng		90
42) TPH C4-C9	4.810	TIC	5881126m	1150.76	ng		
43) TPH C10-C15	9.810	TIC	3327675m	535.80	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040119.D
Acq On : 01 Apr 2021 05:28 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Apr 05 12:58:18 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

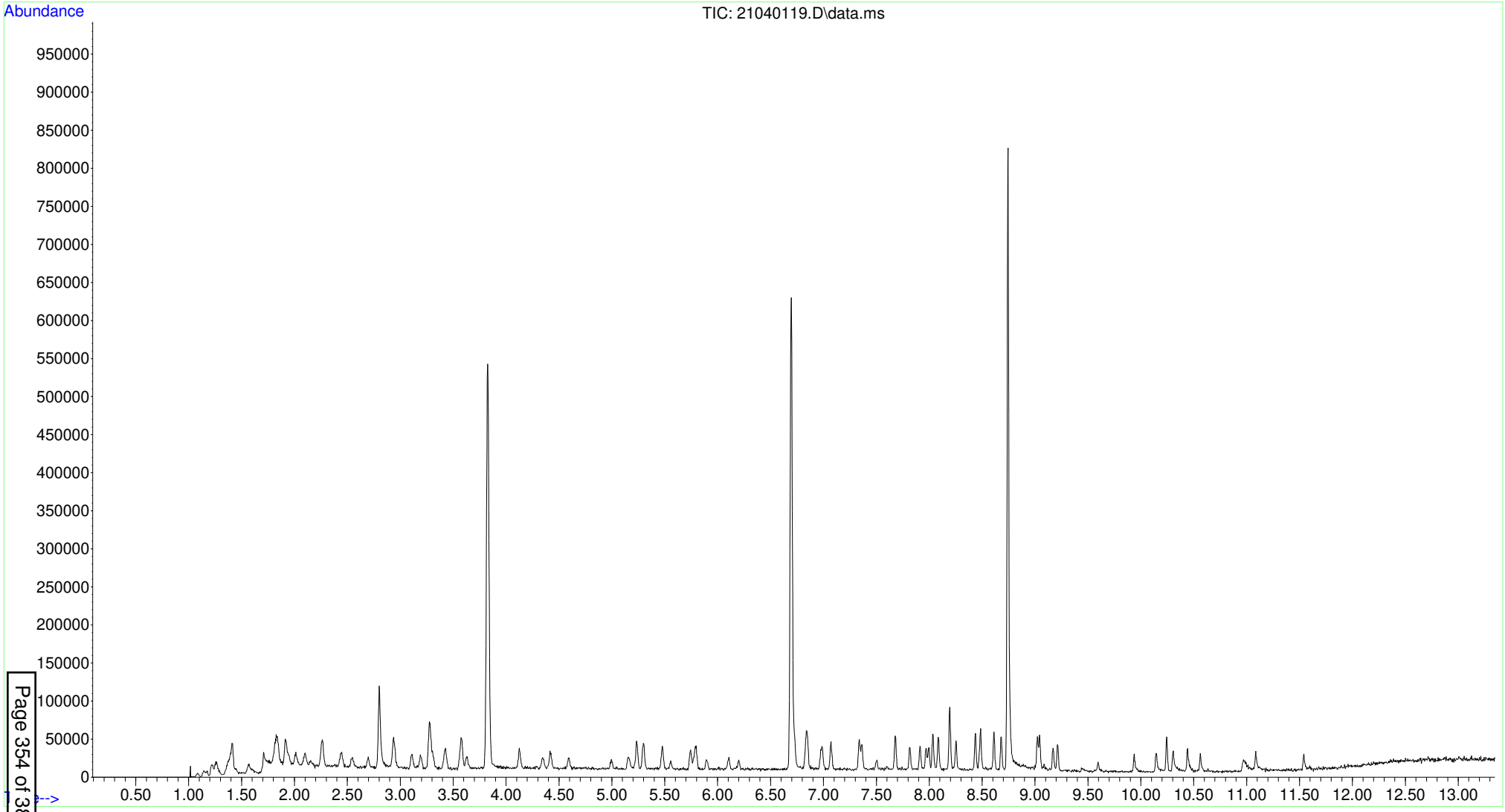
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040119.D
Acq On : 01 Apr 2021 05:28 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Apr 05 12:58:18 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040120.D
Acq On : 01 Apr 2021 05:52 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 05 12:58:22 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	378839	100.00	ng		0.00
18) Chlorobenzene-d5	6.693	117	278202	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	131053	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.570	65	8151	5.44	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.44%#				
19) Toluene-d8	5.234	98	17128	5.00	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.00%#				
31) Bromofluorobenzene	7.815	95	6802	5.01	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.01%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.265	62	5061	5.30	ng	#	91
3) 1,1-Dichloroethene	1.824	96	4208	4.59	ng		93
4) 1,1,2-Trichlorotrifluo...	1.821	101	6222	5.80	ng	#	79
5) trans-1,2-Dichloroethene	2.259	96	5147	4.94	ng		95
6) Methyl-t-butyl ether	2.262	73	14598	5.24	ng		97
7) 1,1-Dichloroethane	2.546	63	10555	5.13	ng		99
8) cis-1,2-Dichloroethene	2.937	96	6257	5.49	ng		97
9) Chloroform	3.192	85	6661	5.61	ng		88
11) 1,2-Dichloroethane	3.627	62	10038	5.25	ng	#	76
12) 1,1,1-Trichloroethane	3.305	97	8840	5.32	ng	#	81
13) Carbon Tetrachloride	3.425	117	6958	4.49	ng	#	97
14) Benzene	3.580	78	22584	5.79	ng		98
15) Trichloroethene	4.131	130	5732	4.51	ng		89
16) 1,4-Dioxane	4.427	88	3694	4.65	ng		95
17) 1,1,2-Trichloroethane	5.741	99	3624	5.82	ng		98
20) Toluene	5.300	92	9136	5.54	ng	#	90
21) 1,2-Dibromoethane (EDB)	6.198	107	5418	5.31	ng		94
22) Tetrachloroethene	5.789	131	4656	5.13	ng	#	82
23) 1,1,1,2-Tetrachloroethane	6.838	131	4855	4.93	ng	#	43
24) Chlorobenzene	6.725	112	14757	5.34	ng		96
25) Ethylbenzene	6.851	106	6960	4.98	ng		97
26) p & m-Xylene	6.986	106	8215	4.82	ng		94
27) 1,1,2,2-Tetrachloroethane	7.969	83	8415	5.11	ng	#	95
28) o-Xylene	7.339	106	7894	4.78	ng		96
29) 1,2,3-Trichloropropane	7.995	75	6944	4.88	ng	#	86
30) Isopropylbenzene	7.680	105	20414	4.71	ng		96
33) 1,3,5-Trimethylbenzene	8.193	120	8582	4.86	ng		87
34) 1,2,4-Trimethylbenzene	8.483	120	7504	4.73	ng	#	87
35) 1,3-Dichlorobenzene	8.678	146	10361	5.07	ng		90
36) 1,4-Dichlorobenzene	8.760	146	11367	5.44	ng		98
37) 1,2-Dichlorobenzene	9.022	146	10209	5.17	ng		97
38) 1,2,4-Trichlorobenzene	10.144	180	6695	4.89	ng		93
39) Naphthalene	10.305	128	21034	4.74	ng	#	94
40) 1,2,3-Trichlorobenzene	10.440	180	7517	5.29	ng		99
41) 2-Methylnaphthalene	10.966	142	12617	4.80	ng		97
42) TPH C4-C9	4.810	TIC	5809790m	1172.87	ng		
43) TPH C10-C15	9.810	TIC	3164557m	525.71	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040120.D
Acq On : 01 Apr 2021 05:52 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 05 12:58:22 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

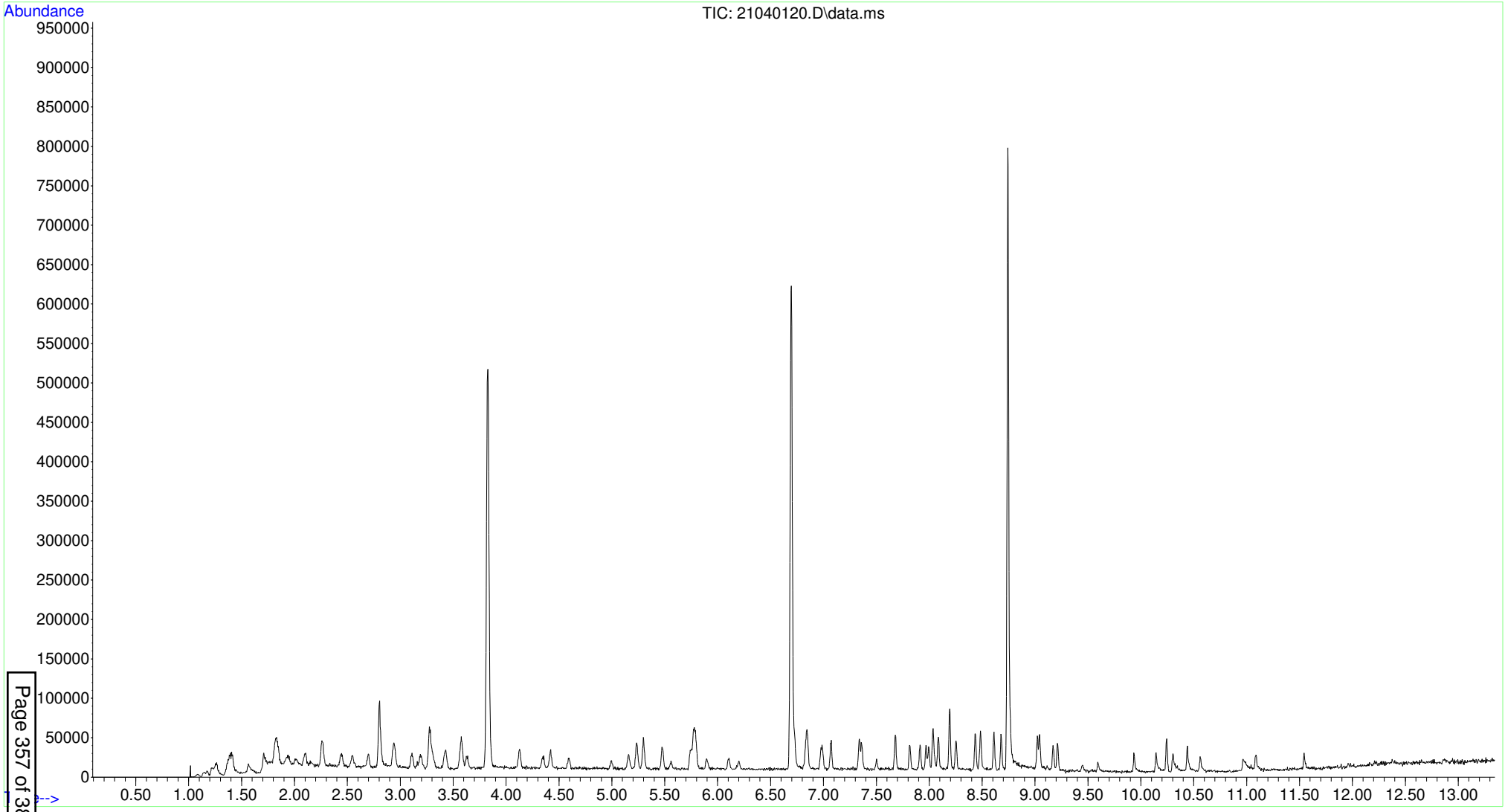
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040120.D
Acq On : 01 Apr 2021 05:52 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 05 12:58:22 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040121.D
Acq On : 01 Apr 2021 06:17 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Apr 05 12:58:26 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	363060	100.00	ng		0.00
18) Chlorobenzene-d5	6.693	117	264400	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	125234	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	7620	5.31	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.31%#				
19) Toluene-d8	5.237	98	16193	4.98	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 4.98%#				
31) Bromofluorobenzene	7.818	95	5988	4.64	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 4.64%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.268	62	5281	5.77	ng	#	88
3) 1,1-Dichloroethene	1.815	96	4289	4.88	ng		97
4) 1,1,2-Trichlorotrifluo...	1.827	101	5444	5.29	ng	#	78
5) trans-1,2-Dichloroethene	2.272	96	4906	4.92	ng		91
6) Methyl-t-butyl ether	2.259	73	11788	4.41	ng	#	63
7) 1,1-Dichloroethane	2.546	63	10130	5.14	ng		98
8) cis-1,2-Dichloroethene	2.937	96	5815	5.33	ng		95
9) Chloroform	3.192	85	5846	5.14	ng		99
11) 1,2-Dichloroethane	3.630	62	9574	5.22	ng	#	88
12) 1,1,1-Trichloroethane	3.305	97	7551	4.74	ng		90
13) Carbon Tetrachloride	3.419	117	6642	4.47	ng	#	95
14) Benzene	3.583	78	20403	5.46	ng		98
15) Trichloroethene	4.125	130	5600	4.60	ng		94
16) 1,4-Dioxane	4.424	88	3419	4.49	ng	#	80
17) 1,1,2-Trichloroethane	5.745	99	2873	4.81	ng	#	72
20) Toluene	5.300	92	7951	5.07	ng	#	99
21) 1,2-Dibromoethane (EDB)	6.198	107	4699	4.84	ng		91
22) Tetrachloroethene	5.792	131	4851	5.62	ng	#	67
23) 1,1,1,2-Tetrachloroethane	6.832	131	4882	5.22	ng	#	44
24) Chlorobenzene	6.721	112	14332	5.46	ng		96
25) Ethylbenzene	6.851	106	6419	4.83	ng		90
26) p & m-Xylene	6.980	106	7920	4.89	ng		98
27) 1,1,2,2-Tetrachloroethane	7.969	83	8039	5.13	ng	#	96
28) o-Xylene	7.339	106	7376	4.70	ng		90
29) 1,2,3-Trichloropropane	7.995	75	6443	4.76	ng		99
30) Isopropylbenzene	7.676	105	19160	4.65	ng		99
33) 1,3,5-Trimethylbenzene	8.199	120	8189	4.86	ng	#	92
34) 1,2,4-Trimethylbenzene	8.489	120	7136	4.71	ng	#	88
35) 1,3-Dichlorobenzene	8.682	146	11192	5.73	ng		96
36) 1,4-Dichlorobenzene	8.760	146	10974	5.50	ng		96
37) 1,2-Dichlorobenzene	9.022	146	10048	5.33	ng		99
38) 1,2,4-Trichlorobenzene	10.144	180	6287	4.81	ng		97
39) Naphthalene	10.301	128	19918	4.70	ng	#	87
40) 1,2,3-Trichlorobenzene	10.440	180	6876	5.06	ng		99
41) 2-Methylnaphthalene	10.969	142	11111	4.43	ng		94
42) TPH C4-C9	4.810	TIC	5157196m	1089.50	ng		
43) TPH C10-C15	9.810	TIC	3252884m	565.49	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040121.D
Acq On : 01 Apr 2021 06:17 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Apr 05 12:58:26 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

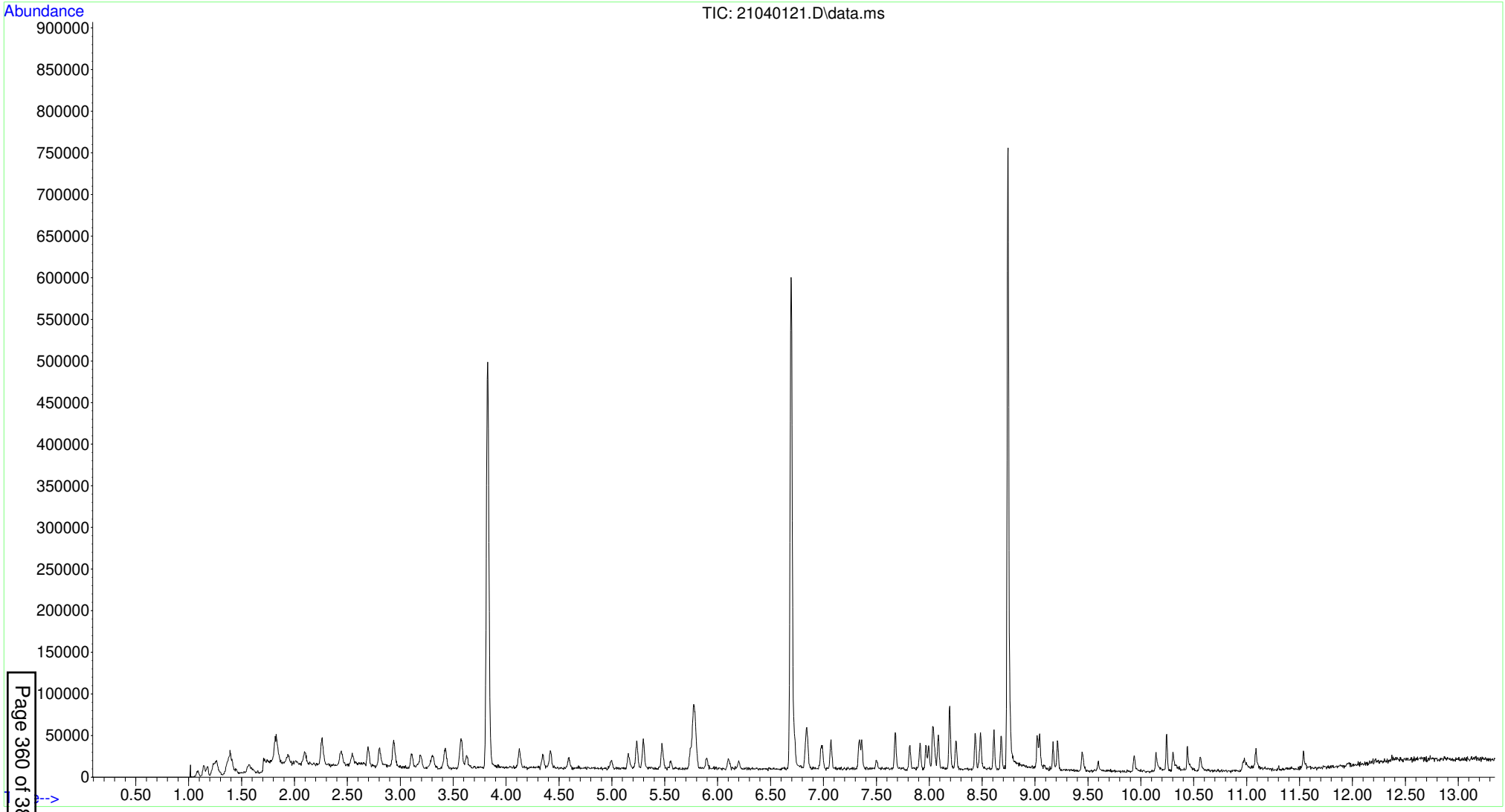
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040121.D
Acq On : 01 Apr 2021 06:17 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Apr 05 12:58:26 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040122.D
Acq On : 01 Apr 2021 06:41 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Apr 05 12:58:30 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.832	96	369327	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	262662	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	120261	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	7424	5.08	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.08%#				
19) Toluene-d8	5.237	98	16739	5.18	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 5.18%#				
31) Bromofluorobenzene	7.815	95	5784	4.51	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 4.51%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.274	62	4414	4.74	ng	#	95
3) 1,1-Dichloroethene	1.834	96	4519	5.05	ng		98
4) 1,1,2-Trichlorotrifluo...	1.830	101	5562	5.31	ng	#	65
5) trans-1,2-Dichloroethene	2.272	96	5168	5.09	ng		91
6) Methyl-t-butyl ether	2.269	73	13849	5.10	ng	#	87
7) 1,1-Dichloroethane	2.555	63	10127	5.05	ng		94
8) cis-1,2-Dichloroethene	2.946	96	5277	4.75	ng		91
9) Chloroform	3.201	85	6064	5.24	ng		93
11) 1,2-Dichloroethane	3.633	62	10179	5.46	ng	#	43
12) 1,1,1-Trichloroethane	3.308	97	8214	5.07	ng	#	79
13) Carbon Tetrachloride	3.422	117	7025	4.65	ng		97
14) Benzene	3.586	78	22369	5.88	ng		97
15) Trichloroethene	4.131	130	6485	5.23	ng		98
16) 1,4-Dioxane	4.424	88	3697	4.78	ng		81
17) 1,1,2-Trichloroethane	5.751	99	3157	5.20	ng		99
20) Toluene	5.300	92	8175	5.25	ng	#	92
21) 1,2-Dibromoethane (EDB)	6.195	107	4413	4.58	ng		94
22) Tetrachloroethene	5.789	131	4861	5.67	ng	#	89
23) 1,1,1,2-Tetrachloroethane	6.838	131	4763	5.12	ng	#	66
24) Chlorobenzene	6.721	112	12996	4.98	ng		94
25) Ethylbenzene	6.844	106	6755	5.12	ng		98
26) p & m-Xylene	6.986	106	7790	4.84	ng		99
27) 1,1,2,2-Tetrachloroethane	7.972	83	7553	4.85	ng		94
28) o-Xylene	7.339	106	7198	4.62	ng		92
29) 1,2,3-Trichloropropane	7.995	75	6964	5.18	ng		98
30) Isopropylbenzene	7.683	105	18964	4.63	ng		98
33) 1,3,5-Trimethylbenzene	8.193	120	7516	4.64	ng		89
34) 1,2,4-Trimethylbenzene	8.489	120	6311	4.34	ng		98
35) 1,3-Dichlorobenzene	8.682	146	9797	5.22	ng		97
36) 1,4-Dichlorobenzene	8.763	146	10665	5.56	ng		94
37) 1,2-Dichlorobenzene	9.025	146	9320	5.14	ng		93
38) 1,2,4-Trichlorobenzene	10.147	180	5263	4.19	ng		97
39) Naphthalene	10.301	128	17092	4.20	ng	#	96
40) 1,2,3-Trichlorobenzene	10.446	180	6866	5.27	ng		96
41) 2-Methylnaphthalene	10.963	142	9222	3.83	ng		95
42) TPH C4-C9	4.810	TIC	5995035m	1318.87	ng		
43) TPH C10-C15	9.810	TIC	2867149m	519.04	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040122.D
Acq On : 01 Apr 2021 06:41 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Apr 05 12:58:30 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

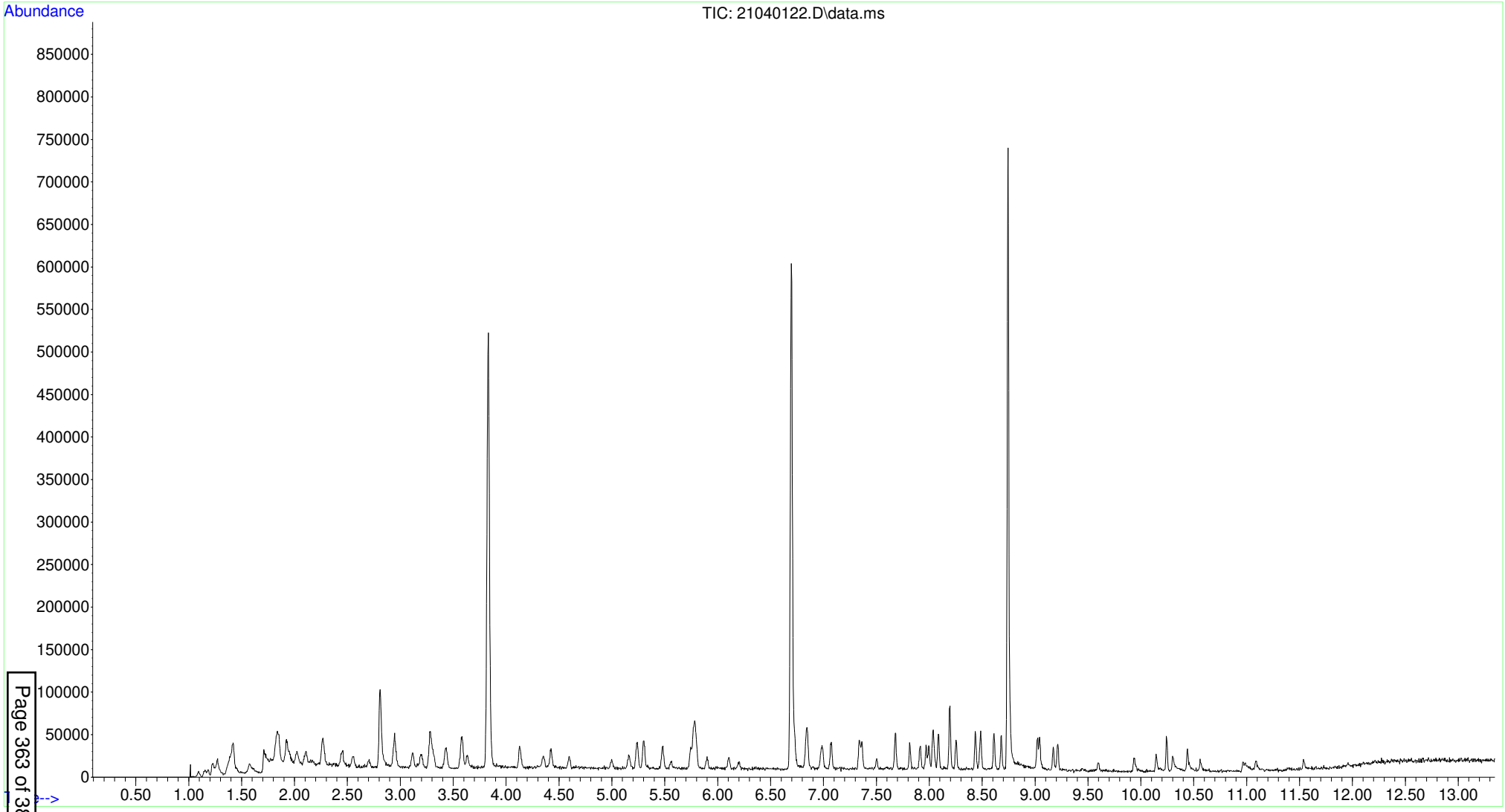
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040122.D
Acq On : 01 Apr 2021 06:41 pm
Operator : KAI
Sample : LOD 5
Misc :
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Apr 05 12:58:30 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040123.D
Acq On : 01 Apr 2021 07:05 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Apr 05 12:58:34 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.826	96	369799	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	260349	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	117811	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	15019	10.27	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 10.27%#				
19) Toluene-d8	5.234	98	33020	10.30	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 10.30%#				
31) Bromofluorobenzene	7.815	95	11883	9.35	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 9.35%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.262	62	8500	9.12	ng	#	94
3) 1,1-Dichloroethene	1.821	96	9739	10.88	ng		95
4) 1,1,2-Trichlorotrifluo...	1.828	101	10547	10.06	ng		86
5) trans-1,2-Dichloroethene	2.262	96	10479	10.31	ng		94
6) Methyl-t-butyl ether	2.259	73	26259	9.65	ng	#	93
7) 1,1-Dichloroethane	2.546	63	20424	10.18	ng		96
8) cis-1,2-Dichloroethene	2.940	96	11030	9.92	ng		93
9) Chloroform	3.192	85	12784	11.03	ng	#	92
11) 1,2-Dichloroethane	3.627	62	20004	10.71	ng	#	43
12) 1,1,1-Trichloroethane	3.302	97	15728	9.70	ng	#	90
13) Carbon Tetrachloride	3.419	117	14301	9.46	ng		96
14) Benzene	3.577	78	42150	11.07	ng		98
15) Trichloroethene	4.122	130	12193	9.83	ng		92
16) 1,4-Dioxane	4.418	88	7421	9.57	ng		99
17) 1,1,2-Trichloroethane	5.742	99	6333	10.41	ng		99
20) Toluene	5.294	92	15626	10.12	ng	#	95
21) 1,2-Dibromoethane (EDB)	6.199	107	9081	9.51	ng		98
22) Tetrachloroethene	5.795	131	9297	10.95	ng	#	97
23) 1,1,1,2-Tetrachloroethane	6.832	131	9103	9.88	ng	#	79
24) Chlorobenzene	6.722	112	26186	10.12	ng		94
25) Ethylbenzene	6.848	106	12170	9.30	ng		94
26) p & m-Xylene	6.986	106	14740	9.25	ng		94
27) 1,1,2,2-Tetrachloroethane	7.973	83	14736	9.55	ng	#	90
28) o-Xylene	7.336	106	14499	9.39	ng		94
29) 1,2,3-Trichloropropane	7.995	75	13682	10.28	ng	#	87
30) Isopropylbenzene	7.680	105	35954	8.86	ng		94
33) 1,3,5-Trimethylbenzene	8.196	120	14911	9.40	ng		99
34) 1,2,4-Trimethylbenzene	8.490	120	13466	9.45	ng		95
35) 1,3-Dichlorobenzene	8.679	146	18441	10.04	ng		99
36) 1,4-Dichlorobenzene	8.761	146	19023	10.13	ng		91
37) 1,2-Dichlorobenzene	9.025	146	17606	9.92	ng		99
38) 1,2,4-Trichlorobenzene	10.147	180	10483	8.52	ng		96
39) Naphthalene	10.302	128	32890	8.25	ng	#	95
40) 1,2,3-Trichlorobenzene	10.440	180	11535	9.03	ng		95
41) 2-Methylnaphthalene	10.967	142	15380	6.51	ng		84
42) TPH C4-C9	4.810	TIC	6492589m	1458.04	ng		
43) TPH C10-C15	9.810	TIC	3798237m	701.90	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040123.D
Acq On : 01 Apr 2021 07:05 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Apr 05 12:58:34 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

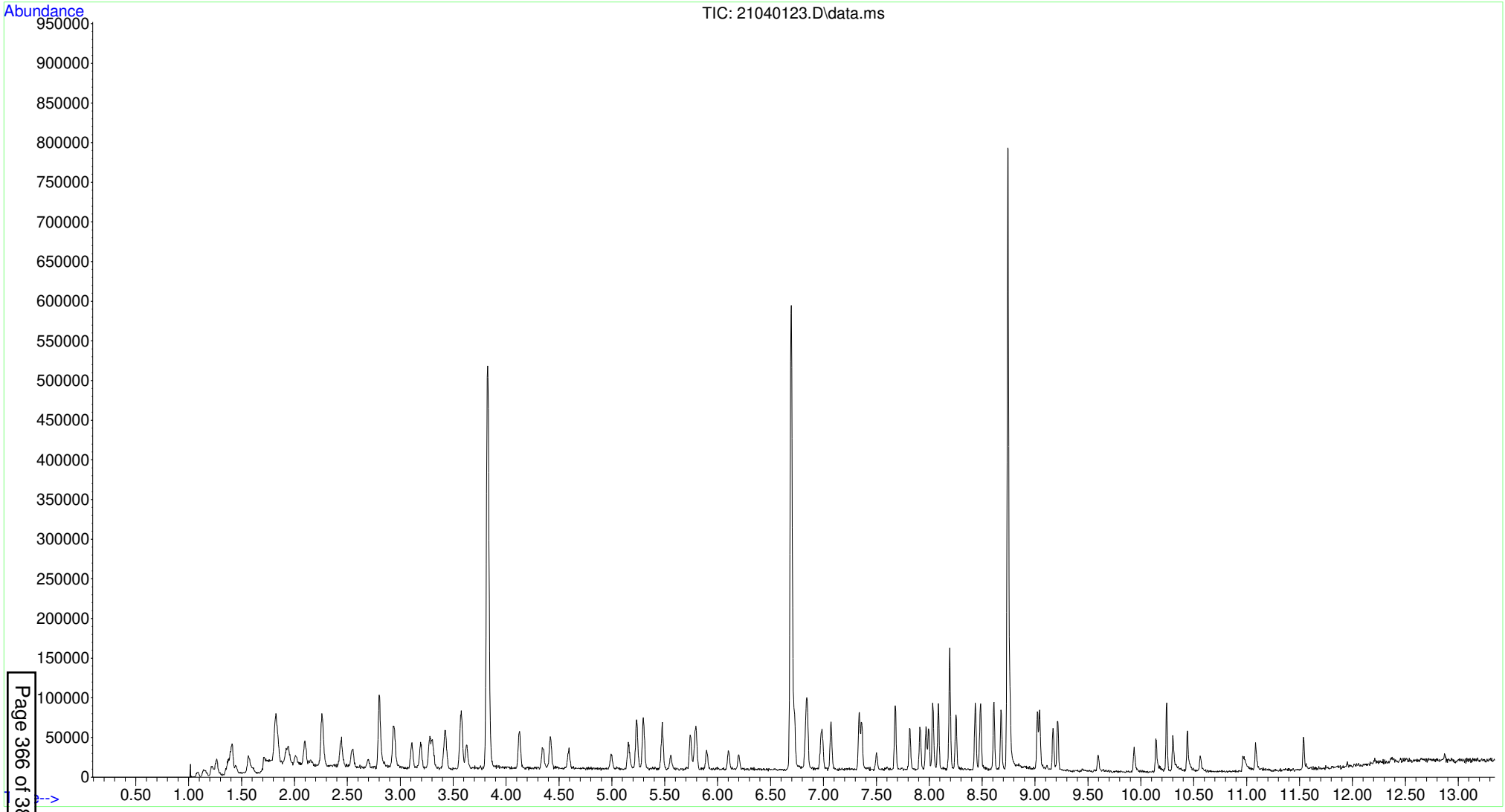
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040123.D
Acq On : 01 Apr 2021 07:05 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Apr 05 12:58:34 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040124.D
Acq On : 01 Apr 2021 07:30 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Apr 05 12:58:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	376121	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	265747	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	131064	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.567	65	15813	10.63	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 10.63%#				
19) Toluene-d8	5.234	98	33597	10.27	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 10.27%#				
31) Bromofluorobenzene	7.818	95	12498	9.64	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 9.64%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.264	62	8282	8.74	ng	#	93
3) 1,1-Dichloroethene	1.824	96	10217	11.22	ng		97
4) 1,1,2-Trichlorotrifluo...	1.821	101	11492	10.78	ng		87
5) trans-1,2-Dichloroethene	2.259	96	10890	10.53	ng		91
6) Methyl-t-butyl ether	2.262	73	27315	9.87	ng		98
7) 1,1-Dichloroethane	2.555	63	21198	10.39	ng		99
8) cis-1,2-Dichloroethene	2.946	96	11295	9.99	ng		94
9) Chloroform	3.198	85	12460	10.57	ng		99
11) 1,2-Dichloroethane	3.630	62	20194	10.63	ng	#	44
12) 1,1,1-Trichloroethane	3.305	97	15508	9.40	ng	#	88
13) Carbon Tetrachloride	3.422	117	12069	7.85	ng		96
14) Benzene	3.583	78	40415	10.44	ng		97
15) Trichloroethene	4.125	130	13338	10.57	ng		97
16) 1,4-Dioxane	4.421	88	7708	9.78	ng		93
17) 1,1,2-Trichloroethane	5.744	99	6822	11.03	ng		91
20) Toluene	5.297	92	17410	11.05	ng	#	99
21) 1,2-Dibromoethane (EDB)	6.198	107	8985	9.22	ng		94
22) Tetrachloroethene	5.795	131	10309	11.89	ng		92
23) 1,1,1,2-Tetrachloroethane	6.835	131	8910	9.47	ng	#	79
24) Chlorobenzene	6.724	112	27586	10.45	ng		99
25) Ethylbenzene	6.844	106	12925	9.68	ng	#	93
26) p & m-Xylene	6.986	106	14952	9.19	ng		96
27) 1,1,2,2-Tetrachloroethane	7.969	83	16310	10.36	ng		99
28) o-Xylene	7.339	106	15663	9.93	ng		95
29) 1,2,3-Trichloropropane	7.991	75	13681	10.07	ng		93
30) Isopropylbenzene	7.679	105	37898	9.15	ng		99
33) 1,3,5-Trimethylbenzene	8.193	120	16524	9.36	ng		98
34) 1,2,4-Trimethylbenzene	8.486	120	14799	9.33	ng		93
35) 1,3-Dichlorobenzene	8.681	146	20633	10.09	ng		98
36) 1,4-Dichlorobenzene	8.760	146	22245	10.65	ng		98
37) 1,2-Dichlorobenzene	9.022	146	19081	9.66	ng		95
38) 1,2,4-Trichlorobenzene	10.144	180	12309	8.99	ng		88
39) Naphthalene	10.304	128	36609	8.26	ng	#	97
40) 1,2,3-Trichlorobenzene	10.440	180	13801	9.71	ng		100
41) 2-Methylnaphthalene	10.969	142	20919	7.96	ng		98
42) TPH C4-C9	4.810	TIC	6399021m	1291.71	ng		
43) TPH C10-C15	9.810	TIC	4348731m	722.36	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040124.D
Acq On : 01 Apr 2021 07:30 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Apr 05 12:58:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

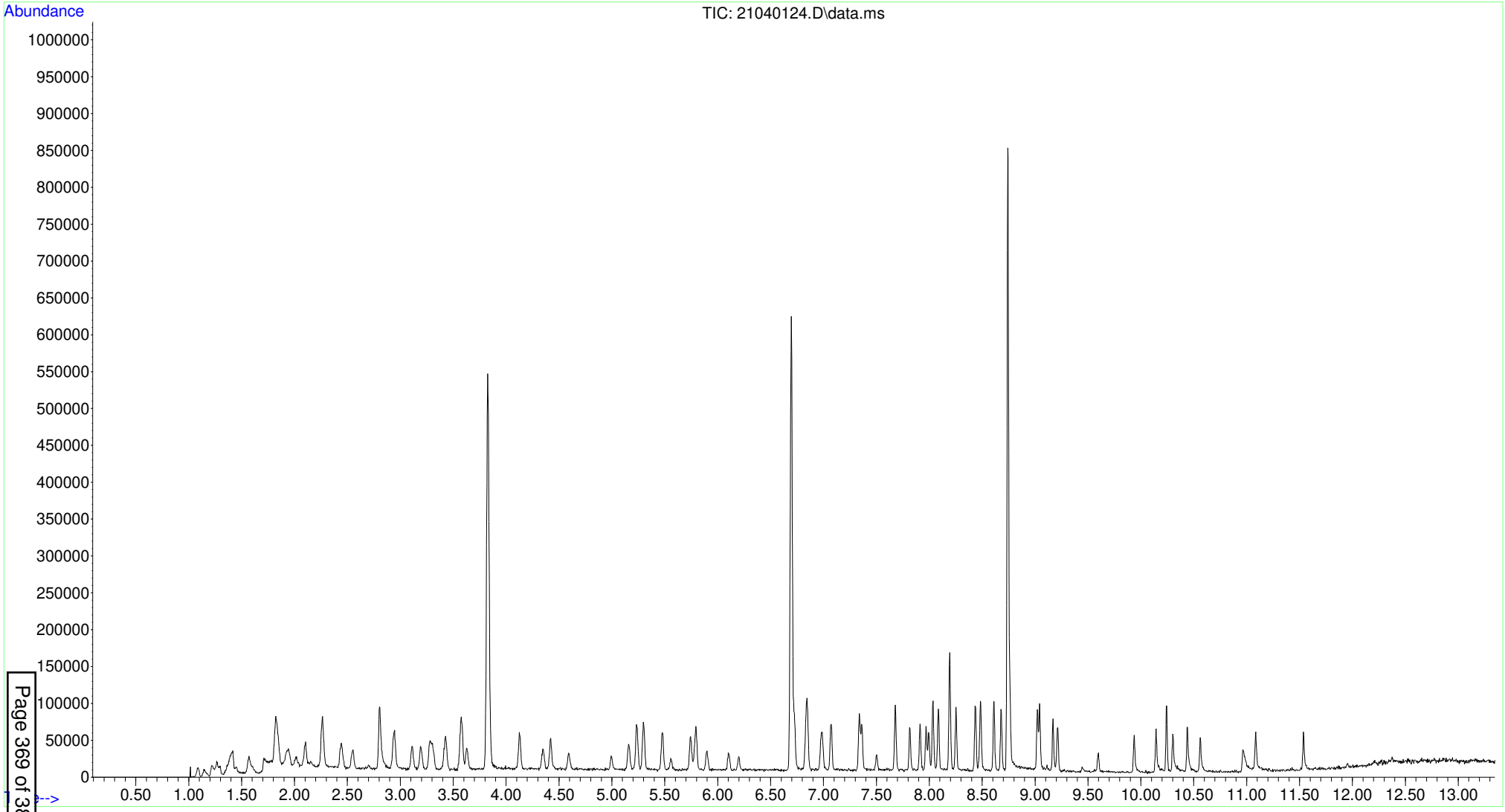
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040124.D
Acq On : 01 Apr 2021 07:30 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Apr 05 12:58:37 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040125.D
Acq On : 01 Apr 2021 07:54 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 05 12:58:41 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.825	96	376021	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	281112	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.745	152	135705	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.564	65	15509	10.43	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 10.43%#				
19) Toluene-d8	5.234	98	35189	10.17	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 10.17%#				
31) Bromofluorobenzene	7.815	95	13215	9.63	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 9.63%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.262	62	8761	9.25	ng	#	94
3) 1,1-Dichloroethene	1.821	96	9292	10.21	ng		94
4) 1,1,2-Trichlorotrifluo...	1.821	101	11224	10.53	ng		89
5) trans-1,2-Dichloroethene	2.266	96	10853	10.50	ng		97
6) Methyl-t-butyl ether	2.259	73	26088	9.43	ng	#	83
7) 1,1-Dichloroethane	2.546	63	19948	9.78	ng		95
8) cis-1,2-Dichloroethene	2.937	96	11846	10.48	ng		98
9) Chloroform	3.192	85	12065	10.23	ng		98
11) 1,2-Dichloroethane	3.630	62	19696	10.38	ng		93
12) 1,1,1-Trichloroethane	3.305	97	16196	9.82	ng	#	90
13) Carbon Tetrachloride	3.422	117	12562	8.17	ng	#	93
14) Benzene	3.577	78	42348	10.94	ng		99
15) Trichloroethene	4.125	130	12760	10.12	ng		99
16) 1,4-Dioxane	4.415	88	7640	9.69	ng		89
17) 1,1,2-Trichloroethane	5.745	99	7175	11.60	ng		96
20) Toluene	5.300	92	18498	11.09	ng		92
21) 1,2-Dibromoethane (EDB)	6.205	107	10565	10.24	ng		96
22) Tetrachloroethene	5.792	131	9680	10.56	ng	#	93
23) 1,1,1,2-Tetrachloroethane	6.835	131	8969	9.01	ng	#	66
24) Chlorobenzene	6.725	112	29863	10.69	ng		98
25) Ethylbenzene	6.844	106	13478	9.54	ng		92
26) p & m-Xylene	6.986	106	16591	9.64	ng		95
27) 1,1,2,2-Tetrachloroethane	7.970	83	16633	9.99	ng		98
28) o-Xylene	7.342	106	15648	9.38	ng		94
29) 1,2,3-Trichloropropane	7.998	75	14710	10.23	ng		97
30) Isopropylbenzene	7.680	105	41046	9.37	ng		96
33) 1,3,5-Trimethylbenzene	8.196	120	16755	9.17	ng		96
34) 1,2,4-Trimethylbenzene	8.486	120	14724	8.97	ng		99
35) 1,3-Dichlorobenzene	8.679	146	20865	9.86	ng		98
36) 1,4-Dichlorobenzene	8.764	146	21950	10.15	ng		98
37) 1,2-Dichlorobenzene	9.022	146	21048	10.30	ng		99
38) 1,2,4-Trichlorobenzene	10.144	180	12733	8.98	ng		98
39) Naphthalene	10.305	128	39745	8.66	ng	#	96
40) 1,2,3-Trichlorobenzene	10.440	180	14353	9.76	ng		94
41) 2-Methylnaphthalene	10.966	142	21183	7.79	ng		98
42) TPH C4-C9	4.810	TIC	7051664m	1374.78	ng		
43) TPH C10-C15	9.810	TIC	4546437m	729.38	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040125.D
Acq On : 01 Apr 2021 07:54 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 05 12:58:41 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

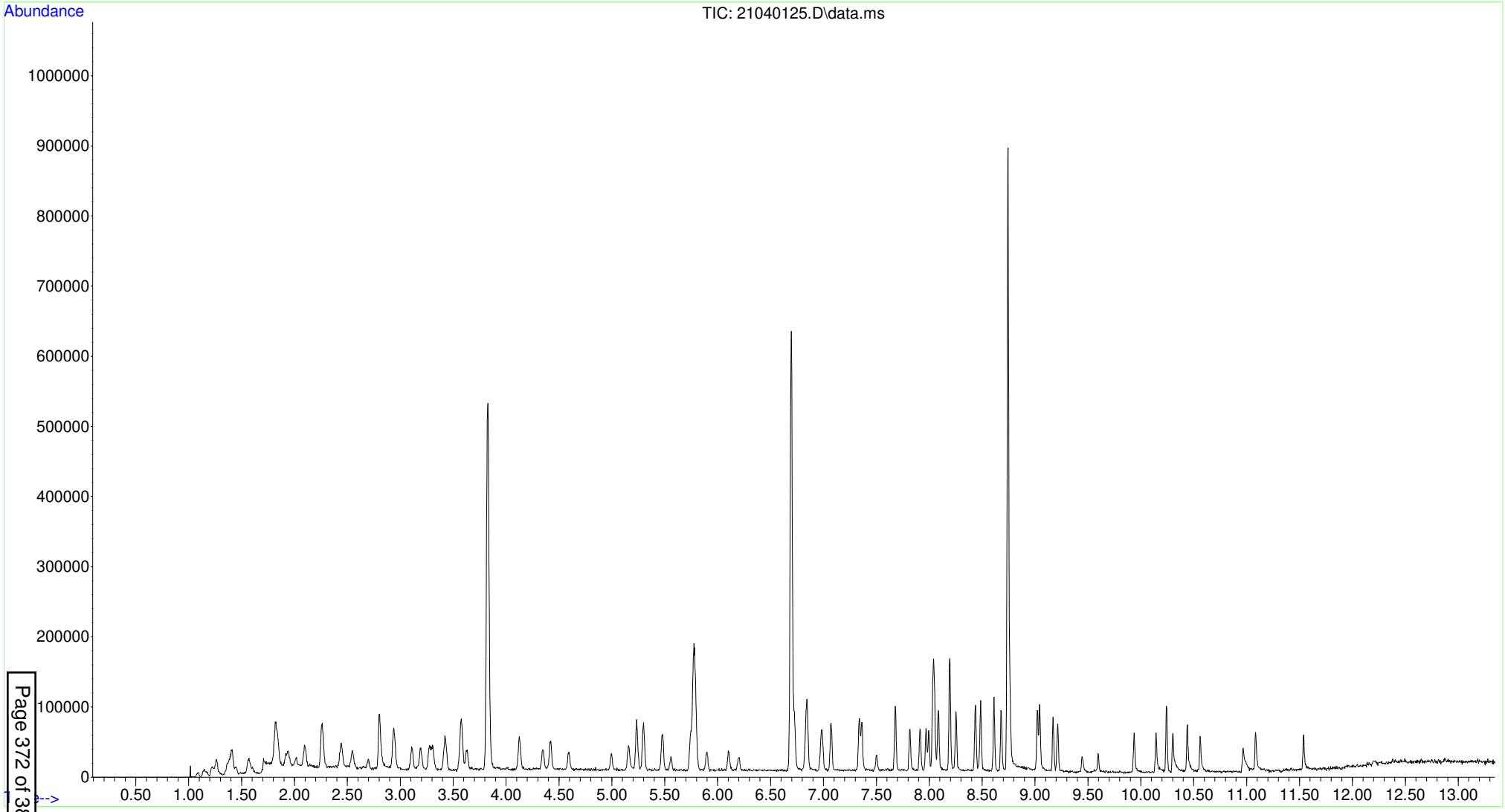
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040125.D
Acq On : 01 Apr 2021 07:54 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 05 12:58:41 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040126.D
Acq On : 01 Apr 2021 08:18 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 05 12:58:44 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) Fluorobenzene	3.828	96	368197	100.00	ng		0.00
18) Chlorobenzene-d5	6.696	117	273247	100.00	ng		0.00
32) 1,4-Dichlorobenzene-d4	8.744	152	130665	100.00	ng		0.00
System Monitoring Compounds							
10) 1,2-DCA-d4	3.564	65	14701	10.10	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 10.10%#				
19) Toluene-d8	5.237	98	32996	9.81	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 9.81%#				
31) Bromofluorobenzene	7.818	95	12252	9.19	ng		0.00
Spiked Amount 100.000	Range 70 - 130		Recovery = 9.19%#				
Target Compounds							Qvalue
2) Vinyl Chloride	1.264	62	8647	9.32	ng		97
3) 1,1-Dichloroethene	1.821	96	8826	9.90	ng		96
4) 1,1,2-Trichlorotrifluo...	1.824	101	10731	10.28	ng		89
5) trans-1,2-Dichloroethene	2.262	96	9923	9.80	ng		95
6) Methyl-t-butyl ether	2.259	73	25501	9.41	ng	#	82
7) 1,1-Dichloroethane	2.543	63	19884	9.95	ng		98
8) cis-1,2-Dichloroethene	2.946	96	10353	9.35	ng		86
9) Chloroform	3.192	85	11597	10.05	ng		97
11) 1,2-Dichloroethane	3.630	62	19479	10.48	ng	#	71
12) 1,1,1-Trichloroethane	3.308	97	15203	9.42	ng	#	86
13) Carbon Tetrachloride	3.419	117	13308	8.84	ng	#	93
14) Benzene	3.583	78	38427	10.14	ng		98
15) Trichloroethene	4.128	130	12599	10.20	ng		98
16) 1,4-Dioxane	4.421	88	7050	9.13	ng		95
17) 1,1,2-Trichloroethane	5.741	99	6533	10.79	ng		96
20) Toluene	5.300	92	17235	10.63	ng	#	96
21) 1,2-Dibromoethane (EDB)	6.198	107	10746	10.72	ng		90
22) Tetrachloroethene	5.792	131	9054	10.16	ng		92
23) 1,1,1,2-Tetrachloroethane	6.835	131	9331	9.65	ng	#	80
24) Chlorobenzene	6.724	112	28284	10.42	ng		97
25) Ethylbenzene	6.850	106	13245	9.64	ng		98
26) p & m-Xylene	6.983	106	15595	9.32	ng		99
27) 1,1,2,2-Tetrachloroethane	7.969	83	15988	9.88	ng		99
28) o-Xylene	7.336	106	14847	9.16	ng		94
29) 1,2,3-Trichloropropane	7.998	75	13703	9.81	ng	#	86
30) Isopropylbenzene	7.676	105	38203	8.97	ng		96
33) 1,3,5-Trimethylbenzene	8.196	120	15969	9.08	ng		99
34) 1,2,4-Trimethylbenzene	8.486	120	14436	9.13	ng		94
35) 1,3-Dichlorobenzene	8.681	146	20773	10.19	ng		95
36) 1,4-Dichlorobenzene	8.760	146	22716	10.91	ng		99
37) 1,2-Dichlorobenzene	9.025	146	17232	8.75	ng		87
38) 1,2,4-Trichlorobenzene	10.147	180	11702	8.57	ng		87
39) Naphthalene	10.301	128	38615	8.73	ng		96
40) 1,2,3-Trichlorobenzene	10.440	180	13681	9.66	ng		99
41) 2-Methylnaphthalene	10.963	142	20478	7.82	ng		92
42) TPH C4-C9	4.810	TIC	6455758m	1307.15	ng		
43) TPH C10-C15	9.810	TIC	3943003m	656.97	ng		

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040126.D
Acq On : 01 Apr 2021 08:18 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 05 12:58:44 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration

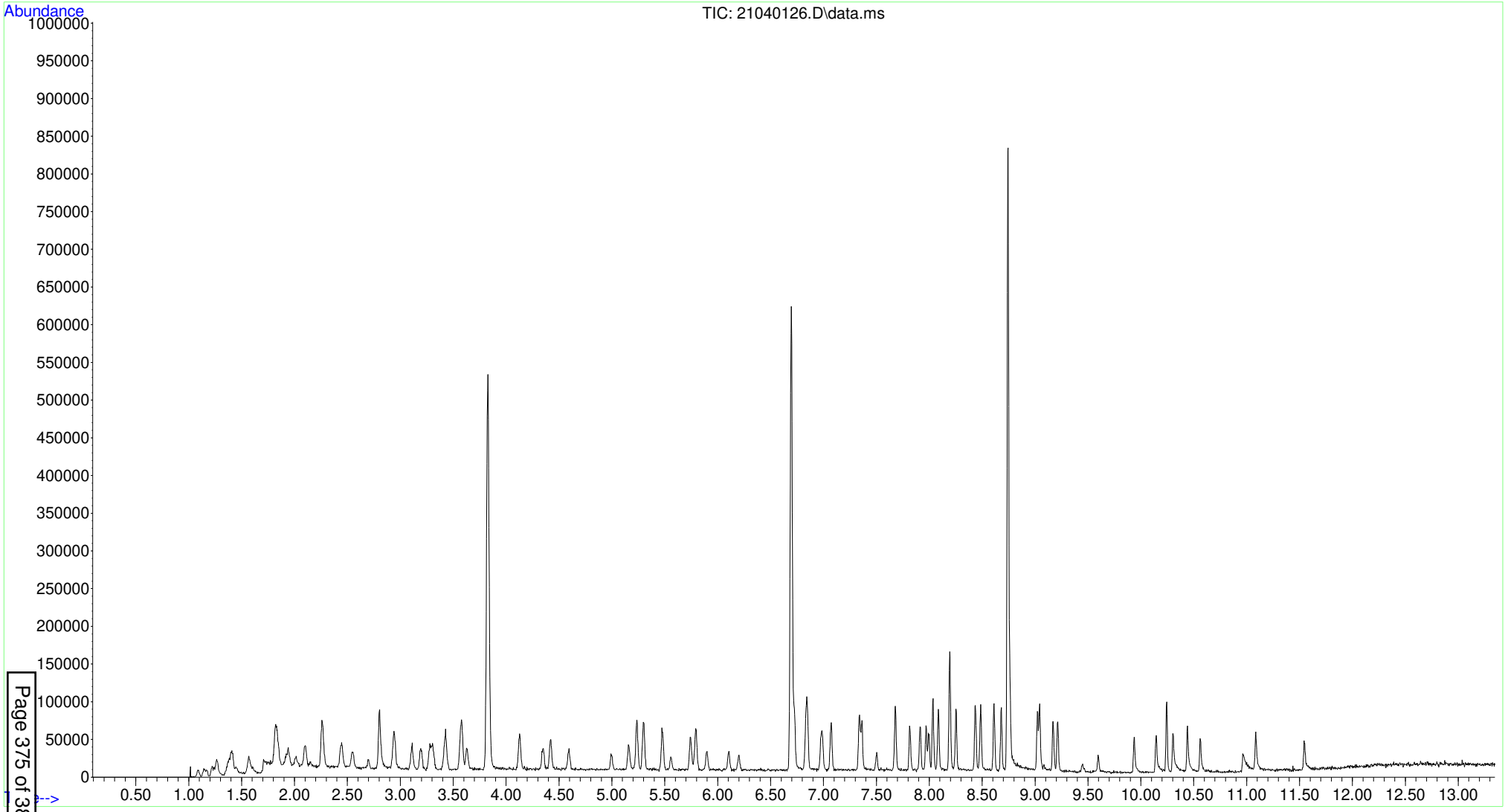
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : Z:\GCMS\data\21\04\C210401 QUART CAL\STD\8260C\
Data File : 21040126.D
Acq On : 01 Apr 2021 08:18 pm
Operator : KAI
Sample : LOQ 10
Misc :
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 05 12:58:44 2021
Quant Method : Z:\msdchem\C_system\5977c_210401_STD LIST_8260C.M
Quant Title : SOURCE AREA VOA ANALYSIS
QLast Update : Thu Apr 01 15:44:17 2021
Response via : Initial Calibration



2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Management Records

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Sample Condition & Receipt Log

Shipped By:

Received: 4/8/21 16:26

Samples Logged: 4/8/21 16:26

Submitted by:

Received by: Steve Thornley

Custody Seals Intact or NA	Yes	All Samples Returned	Yes
Containers Intact	Yes	Tools Returned	Yes
COC/Samples Agree	Yes	All Samples received in acceptable Condition	Yes

Lab ID: 0005717-01 **Sample ID:** Trip-1

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 12:00	Beacon Passive Sampler	Adsorbent	Air	Good

Comments:

Lab ID: 0005717-02 **Sample ID:** Trip-2

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 12:00	Beacon Passive Sampler	Adsorbent	Air	Good

Comments:

Lab ID: 0005717-03 **Sample ID:** NWP_PSG01-03262021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 12:04	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-04 **Sample ID:** NWP_PSG02-03262021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 11:55	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-05 **Sample ID:** NWP_PSG03-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:04	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

BEACON ENVIRONMENTAL

2203A Commerce Road, Suite 1
Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab ID: 0005717-06 **Sample ID:** NWP_PSG04-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:02	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-07 **Sample ID:** NWP_PSG05-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 8:59	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-08 **Sample ID:** NWP_PSG06-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 8:55	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-09 **Sample ID:** NWP_PSG07-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 8:51	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-10 **Sample ID:** NWP_PSG08-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 8:47	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-11 **Sample ID:** NWP_PSG09-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:48	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-12 **Sample ID:** NWP_PSG10-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:45	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-13 **Sample ID:** NWP_PSG11-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:42	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

BEACON ENVIRONMENTAL

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Forest Hill, MD 21050 USA
1.410.838.8780

CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab ID: 0005717-14 **Sample ID:** NWP_PSG12-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:12	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-15 **Sample ID:** NWP_PSG13-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:14	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-16 **Sample ID:** NWP_PSG14-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:16	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-17 **Sample ID:** NWP_PSG15-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:18	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-18 **Sample ID:** NWP_PSG16-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:20	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-19 **Sample ID:** NWP_PSG17-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:22	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-20 **Sample ID:** NWP_PSG18-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:26	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-21 **Sample ID:** NWP_PSG19-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:29	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

BEACON ENVIRONMENTAL

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Forest Hill, MD 21050 USA
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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab ID: 0005717-22 **Sample ID:** NWP_PSG20-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:54	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-23 **Sample ID:** NWP_PSG21-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:34	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-24 **Sample ID:** NWP_PSG22-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:15	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-25 **Sample ID:** NWP_PSG23-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:13	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-26 **Sample ID:** NWP_PSG24-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:11	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-27 **Sample ID:** NWP_PSG25-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:07	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-28 **Sample ID:** NWP_PSG26-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:05	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-29 **Sample ID:** NWP_PSG27-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:02	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab ID: 0005717-30 **Sample ID:** NWP_PSG28-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:00	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-31 **Sample ID:** NWP_PSG29-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:57	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-32 **Sample ID:** NWP_PSG30-03242021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 11:37	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-33 **Sample ID:** NWP_PSG31-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:41	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-34 **Sample ID:** NWP_PSG32-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:43	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-35 **Sample ID:** NWP_PSG33-03262021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:45	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-36 **Sample ID:** NWP_PSG34-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:52	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-37 **Sample ID:** NWP_PSG35-03252021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 10:57	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

BEACON ENVIRONMENTAL

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Forest Hill, MD 21050 USA
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CERTIFICATE OF ANALYSIS

Jacobs	**Site Name:** Northwest Pipe	**Beacon Proposal:** 201009R01
2020 SW Fourth Avenue, Suite 300	**Site Location:** Portland, OR	**Lab Work Order:** 0005717
Portland, OR 97201-4973	**Project Manager:** Kris Ivarson	**Reported:** 04/26/2021

Lab ID: 0005717-38 **Sample ID:** NWP_PSG36-03262021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 11:02	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-39 **Sample ID:** NWP_PSG37-03262021

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 11:09	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-40 **Sample ID:** NWP_PSG01-03262021-Dup

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 12:04	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

Lab ID: 0005717-41 **Sample ID:** NWP_PSG16-03242021-Dup

Sampled	Sampler Type	Preservation	Matrix	Sample Condition
4/7/21 9:20	Beacon Passive Sampler	Adsorbent	Soil Gas	Good

Comments:

BEACON ENVIRONMENTAL
2203A Commerce Rd, Suite 1
Forest Hill, MD 21050, USA
1-410-838-8780
800-878-5510 Toll Free

PASSIVE SOIL GAS SAMPLES | CHAIN-OF-CUSTODY

Project Information		Client Information	
Site Name: NORTHWEST PIPE	Company Name: JACOBS	Project Manager: KRIS IVARSON	
	Office Location: PDX	Client PO: NWP 21002	
Site Location: PORTLAND, OR	Submitted by: LAURA TOCHKO	Turn around time (check one): [X] Normal [ ] Rush (specify) ____ days	
	Email: LAURA.TOCHKO@JACOBS.COM		

Field Sample ID	Start Date	Start Time	Stop Date	Stop Time	Sampling Hole Depth (cm)	Surface Type (Soil, Asphalt, Concrete, Gravel)	Optional Information (Location Description, Sample Condition, PID / FID Readings, etc)
NWP-PS608-03242021	3/24/2021	0930	4/7/2021	0847	91	Soil	
NWP-PS607-03242021	3/24/2021	0946		0851	91	Soil	
NWP-PS606-03242021		1005		0855			
NWP-PS605-03242021		1022		0859			
NWP-PS604-03242021		1042		0902			
NWP-PS603-03242021		1110		0904			
NWP-PS612-03242021		1227		0912			
NWP-PS613-03242021		1246		0914			
NWP-PS614-03242021		1302		0916			
NWP-PS615-03242021		1317		0918			
NWP-PS616-03242021		1334		0920			
NWP-PS617-03242021		1348		0922			
NWP-PS618-03242021		1400		0926			
NWP-PS619-03242021		1420		0929			
NWP-PS621-03242021		1519		0934		Gravel	

Special Instructions:

Relinquished by (signature):	Date / Time: 4/7/21 15:00	Received by (signature): Steven Shonly	Date / Time: 4.8.2021 / 1626
Relinquished by (signature):	Date / Time:	Received by (signature):	Date / Time:
For Lab Use Only	Beacon Job No: 5717	Beacon Proposal: 201009R01	Analytical Method: 8260C
Courier Name: FedEx	Shipment Condition: ✓	Custody Seal Intact: [✓] Yes [ ] No [ ] n/a	Custody Seal No: 3614593

BEACON ENVIRONMENTAL
2203A Commerce Rd, Suite 1
Forest Hill, MD 21050, USA
1-410-838-8780
800-878-5510 Toll Free

PASSIVE SOIL GAS SAMPLES | CHAIN-OF-CUSTODY

Project Information		Client Information	
Site Name: NORTHWEST PIPE	Company Name: JACOBS	Project Manager: KRIS IVARSON	
	Office Location: PDX	Client PO: NWP 21002	
Site Location: PORTLAND, OR	Submitted by: LAURA TOCHKO	Turn around time (check one):	
	Email: LAURA.TOCHKO@JACOBS.COM	[X] Normal [ ] Rush (specify) ____ days	

Field Sample ID	Start Date	Start Time	Stop Date	Stop Time	Sampling Hole Depth (cm)	Surface Type (Soil, Asphalt, Concrete, Gravel)	Optional Information (Location Description, Sample Condition, PID / FID Readings, etc)
NWP-PS611-03242021	3/24/2021	1538	4/7/2021	0942	91	Gravel	
NWP-PS610-03252021	3/25/2021	0915		0945	91	~~Soil~~ Gravel	
NWP-PS609-03252021		0933		0948		Soil/Gravel	
NWP-PS629-03252021		0950		0957		Soil	
NWP-PS628-03252021		1005		1000			
NWP-PS627-03252021		1028		1002			
NWP-PS626-03252021		1044		1005			
NWP-PS625-03252021		1057		1007			
NWP-PS624-03252021		1110		1011			
NWP-PS623-03252021		1122		1013			
NWP-PS622-03252021		1130		1015			
NWP-PS620-03252021		1230		0954		Gravel	
NWP-PS631-03252021		1351		1041		Soil/Gravel	
NWP-PS632-03252021		1415		1043		Soil/Gravel	
NWP-PS634-03252021		1436		1052	76	Asphalt	
NWP-PS635-03252021		1500		1057	76	Asphalt	
NWP-PS630-03262021	3/26/2021	0902		1137	91	Gravel/Soil	
NWP-PS633-03262021		0922		1045	91	Gravel/Soil	
NWP-PS636-03262021		0951		1102	91	Asphalt	
NWP-PS637-03262021		1016		1109	91	Gravel/Soil	

Special Instructions:

For Lab Use Only	Beacon Job No: 5717	Beacon Proposal: 201009R01	Analytical Method: 8260C

BEACON ENVIRONMENTAL

2203A Commerce Rd, Suite 1
Forest Hill, MD 21050, USA
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PASSIVE SOIL GAS SAMPLES | CHAIN-OF-CUSTODY

Project Information		Client Information	
Site Name: NORTHWEST PIPE	Company Name: JACOBS	Project Manager: KRIS IVARSON	
	Office Location: PDX	Client PO: NWP21002	
Site Location: PORTLAND, OR	Submitted by: LAURA TOCHKIN	Turn around time (check one):	
	Email: LAURA.TOCHKIN@JACOBS.COM	[X] Normal [ ] Rush (specify) ____ days	

Field Sample ID	Start Date	Start Time	Stop Date	Stop Time	Sampling Hole Depth (cm)	Surface Type (Soil, Asphalt, Concrete, Gravel)	Optional Information (Location Description, Sample Condition, PID / FID Readings, etc)
NWP-PSG02-032621	3/26/21	1047	4/7/2021	1155	91	Asphalt	
NWP-PSG01-032621	3/26/21	1112	4/7/2021	1204	91	Asphalt	
TRIP1	3/24/21	0800	4/7/2021	1200	NA	NA	
TRIP2	3/24/21	0800	4/7/2021	1200	NA	NA	

Special Instructions:

For Lab Use Only	Beacon Job No: 57177	Beacon Proposal: 201009R01	Analytical Method: 8260C

Appendix C

Site Photos and Field Notes

NWP PSG SAMPLE UTILITY LOCATE PREP 3/9/21

TASK: MARK OUT PSG UTILITY LOCATES ~~QUESTION~~ FOR THIRD PARTY LOCATES.

PERSONNEL: L. TOCHKO + PAT TERHUNE

WEATHER: 54°F / 37°F, ~~CLEAR~~ OVERCAST / PARTLY CLOUDY

SAFETY: NEW PERSON ON SITE, PIPES @ NWP ~~ARE~~ 9 FT DIAMETER WATCH OUT FOR VEHICLES (COVID)

0900 MEET UP OUT NWP LOT. HTS TAILGATE

0930 CHECK IN W/ NWP W/ TIM. INSPECT WELL LOCATIONS FOR ACCESSIBILTY ISSUES. MW 03 + MW 04 ARE ACCESSIBLE BUT WILL REQUIRE ASPHALT CUTTING FOR PSG INSTALLATION

1000 CHECK IN @ PORT SECURITY AND REQUEST GATE 405 BE UNLOCKED

1010 BEGIN MARKING OUT PSG SAMPLE LOCATIONS. NOTE THE 2 LOCATIONS @ NWP + 4 ON PORT PROPERTY @ AT ASPHALT. 5 ~~LOCATIONS~~ LOCATIONS ON PORT IN GRAVEL LOT. 2 LOCATIONS ON PORT POTENTIALLY IN GRAVEL / ASPHALT. MAY POSE ISSUE W/ HAMMER DRILL

1400 OFFSITE

Laura Tochko 3/9/21

NWP PSG ~~PGS~~ @ UTILITY LOCATE 3/11/21

TASK: 3RD PARTY LOCATE OF PSG SAMPLERS WITH APS

PERSONNEL: LAURA TOCHKO / JACOBS
BILL PATTERSON / APS

WEATHER MOSTLY CLEAR, CALM, 34°F / 61°F

SAFETY: ORIENT APS TO SITE, COLD, LARGE PIPES @ NWP

0900 : CHECK IN W/ TIM @ NWP, MEET B. PATTERSON/APS
CONDUCT H+S TAILGATE

0920 BEGIN LOCATES @ NWP
METROTECH + RADIO DETECTION - APS EQUIPMENT

0935 FINISH LOCATES @ NWP. ALL CLEAR. CHECK OUT W/ TIM

0940 CHECK IN W/ PORT SECURITY @ GATE. BEGIN PORT LOCATION UTILITY LOCATES:
3 LOCATIONS MOVED DUE TO PROXIMITY TO SEWER LINE. SEWER LINE ESTIMATED 5 FT BGS
ONE LOCATION MOVED DUE TO PROXIMITY TO SILT FENCE / CONSTRUCTION AREA.

1120 ALL LOCATIONS CLEARED FOR UTILITIES WITHIN 6FT OF MARKED LOCATIONS

1130 OFFSITE

Laura Tochko 3/11/21

PS6 Sampler Install 3/24/2021

0800 Arrived on site at Port of Portland Employees on site: Pat Terhune, Brandon Jones-Stanley. Objective: Install passive soil gas samplers. Weather: 45°F, Cloudy/Rain

0830 Met with Mike Shields (PoP) who informed us he moved some of our locations due to utility conflicts.

0915 Set up at NWP-PS608

0930 Installed NWP-PS608-03242021. Hole drilled to 3' bgs. Sampler deployed at ~~4 feet bgs~~ ~6" bgs

0940 Began install at NWP-PS607

0946 Installed NWP-PS607-03242021 Hole drilled to 3' bgs. Sampler deployed at ~~4 feet bgs~~ ~6" bgs

0955 Began install at NWP-PS606

1005 Installed NWP-PS606-03242021 Hole drilled to 3' bgs Sampler deployed to ~6" bgs.

1015 Began install at NWP-PS605

1022 Installed NWP-PS605-03242021 Hole drilled to 3' bgs Sampler deployed to ~6" bgs

1030 Began install at NWP-PS604

1042 Installed NWP-PS604-03242021 Hole drilled to 3' bgs. Sampler deployed to ~6" bgs.

1105 Began install at NWP-PS603

1110 Installed NWP-PS603-03242021 Hole drilled to 3' bgs Sampler deployed to ~6" bgs

1218 Began install at NWP-PS612

1227 Installed NWP-PS612-03242021 Hole drilled to 3' bgs. Sampler deployed at ~6" bgs.

1236 Began install at NWP-PS613

1246 Installed NWP-PS613-03242021 Hole drilled to 3' bgs Sampler deployed at ~6" bgs

1253 Begin install at NWP-PS614-03242021PT

1302 Installed NWP-PS614-03242021 Hole drilled to 3' bgs. PT Sampler deployed to ~6" bgs.

1309 Began install at NWP-PS615

1317 Installed NWP-PS615-03242021 Hole drilled to 3' bgs Sampler deployed to 6" bgs.

1325 Began installing NWP-PS616

1334 Installed NWP-PS616-03242021 Hole drilled to 3' bgs Sampler deployed at ~6" bgs.

1337 NWP-PS617 - Began install

1348 Installed NWP-PS617-03242021 Hole drilled to 3' bgs. Sampler deployed at ~6" bgs.

03/24/2021

1355 Began install at ~~NWP-PS618~~
1400 Installed NWP-PS618-03242021 Hole drilled to 3' bgs. Sampler deployed to ~6" bgs.
1408 Began installing NWP-PS619
1420 Installed NWP-PS619-03242021 Hole drilled to 3' bgs. Sampler deployed to ~6" bgs
1430 Began install at ~~PS6~~ PT NWP-PS620. Ground is covered in 2" Gravel, and PS6 Point is in a low point where water is pooling. Need to move ~40' east to get out of pooling water. Called Kris to get approval. Skipping point until we can get Utility clearance. Port of Portland will clear point tomorrow.
1~~4~~55 Began install at NWP-PS621
1519 Installed NWP-PS621-03242021 Hole advanced to 3' bgs. Could only advance 1½" bit to ~8" bgs. Cut Pipesleeve to 8" and deployed sampler to ~4" bgs.
1521 Began install at NWP-PS611
1538 Installed ~~NWP~~ NWP-PS611-03242021. Hole drilled to 3' bgs. Could only advance 1½" bit to ~9". Cut pipe liner to 9" and deployed Sampler to ~4".
1615 Offsite for day.

3/24/2021

PS6 Sampler Install 3/25/2021

0800 Pat Terhune on site.
0830 Brandon Jones- stanley on site. Objective: Install Passive Soil gas samplers. Weather: 45°F Overcast. His Topic: stuck hammer drill.
0858 Began install at NWP-PS610
0915 Installed NWP-PS610-03252021 Had trouble with drilling through gravel and hole collapsing. Hole drilled to ~2.5' bgs. could only advance 1½" bit to ~8". Sampler deployed to ~4". PT PT
0925 Began install at NWP-PS609.
0933 Installed NWP-PS609-03252021 Hole drilled to 3' bgs. Samplers deployed to ~6" bgs.
Note: PS609 and PS610 are located on a gravel pad with 2" gravel. Difficulty drilling, hole collapse. Seemed to be gravel to ~3' bgs.
0945 Began install at NWP-PS629
0950 Installed NWP-PS629-03252021. Hole drilled to 3' bgs. Sampler deployed to 6". Easy drilling. Port of Portland locates on site to clear PS620 moved location for Utilities
0959 Began install at NWP-PS628. Note: PS629 had to be moved ~3' North to avoid a utility
1005 Installed NWP-PS628-03252021 Hole drilled to 3' bgs. Sampler deployed to ~6" bgs. Easy drilling.
1020 Began installing NWP-PS627
1028 Installed NWP-PS627-03252021 Hole drilled to 3' bgs. Sampler deployed to 3' bgs. Easy drilling.
1037 Began install at NWP-PS626
1044 Installed NWP-PS626-03252021. Hole drilled to 3' bgs. Sampler installed to 6" bgs. Easy drilling.
1050 Began install at NWP-PS625
1057 Installed NWP-PS625-03252021. Hole drilled to 3' bgs. Sampler ~~ins~~ (PT) Deployed to 6" bgs. Easy drilling.
1102 Began install at NWP-PS624
1110 Installed NWP-PS624-03252021 Hole drilled to 3' bgs. Sampler deployed to ~6" bgs. Easy drilling.
1116 Began install at NWP-PS623.
1122 Installed NWP-PS623-03252021. Hole drilled to 3' bgs. Sampler deployed to ~6" bgs. Easy drilling.
1126 Began install at NWP-PS622
1130 Installed NWP-PS622-03252021 Hole drilled to 3' bgs. Sampler deployed to ~6" bgs. Easy drilling.
1208 Began install at NWP-PS620, moved ~40' to the east

PSG Install 3/25/2021

1230 Installed NWP-PSG20-03252021. Hole drilled to 5' bgs. Could only advance 1 1/2" bit to ~4", and hole collapsed because of gravel + loose material. Installed Pipe liner to ~8" and deployed sampler to ~4".

1340 Began install at NWP-PS631

1351 Installed NWP-PS631-03252021. Hole drilled to 3' bgs. Advanced 1 1/2" bit to ~8". Pipe sleeve inserted to ~8". Sampler deployed to ~5" bgs.

1357 Began install at NWP-PS632

1415 Installed NWP-PS632-03252021. Hole drilled to 3' bgs. Pipe sleeve inserted to 8". Sampler deployed to ~4" bgs. Hard drilling.

1421 Began install at NWP-PS634

1436 Installed NWP-PS634-03252021. Hole drilled to 2.5' bgs. Pipe liner installed to 10" bgs. Sampler deployed to 4" bgs.

1445 Began install at NWP-PS635

1500 Installed NWP-PS635-03252021. Hole drilled to 2.5' bgs. Pipe liner inserted to ~10" bgs. Sampler deployed to ~5" bgs.

1515 left PoP property. Disposed of IDW Decon water in drum at NWP.

1540 collected Equipment Blank NWP-PSG-EB. Brandon taking to Fedex for shipping.

1615 offsite for day

DC 3/25/2021

PSG Samplers Install 3/26/2021

0800 Pat Terhune and Brandon Jones - Stanley arrived on site. Objective: Install PSG Samplers. Weather, 45°F overcast. HrS Tailgate Topic: Utilities.

0815 Mike Shields with PoP Utilities on site to clear utilities for a moved point.

0848 Began install at NWP-PSG30. Moved point ~20-30' east to avoid utilities.

0902 Installed [NWP-PSG30-03262021]. Hole drilled to 3' bgs. Sampler deployed to ~5". Lots of gravel/coarse material.

0910 Began install at NWP-PSG33. Moved point ~ 15' North to avoid utilities.

0922 Installed [NWP-PSG33-03262021] Hole drilled to 3' bgs. Pipe liner installed to 10". Sampler deployed to ~4". Coarse material/gravel.

0930 Began install at NWP-PSG36

0951 Installed [NWP-PSG36-03262021]. Hole drilled to 3' bgs. Pipe liner installed to ~10" bgs. Sampler deployed to ~4" bgs. Patched with concrete.

1005 Began install at NWP-PSG37

1016 Installed [NWP-PSG37-03262021] Hole drilled to 3' bgs. Pipe liner installed to 10". Sampler deployed to ~4" bgs.

1030 left PoP property for NWP

1039 Began install at NWP-PSG02. Notified Tim with NWP that we are onsite.

1047 Installed [NWP-PSG02-03262021]. Hole drilled to 3' bgs through asphalt. Pipe liner installed to 10". Sampler deployed to ~4". Concrete patched.

1100 Began install at NWP-PSG01

1112 Installed [NWP-PSG01-03262021]. Hole drilled to 3' bgs through asphalt. Pipe liner installed to 10" bgs. Sampler deployed to ~4" bgs. Note: GPS accuracy for Sample point was poor because location was behind metal pipes.

1130 Disposed of IDW Decon water in drum at NWP.

1145 offsite for day.

3/26/2021

4/7/2021

PSG Removal

TASK: RETRIEVE PSG SAMPLERS
PERSONNEL: LAURA TOCHKO / JACOBS
BRANDON JONES-STANLEY / JACOBS
WEATHER: CLOUDY 54°F / 39°F
H+S TOPIC: BIOLOGICAL HAZARDS, BIRD POOP
0800 MET ON SITE H+S TAILGATE.
0835 BEGIN RETRIEVING PSG SAMPLERS

0847	RETRIEVE	NWP - PSG08 - 03242021
0851	RETRIEVE	NWP - PSG07 - 03242021
0855	RETRIEVE	NWP - PSG06 - 03242021
0859	RETRIEVE	NWP - PSG05 - 03242021
0902	RETRIEVE	NWP - PSG04 - 03242021
0904	RETRIEVE	NWP - PSG03 - 03242021
0912	RETRIEVE	NWP - PSG12 - 03242021
0914	RETRIEVE	NWP - PSG13 - 03242021
0916	RETRIEVE	NWP - PSG14 - 03242021
0918	RETRIEVE	NWP - PSG15 - 03242021
0920	RETRIEVE	NWP - PSG16 - 03242021
0922	RETRIEVE	NWP - PSG17 - 03242021
0926	RETRIEVE	NWP - PSG18 - 03242021
0929	RETRIEVE	NWP - PSG19 - 03242021
0934	RETRIEVE	~~NWP - PSG20~~ NWP - PSG21 - 03242021
0942	RETRIEVE	NWP - PSG11 - 03242021
0945	RETRIEVE	NWP - PSG10 - 03252021
0948	RETRIEVE	NWP - PSG09 - 03252021
0954	RETRIEVE	NWP - PSG20 - 03252021
0957	RETRIEVE	NWP - PSG29 - 03252021
1000	RETRIEVE	NWP - PSG28 - 03252021
1002	RETRIEVE	NWP - PSG27 - 03252021
1005	RETRIEVE	NWP - PSG26 - 03252021
1007	RETRIEVE	NWP - PSG25 - 03252021
1011	RETRIEVE	NWP - PSG24 - 03252021
1013	RETRIEVE	NWP - PSG23 - 03252021
1015	RETRIEVE	NWP - PSG22 - 03252021
1041	RETRIEVE	NWP - PSG31 - 03252021
1043	RETRIEVE	NWP - PSG32 - 03252021
1045	RETRIEVE	NWP - PSG33 - 03262021
1052	RETRIEVE	NWP - PSG34 - 03252021
1057	RETRIEVE	NWP - PSG35 - 03252021
1102	RETRIEVE	NWP - PSG36 - 03262021

4/7/2021

PSG REMOVAL 4/1/2021

1109	RETRIEVE NWP - PSG37 - 03262021
1137	RETRIEVE NWP - PSG30 - 03262021
1145	FINISH RETRIEVING PSG SAMPLERS FROM PORT OF POX PROPERTY. ALL ASPHALT HOLES HAVE BEEN PATCHED.
1160	CHECK IN WITH MIKE @ NWP.
1155	RETRIEVE NWP - PSG02 - 03262021
1204	RETRIEVE NWP - PSG01 - 03262021
1215	FINISH RETRIEVING PSG SAMPLERS FROM NWP + PATCH HOLES WITH ASPHALT. PREP SAMPLERS FOR SHIPPING.
1255	OFFSITE. BRANDON JONES-STANLEY TO DROP SAMPLES OFF @ FEDEX.

Lauren Locklo
4/1/2021

Northwest Pipe – Passive Soil Gas Sampler Installation Photos



Photo 1: Drilling of Surface Hole for Passive Soil Gas Sampler

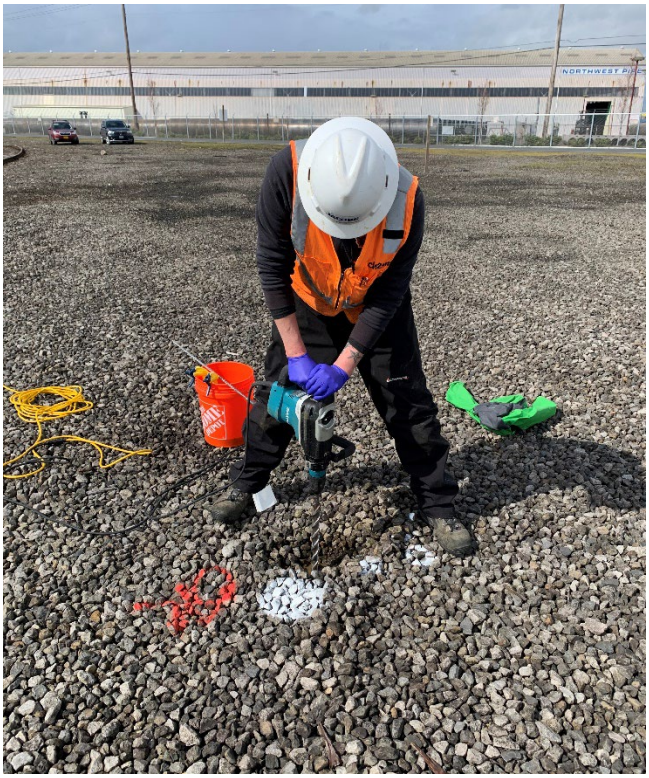


Photo 2: Drilling of Surface Hole for Passive Soil Gas Sampler



Photo 3: Drilling of Surface Hole for Passive Soil Gas Sampler



Photo 4: Surface Patch Following Removal