WSP USA, Inc.
100 Apollo Drive, 3rd Floor
Chelmsford, MA 01824

May 11, 2023

Mr. Joseph T. Martella II, Senior Engineer
Rhode Island Department of Environmental Management
Office of Land Revitalization and Sustainable Materials Management
Site Remediation Program
235 Promenade Street
Providence, Rhode Island 02908

RE: Parcel C Groundwater Sampling – February 1, 2023
Former Gorham Manufacturing Facility
333 Adelaide Avenue, Providence, Rhode Island
WSP Project No. 3652220351

Dear Mr. Martella:

This letter summarizes the February 1, 2023, collection and analysis of a groundwater sample from monitoring well MW-D within Parcel C at the Former Gorham Manufacturing Site in Providence, Rhode Island (**Figure 1**). This activity was performed to supplement historic periodic groundwater testing done between July 2015 and September 2017. The groundwater sampling and review was conducted in accordance with the Remedial Action Work Plan (RAWP) dated March 11, 2015, and the corresponding Rhode Island Department of Environmental Management (RIDEM) July 9, 2015, Order of Approval (Order of Approval).

Background

Extensive groundwater investigations were previously conducted throughout the upland portions of the Former Gorham Manufacturing Site property, including Parcel C, and within the Mashapaug Inner and Outer Coves. The groundwater investigations identified low levels of volatile organic compounds (VOCs) in groundwater immediately upgradient of and along the southern shore of the Inner Cove (Parcels C and C-1).

Based on 2006-2010 groundwater data, tetrachloroethylene (PCE) and trichloroethylene (TCE) were present at low levels in groundwater from the northwestern corner of Parcel C. Groundwater and Inner Cove sediment data collected during the same period (2006-2010) demonstrated that a clear trend of decreasing contaminant concentrations within the groundwater had occurred over time.

RIDEM's Order of Approval required Textron to monitor Parcel C/C-1 groundwater following completion of the remedial action in December 2015, by sampling six wells (MW-235S, MW-236S, MW-237S, MW-D, MW-241, and MW-FS) until data from three consecutive sampling rounds demonstrate that Parcel C groundwater is compliant with RIDEM's GB Groundwater Objectives with no increasing concentrations of VOCs, and that Parcel C-1 groundwater is compliant with the Massachusetts Department of Environmental Protection (MassDEP) GW-3 Standards with no increasing concentrations of VOCs.

The April 2016 sampling event confirmed that both MW-FS and MW-237S met the required criteria of three consecutive decreasing rounds of groundwater concentrations that were below the MassDEP GW-3 Standards.

These two wells were eliminated from the groundwater monitoring program (April 2016 groundwater monitoring report). Three more wells were eliminated from monitoring following the July 2016 sampling round, specifically MW-235S, MW-236S, and MW-241, in accordance with the Order of Approval. Starting in September 2016, only MW-D has been sampled; it has been sampled thirteen times semi-annually in the late winter/early spring and fall of each year.

At the time of the Parcel C Closure Report submittal in May 2017, TCE and 1,1-dichloroethene (1,1-DCE) were the only analytes present above their respective GB Groundwater Objectives in MW-D. In 2016 and 2017, TCE had been detected at concentrations ranging from 0.499 milligrams per liter (mg/L) to 3.32 mg/L; most results were above its GB Groundwater Objective of 0.54 mg/L. Concentrations of 1,1-DCE ranged from 0.0019 mg/L to 0.0149 mg/L; some of these results exceeded the GB Groundwater Criteria of 0.007 mg/L. Concentration trends for both analytes were generally decreasing during 2017. Other chemicals that have been detected in MW-D since May 2017 are detected at concentrations well below their respective applicable standards and are not discussed further herein.

APTIM continues to sample monitoring well MW-D semi-annually, and reported concentrations of VOCs, specifically 1,1-DCE and TCE, have continued to trend downward. However, concentrations of TCE typically remain above the GB Groundwater Objective and below the MassDEP GW-3 standards. Previously collected results have been presented in a semi-annual letter report to RIDEM since 2015.

February 2023 Activities

On February 1, 2023, APTIM, of Canton, Massachusetts sampled groundwater monitoring well, MW-D (**Figure 2**), using the U.S. Environmental Protection Agency (USEPA) low-flow methodology. The one groundwater sample was submitted under chain-of-custody control to an off-site laboratory for VOC analysis by USEPA Method 8260B. Stabilization parameters for this groundwater sampling event are included in **Appendix A**.

Groundwater Sampling Results

Table 1 summarizes the historic VOC concentrations detected in MW-D including the February 2023 groundwater sampling event. VOC concentrations detected in Parcel C (including MW-D) are compared to the GB Groundwater Objectives, as well as the MassDEP GW-3 Standards (per the 2015 Order of Approval). The analytical laboratory report for the February 2023 groundwater sampling event is included in **Appendix B**.

As shown in **Table 1**, results from the February 2023 sampling round show that TCE and cis-1,2-dichloroethene were detected. The TCE concentration of 0.190 mg/L was below its GB Groundwater Objective and its MassDEP GW-3 Standard. The concentration of TCE was lower in this sampling round than in any of the other historic sampling events (the previous minimum detected concentration was 0.272 mg/L in December 1998). The concentration of cis-1,2-dichloroethene was below both the GB Groundwater Objective and MassDEP GW-3 Groundwater Standard. No other compounds were detected in MW-D above the applicable laboratory detection limits.

Groundwater Monitoring Approach

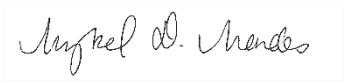
Based on the extensive groundwater data collected, VOC concentrations within the northwestern area of Parcel C have been reduced. In 2016 and 2017, only MW-D continued to exhibit exceedances of GB Groundwater Objectives, specifically for TCE and 1,1-DCE. Concentrations of 1,1-DCE had reduced to below their respective criteria by April 2019, likely as a result of continued biodegradation and natural attenuation in the groundwater. After concentrations of 1,1-DCE rebounded slightly above the criteria in October 2019, concentrations decreased in the subsequent sampling rounds in March 2020, September 2020, and March 2021, and 1,1-DCE was not detected in the four most recent sampling rounds in August 2021, February 2022, August 2022, and February 2023. Furthermore, TCE concentrations have also been trending downward since the September 2016 sampling event. In this most recent sampling event in February 2023, the concentration of TCE was consistent with the trend observed from 2019-2022 but was below the applicable GB Objective. WSP concludes that the results continue to show an overall downward trend in all analytes since 2016.

The Parcel C/C-1 area is currently being used by the City of Providence School Department as a recreational field. No buildings are planned in the area of MW-D which is located within the woods. The final Environmental Land Use Restrictions (ELUR) and Soil Management Plan (SMP) has been signed by the City of Providence and filed in the Providence Land Evidence Records. A copy of this signed ELUR and SMP was submitted to RIDEM for their records. The ELUR includes the provision preventing the use of the groundwater for potable and non-potable use, and that no subsurface structures can be constructed over the groundwater without prior approval from RIDEM. This provision addresses the potential future vapor intrusion issue associated with the RIDEM GB Groundwater Objective.

Textron proposes to continue monitoring the groundwater quality at MW-D on a semi-annual basis, pending continued compliance with RIDEM's GB Groundwater Objectives. The next scheduled sampling event is August 2023. A report will be prepared and submitted to RIDEM in September 2023 to update the status of this one monitoring well and provide an annual recommendation concerning the continuation of the semi-annual monitoring of this well.

Please contact Makala Fioritto, Textron, (401-457-6009) or Mykel Mendes, WSP, (951-312-8756) if we can provide additional information or answer any questions concerning these groundwater monitoring data and planned future sampling of MW-D.

Sincerely,
WSP USA, Inc.



Mykel Mendes
Project Manager

Jane Parkin Kullmann, PhD, CPH
Lead Consultant - Risk Assessor

Enclosures: Table 1 – Summary of Parcel C/C-1 Groundwater Results 1989 – 2023
Figure 1 – Site Location Map
Figure 2 – Parcel C/C-1 Site Map
Appendix A – Stabilization Parameters February 2023 Sampling Event
Appendix B – Laboratory Report February 2023 Sampling Event

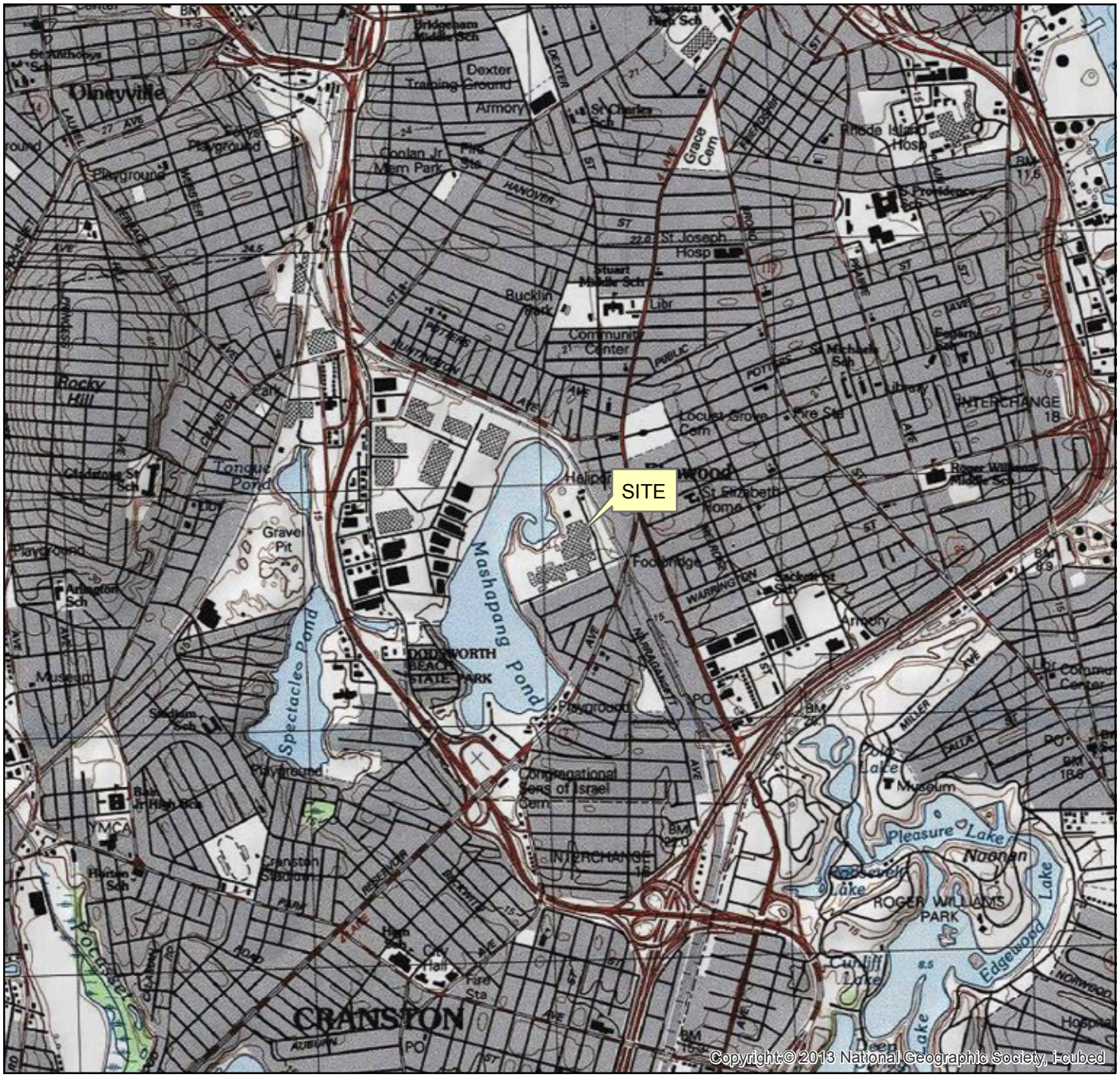
cc: Robert Azar, Deputy Director - Providence Planning & Development (Electronic)
M. Fioritto, Textron, Inc. (Electronic)
G. Simpson, Textron, Inc. (Electronic)
Knight Memorial Library Repository

Tables

Table 1
MW-D/B-4
Groundwater Results 1989 - 2023
Former Gorham Manufacturing Site
Providence, RI

| Location: | | | | | | | | | | | | | | MW-D/B-4 | | | | | | | | | | | | | |

Figures



Location of Site

SITE LOCATION MAP

Former Gorham
Manufacturing Site

333 Adelaide Avenue
Providence, Rhode Island

Notes & Sources

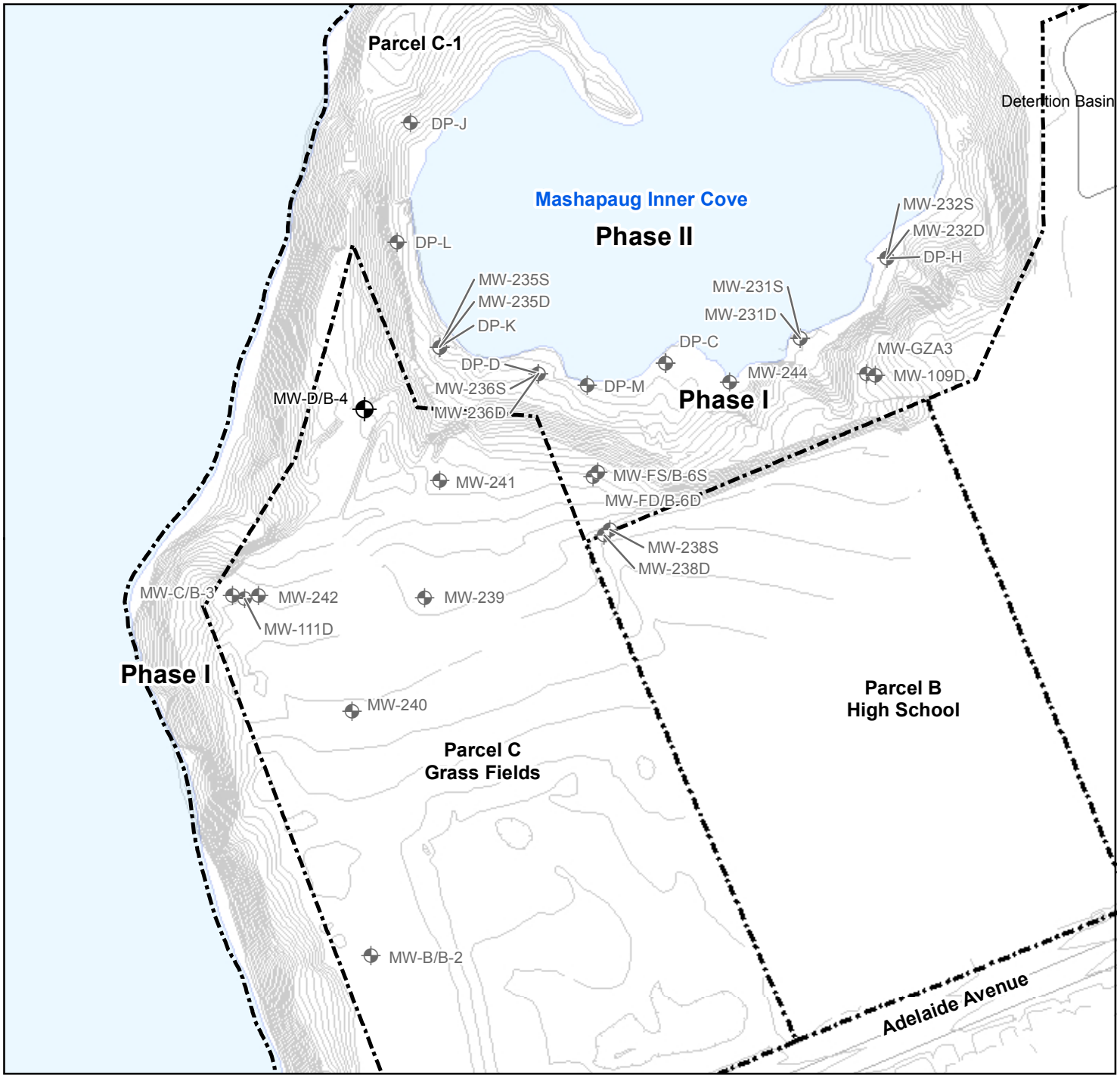
0 1,000 2,000
Feet

N

WSP USA, Inc.
100 Apollo Drive
Chelmsford, MA 01824

FIGURE
1

H:\Textron-Gorham\Providence_RI\Task7\MXD\Fig1_ParcelC_MW-D.mxd May 08, 2019 DWN: emily.gardiner CHKD: AKN, Rev: MDM 11.02.22



PARCEL C: MW-D

Former Gorham Manufacturing Site

333 Adelaide Avenue
Providence, Rhode Island

Legend

- Existing Monitoring Well
- Abandoned Monitoring Well
- Approximate Site Boundary
- Mashapaug Pond
- Elevation Contour

Location of Site

Notes & Sources

0 140 Feet

N

WSP USA, Inc.
100 Apollo Drive
Chelmsford, MA 01824

FIGURE
2

H:\Textron-Gorham\Providence_RI\Task7\MXD\Fig1_ParcelC_MW-D.mxd May 08, 2019 DWN: emily.gardiner CHKD: HWC, Rev: MDM 11.02.22

Appendix A

Stabilization Parameters February 2023 Sampling Event

Appendix A - Stabilization Parameters for MW-D, February2023 Sampling Event				
Date	Aug-21	Feb-22	Aug-22	Feb-23
pH	5.83	6.94	6.36	7.90
Temp (°C)	12.42	9.26	13.32	10.78
Conductivity (µS/cm)	485	313	375	302
DO (mg/L)	2.54	3.36	0.93	4.61
ORP (mV)	64.3	-35.2	115.6	123.1
Turbidity (NTU)	0.6	0.5	0.4	0.4
Depth to Water (ft)	21.05	20.18	21.18	19.97
Depth to Bottom (ft)	33.77	22*	33.75	33.85

* Possible obstruction noted at 22 ft.

Prepared by: MDM 4/19/23

Checked by: JP 5/8/23

Appendix B

Laboratory Report, February 2023 Sampling Event

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

February 10, 2023

Catherine Joe Mainville
APTIM - MA
150 Royall Street
Canton, MA 02021

Project Location: 333 Adelaide Ave., Providence, RI
Client Job Number:
Project Number: 631010697
Laboratory Work Order Number: 23B0525

Enclosed are results of analyses for samples as received by the laboratory on February 3, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Theresa L. Ferrentino
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

APTIM - MA
150 Royall Street
Canton, MA 02021
ATTN: Catherine Joe Mainville

REPORT DATE: 2/10/2023

PURCHASE ORDER NUMBER: 216859

PROJECT NUMBER: 631010697

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23B0525

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 333 Adelaide Ave., Providence, RI

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW-D-2023021	23B0525-01	Ground Water		SW-846 8260D	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8260D

Qualifications:

RL-11

Elevated reporting limit due to high concentration of target compounds.

Analyte & Samples(s) Qualified:

23B0525-01[MW-D-2023021]

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

1,2-Dibromo-3-chloropropane (DBCP)
23B0525-01[MW-D-2023021], B330723-BLK1, B330723-BS1, B330723-BSD1, S082951-CCV1

Bromoform
23B0525-01[MW-D-2023021], B330723-BLK1, B330723-BS1, B330723-BSD1, S082951-CCV1

tert-Butyl Alcohol (TBA)
23B0525-01[MW-D-2023021], B330723-BLK1, B330723-BS1, B330723-BSD1, S082951-CCV1

trans-1,4-Dichloro-2-butene
23B0525-01[MW-D-2023021], B330723-BLK1, B330723-BS1, B330723-BSD1, S082951-CCV1

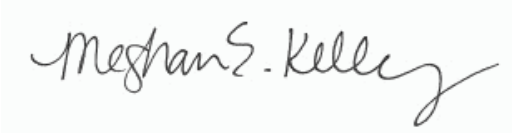
V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

Bromomethane
B330723-BS1, B330723-BSD1, S082951-CCV1

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 333 Adelaide Ave., Providence, R Sample Description: Work Order: 23B0525

Date Received: 2/3/2023

Field Sample #: MW-D-2023021 Sampled: 2/1/2023 09:00

Sample ID: 23B0525-01

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	100	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Acrylonitrile	ND	10	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
tert-Amyl Methyl Ether (TAME)	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Benzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Bromobenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Bromochloromethane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Bromodichloromethane	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Bromoform	ND	2.0	µg/L	2	V-05	SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Bromomethane	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
2-Butanone (MEK)	ND	40	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
tert-Butyl Alcohol (TBA)	ND	40	µg/L	2	V-05	SW-846 8260D	2/7/23	2/7/23 20:50	MFF
n-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
sec-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
tert-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Carbon Disulfide	ND	10	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Carbon Tetrachloride	ND	10	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Chlorobenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Chlorodibromomethane	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Chloroethane	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Chloroform	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Chloromethane	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
2-Chlorotoluene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
4-Chlorotoluene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	10	µg/L	2	V-05	SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Dibromomethane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,3-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,4-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
trans-1,4-Dichloro-2-butene	ND	4.0	µg/L	2	V-05	SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Dichlorodifluoromethane (Freon 12)	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,1-Dichloroethane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2-Dichloroethane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,1-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
cis-1,2-Dichloroethylene	34	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
trans-1,2-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2-Dichloropropane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,3-Dichloropropane	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
2,2-Dichloropropane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,1-Dichloropropene	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
cis-1,3-Dichloropropene	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
trans-1,3-Dichloropropene	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Diethyl Ether	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 333 Adelaide Ave., Providence, R Sample Description: Work Order: 23B0525

Date Received: 2/3/2023

Field Sample #: MW-D-2023021 Sampled: 2/1/2023 09:00

Sample ID: 23B0525-01

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,4-Dioxane	ND	100	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Ethylbenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Hexachlorobutadiene	ND	1.2	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
2-Hexanone (MBK)	ND	20	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Isopropylbenzene (Cumene)	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
p-Isopropyltoluene (p-Cymene)	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Methyl Acetate	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Methyl tert-Butyl Ether (MTBE)	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Methyl Cyclohexane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Methylene Chloride	ND	10	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Naphthalene	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
n-Propylbenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Styrene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,1,1,2-Tetrachloroethane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,1,2,2-Tetrachloroethane	ND	1.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Tetrachloroethylene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Tetrahydrofuran	ND	20	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Toluene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2,3-Trichlorobenzene	ND	10	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2,4-Trichlorobenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,3,5-Trichlorobenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,1,1-Trichloroethane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,1,2-Trichloroethane	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Trichloroethylene	190	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Trichlorofluoromethane (Freon 11)	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2,3-Trichloropropane	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,2,4-Trimethylbenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
1,3,5-Trimethylbenzene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Vinyl Chloride	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
m+p Xylene	ND	4.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
o-Xylene	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF
Xylenes (total)	ND	2.0	µg/L	2		SW-846 8260D	2/7/23	2/7/23 20:50	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	101	70-130		2/7/23 20:50
Toluene-d8	102	70-130		2/7/23 20:50
4-Bromofluorobenzene	95.5	70-130		2/7/23 20:50

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Sample Extraction Data

Prep Method: SW-846 5030B **Analytical Method: SW-846 8260D**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23B0525-01 [MW-D-2023021]	B330723	2.5	5.00	02/07/23

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B330723 - SW-846 5030B										
Blank (B330723-BLK1)				Prepared & Analyzed: 02/07/23						
Acetone	ND	50	µg/L							
Acrylonitrile	ND	5.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L							
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	µg/L							
Bromochloromethane	ND	1.0	µg/L							
Bromodichloromethane	ND	0.50	µg/L							
Bromoform	ND	1.0	µg/L							V-05
Bromomethane	ND	2.0	µg/L							
2-Butanone (MEK)	ND	20	µg/L							
tert-Butyl Alcohol (TBA)	ND	20	µg/L							V-05
n-Butylbenzene	ND	1.0	µg/L							
sec-Butylbenzene	ND	1.0	µg/L							
tert-Butylbenzene	ND	1.0	µg/L							
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L							
Carbon Disulfide	ND	5.0	µg/L							
Carbon Tetrachloride	ND	5.0	µg/L							
Chlorobenzene	ND	1.0	µg/L							
Chlorodibromomethane	ND	0.50	µg/L							
Chloroethane	ND	2.0	µg/L							
Chloroform	ND	2.0	µg/L							
Chloromethane	ND	2.0	µg/L							
2-Chlorotoluene	ND	1.0	µg/L							
4-Chlorotoluene	ND	1.0	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L							V-05
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	1.0	µg/L							
1,2-Dichlorobenzene	ND	1.0	µg/L							
1,3-Dichlorobenzene	ND	1.0	µg/L							
1,4-Dichlorobenzene	ND	1.0	µg/L							
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L							V-05
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L							
1,1-Dichloroethane	ND	1.0	µg/L							
1,2-Dichloroethane	ND	1.0	µg/L							
1,1-Dichloroethylene	ND	1.0	µg/L							
cis-1,2-Dichloroethylene	ND	1.0	µg/L							
trans-1,2-Dichloroethylene	ND	1.0	µg/L							
1,2-Dichloropropane	ND	1.0	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	1.0	µg/L							
1,1-Dichloropropene	ND	2.0	µg/L							
cis-1,3-Dichloropropene	ND	0.50	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							
1,4-Dioxane	ND	50	µg/L							
Ethylbenzene	ND	1.0	µg/L							
Hexachlorobutadiene	ND	0.60	µg/L							
2-Hexanone (MBK)	ND	10	µg/L							
Isopropylbenzene (Cumene)	ND	1.0	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L							
Methyl Acetate	ND	1.0	µg/L							

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B330723 - SW-846 5030B											
Blank (B330723-BLK1)				Prepared & Analyzed: 02/07/23							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L								
Methyl Cyclohexane	ND	1.0	µg/L								
Methylene Chloride	ND	5.0	µg/L								
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L								
Naphthalene	ND	2.0	µg/L								
n-Propylbenzene	ND	1.0	µg/L								
Styrene	ND	1.0	µg/L								
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L								
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L								
Tetrachloroethylene	ND	1.0	µg/L								
Tetrahydrofuran	ND	10	µg/L								
Toluene	ND	1.0	µg/L								
1,2,3-Trichlorobenzene	ND	5.0	µg/L								
1,2,4-Trichlorobenzene	ND	1.0	µg/L								
1,3,5-Trichlorobenzene	ND	1.0	µg/L								
1,1,1-Trichloroethane	ND	1.0	µg/L								
1,1,2-Trichloroethane	ND	1.0	µg/L								
Trichloroethylene	ND	1.0	µg/L								
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L								
1,2,3-Trichloropropane	ND	2.0	µg/L								
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L								
1,2,4-Trimethylbenzene	ND	1.0	µg/L								
1,3,5-Trimethylbenzene	ND	1.0	µg/L								
Vinyl Chloride	ND	2.0	µg/L								
m+p Xylene	ND	2.0	µg/L								
o-Xylene	ND	1.0	µg/L								
Xylenes (total)	ND	1.0	µg/L								
Surrogate: 1,2-Dichloroethane-d4	*25.5*		µg/L	25.0		102	70-130				
Surrogate: Toluene-d8	*25.8*		µg/L	25.0		103	70-130				
Surrogate: 4-Bromofluorobenzene	*24.3*		µg/L	25.0		97.2	70-130				
LCS (B330723-BS1)				Prepared & Analyzed: 02/07/23							
Acetone	94.5	50	µg/L	100		94.5	70-160				†
Acrylonitrile	9.60	5.0	µg/L	10.0		96.0	70-130				
tert-Amyl Methyl Ether (TAME)	10.0	0.50	µg/L	10.0		100	70-130				
Benzene	10.7	1.0	µg/L	10.0		107	70-130				
Bromobenzene	9.38	1.0	µg/L	10.0		93.8	70-130				
Bromochloromethane	10.8	1.0	µg/L	10.0		108	70-130				
Bromodichloromethane	9.31	0.50	µg/L	10.0		93.1	70-130				
Bromoform	7.38	1.0	µg/L	10.0		73.8	70-130			V-05	
Bromomethane	12.0	2.0	µg/L	10.0		120	40-160			V-20	†
2-Butanone (MEK)	103	20	µg/L	100		103	40-160				†
tert-Butyl Alcohol (TBA)	72.9	20	µg/L	100		72.9	40-160			V-05	†
n-Butylbenzene	10.1	1.0	µg/L	10.0		101	70-130				
sec-Butylbenzene	10.0	1.0	µg/L	10.0		100	70-130				
tert-Butylbenzene	9.75	1.0	µg/L	10.0		97.5	70-130				
tert-Butyl Ethyl Ether (TBEE)	10.2	0.50	µg/L	10.0		102	70-130				
Carbon Disulfide	107	5.0	µg/L	100		107	70-130				
Carbon Tetrachloride	8.69	5.0	µg/L	10.0		86.9	70-130				
Chlorobenzene	9.55	1.0	µg/L	10.0		95.5	70-130				
Chlorodibromomethane	8.15	0.50	µg/L	10.0		81.5	70-130				
Chloroethane	9.38	2.0	µg/L	10.0		93.8	70-130				

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B330723 - SW-846 5030B											
LCS (B330723-BS1)				Prepared & Analyzed: 02/07/23							
Chloroform	9.77	2.0	µg/L	10.0		97.7	70-130				
Chloromethane	11.6	2.0	µg/L	10.0		116	40-160				†
2-Chlorotoluene	9.49	1.0	µg/L	10.0		94.9	70-130				
4-Chlorotoluene	9.50	1.0	µg/L	10.0		95.0	70-130				
1,2-Dibromo-3-chloropropane (DBCP)	7.81	5.0	µg/L	10.0		78.1	70-130			V-05	
1,2-Dibromoethane (EDB)	9.14	0.50	µg/L	10.0		91.4	70-130				
Dibromomethane	9.10	1.0	µg/L	10.0		91.0	70-130				
1,2-Dichlorobenzene	9.75	1.0	µg/L	10.0		97.5	70-130				
1,3-Dichlorobenzene	9.91	1.0	µg/L	10.0		99.1	70-130				
1,4-Dichlorobenzene	9.71	1.0	µg/L	10.0		97.1	70-130				
trans-1,4-Dichloro-2-butene	7.11	2.0	µg/L	10.0		71.1	70-130			V-05	
Dichlorodifluoromethane (Freon 12)	11.4	2.0	µg/L	10.0		114	40-160				†
1,1-Dichloroethane	9.88	1.0	µg/L	10.0		98.8	70-130				
1,2-Dichloroethane	9.01	1.0	µg/L	10.0		90.1	70-130				
1,1-Dichloroethylene	9.78	1.0	µg/L	10.0		97.8	70-130				
cis-1,2-Dichloroethylene	9.79	1.0	µg/L	10.0		97.9	70-130				
trans-1,2-Dichloroethylene	9.36	1.0	µg/L	10.0		93.6	70-130				
1,2-Dichloropropane	10.0	1.0	µg/L	10.0		100	70-130				
1,3-Dichloropropane	9.63	0.50	µg/L	10.0		96.3	70-130				
2,2-Dichloropropane	9.04	1.0	µg/L	10.0		90.4	40-130				†
1,1-Dichloropropene	10.0	2.0	µg/L	10.0		100	70-130				
cis-1,3-Dichloropropene	9.52	0.50	µg/L	10.0		95.2	70-130				
trans-1,3-Dichloropropene	9.14	0.50	µg/L	10.0		91.4	70-130				
Diethyl Ether	10.6	2.0	µg/L	10.0		106	70-130				
Diisopropyl Ether (DIPE)	10.8	0.50	µg/L	10.0		108	70-130				
1,4-Dioxane	77.9	50	µg/L	100		77.9	40-130				†
Ethylbenzene	10.3	1.0	µg/L	10.0		103	70-130				
Hexachlorobutadiene	10.4	0.60	µg/L	10.0		104	70-130				
2-Hexanone (MBK)	82.9	10	µg/L	100		82.9	70-160				†
Isopropylbenzene (Cumene)	9.66	1.0	µg/L	10.0		96.6	70-130				
p-Isopropyltoluene (p-Cymene)	9.56	1.0	µg/L	10.0		95.6	70-130				
Methyl Acetate	10.0	1.0	µg/L	10.0		100	70-130				
Methyl tert-Butyl Ether (MTBE)	9.83	1.0	µg/L	10.0		98.3	70-130				
Methyl Cyclohexane	11.5	1.0	µg/L	10.0		115	70-130				
Methylene Chloride	9.67	5.0	µg/L	10.0		96.7	70-130				
4-Methyl-2-pentanone (MIBK)	86.5	10	µg/L	100		86.5	70-160				†
Naphthalene	8.08	2.0	µg/L	10.0		80.8	40-130				†
n-Propylbenzene	9.68	1.0	µg/L	10.0		96.8	70-130				
Styrene	9.65	1.0	µg/L	10.0		96.5	70-130				
1,1,1,2-Tetrachloroethane	8.68	1.0	µg/L	10.0		86.8	70-130				
1,1,2,2-Tetrachloroethane	8.71	0.50	µg/L	10.0		87.1	70-130				
Tetrachloroethylene	9.56	1.0	µg/L	10.0		95.6	70-130				
Tetrahydrofuran	9.33	10	µg/L	10.0		93.3	70-130				
Toluene	9.85	1.0	µg/L	10.0		98.5	70-130				
1,2,3-Trichlorobenzene	8.97	5.0	µg/L	10.0		89.7	70-130				
1,2,4-Trichlorobenzene	9.55	1.0	µg/L	10.0		95.5	70-130				
1,3,5-Trichlorobenzene	10.8	1.0	µg/L	10.0		108	70-130				
1,1,1-Trichloroethane	9.66	1.0	µg/L	10.0		96.6	70-130				
1,1,2-Trichloroethane	9.42	1.0	µg/L	10.0		94.2	70-130				
Trichloroethylene	9.66	1.0	µg/L	10.0		96.6	70-130				
Trichlorofluoromethane (Freon 11)	9.73	2.0	µg/L	10.0		97.3	70-130				
1,2,3-Trichloropropane	10.9	2.0	µg/L	10.0		109	70-130				

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B330723 - SW-846 5030B											
LCS (B330723-BS1)				Prepared & Analyzed: 02/07/23							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	10.6	1.0	µg/L	10.0		106	70-130				
1,2,4-Trimethylbenzene	9.78	1.0	µg/L	10.0		97.8	70-130				
1,3,5-Trimethylbenzene	9.51	1.0	µg/L	10.0		95.1	70-130				
Vinyl Chloride	11.0	2.0	µg/L	10.0		110	40-160				†
m+p Xylene	19.8	2.0	µg/L	20.0		99.2	70-130				
o-Xylene	9.76	1.0	µg/L	10.0		97.6	70-130				
Xylenes (total)	29.6	1.0	µg/L	30.0		98.7	0-200				
Surrogate: 1,2-Dichloroethane-d4	*24.8*		µg/L	25.0		99.4	70-130				
Surrogate: Toluene-d8	*25.5*		µg/L	25.0		102	70-130				
Surrogate: 4-Bromofluorobenzene	*24.3*		µg/L	25.0		97.4	70-130				
LCS Dup (B330723-BSD1)				Prepared & Analyzed: 02/07/23							
Acetone	96.8	50	µg/L	100		96.8	70-160	2.39	25		†
Acrylonitrile	9.46	5.0	µg/L	10.0		94.6	70-130	1.47	25		
tert-Amyl Methyl Ether (TAME)	10.3	0.50	µg/L	10.0		103	70-130	2.27	25		
Benzene	10.5	1.0	µg/L	10.0		105	70-130	1.32	25		
Bromobenzene	9.87	1.0	µg/L	10.0		98.7	70-130	5.09	25		
Bromochloromethane	10.8	1.0	µg/L	10.0		108	70-130	0.0926	25		
Bromodichloromethane	9.35	0.50	µg/L	10.0		93.5	70-130	0.429	25		
Bromoform	7.57	1.0	µg/L	10.0		75.7	70-130	2.54	25	V-05	
Bromomethane	11.8	2.0	µg/L	10.0		118	40-160	1.35	25	V-20	†
2-Butanone (MEK)	108	20	µg/L	100		108	40-160	4.21	25		†
tert-Butyl Alcohol (TBA)	77.4	20	µg/L	100		77.4	40-160	5.99	25	V-05	†
n-Butylbenzene	10.2	1.0	µg/L	10.0		102	70-130	1.38	25		
sec-Butylbenzene	10.3	1.0	µg/L	10.0		103	70-130	2.76	25		
tert-Butylbenzene	10.1	1.0	µg/L	10.0		101	70-130	3.63	25		
tert-Butyl Ethyl Ether (TBEE)	10.7	0.50	µg/L	10.0		107	70-130	5.18	25		
Carbon Disulfide	110	5.0	µg/L	100		110	70-130	3.10	25		
Carbon Tetrachloride	8.63	5.0	µg/L	10.0		86.3	70-130	0.693	25		
Chlorobenzene	9.95	1.0	µg/L	10.0		99.5	70-130	4.10	25		
Chlorodibromomethane	8.42	0.50	µg/L	10.0		84.2	70-130	3.26	25		
Chloroethane	10.0	2.0	µg/L	10.0		100	70-130	6.40	25		
Chloroform	9.82	2.0	µg/L	10.0		98.2	70-130	0.510	25		
Chloromethane	11.7	2.0	µg/L	10.0		117	40-160	0.775	25		†
2-Chlorotoluene	9.58	1.0	µg/L	10.0		95.8	70-130	0.944	25		
4-Chlorotoluene	9.67	1.0	µg/L	10.0		96.7	70-130	1.77	25		
1,2-Dibromo-3-chloropropane (DBCP)	8.44	5.0	µg/L	10.0		84.4	70-130	7.75	25	V-05	
1,2-Dibromoethane (EDB)	9.38	0.50	µg/L	10.0		93.8	70-130	2.59	25		
Dibromomethane	9.30	1.0	µg/L	10.0		93.0	70-130	2.17	25		
1,2-Dichlorobenzene	10.1	1.0	µg/L	10.0		101	70-130	3.53	25		
1,3-Dichlorobenzene	10.3	1.0	µg/L	10.0		103	70-130	4.15	25		
1,4-Dichlorobenzene	9.86	1.0	µg/L	10.0		98.6	70-130	1.53	25		
trans-1,4-Dichloro-2-butene	8.09	2.0	µg/L	10.0		80.9	70-130	12.9	25	V-05	
Dichlorodifluoromethane (Freon 12)	11.5	2.0	µg/L	10.0		115	40-160	1.31	25		†
1,1-Dichloroethane	9.92	1.0	µg/L	10.0		99.2	70-130	0.404	25		
1,2-Dichloroethane	9.28	1.0	µg/L	10.0		92.8	70-130	2.95	25		
1,1-Dichloroethylene	10.2	1.0	µg/L	10.0		102	70-130	4.01	25		
cis-1,2-Dichloroethylene	10.0	1.0	µg/L	10.0		100	70-130	2.12	25		
trans-1,2-Dichloroethylene	10.0	1.0	µg/L	10.0		100	70-130	6.81	25		
1,2-Dichloropropane	9.99	1.0	µg/L	10.0		99.9	70-130	0.599	25		
1,3-Dichloropropane	9.57	0.50	µg/L	10.0		95.7	70-130	0.625	25		
2,2-Dichloropropane	8.60	1.0	µg/L	10.0		86.0	40-130	4.99	25		†

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B330723 - SW-846 5030B										
LCS Dup (B330723-BSD1)				Prepared & Analyzed: 02/07/23						
1,1-Dichloropropene	10.3	2.0	µg/L	10.0		103	70-130	2.85	25	
cis-1,3-Dichloropropene	9.48	0.50	µg/L	10.0		94.8	70-130	0.421	25	
trans-1,3-Dichloropropene	9.49	0.50	µg/L	10.0		94.9	70-130	3.76	25	
Diethyl Ether	10.3	2.0	µg/L	10.0		103	70-130	3.07	25	
Diisopropyl Ether (DIPE)	10.9	0.50	µg/L	10.0		109	70-130	1.01	25	
1,4-Dioxane	84.0	50	µg/L	100		84.0	40-130	7.47	50	† ‡
Ethylbenzene	10.2	1.0	µg/L	10.0		102	70-130	1.17	25	
Hexachlorobutadiene	10.4	0.60	µg/L	10.0		104	70-130	0.0962	25	
2-Hexanone (MBK)	90.5	10	µg/L	100		90.5	70-160	8.78	25	†
Isopropylbenzene (Cumene)	9.84	1.0	µg/L	10.0		98.4	70-130	1.85	25	
p-Isopropyltoluene (p-Cymene)	10.1	1.0	µg/L	10.0		101	70-130	5.39	25	
Methyl Acetate	10.9	1.0	µg/L	10.0		109	70-130	8.98	25	
Methyl tert-Butyl Ether (MTBE)	9.82	1.0	µg/L	10.0		98.2	70-130	0.102	25	
Methyl Cyclohexane	11.6	1.0	µg/L	10.0		116	70-130	0.778	25	
Methylene Chloride	9.87	5.0	µg/L	10.0		98.7	70-130	2.05	25	
4-Methyl-2-pentanone (MIBK)	92.1	10	µg/L	100		92.1	70-160	6.25	25	†
Naphthalene	8.18	2.0	µg/L	10.0		81.8	40-130	1.23	25	†
n-Propylbenzene	9.99	1.0	µg/L	10.0		99.9	70-130	3.15	25	
Styrene	9.64	1.0	µg/L	10.0		96.4	70-130	0.104	25	
1,1,1,2-Tetrachloroethane	9.01	1.0	µg/L	10.0		90.1	70-130	3.73	25	
1,1,2,2-Tetrachloroethane	9.17	0.50	µg/L	10.0		91.7	70-130	5.15	25	
Tetrachloroethylene	9.52	1.0	µg/L	10.0		95.2	70-130	0.419	25	
Tetrahydrofuran	10.0	10	µg/L	10.0		100	70-130	7.03	25	
Toluene	9.84	1.0	µg/L	10.0		98.4	70-130	0.102	25	
1,2,3-Trichlorobenzene	9.10	5.0	µg/L	10.0		91.0	70-130	1.44	25	
1,2,4-Trichlorobenzene	9.74	1.0	µg/L	10.0		97.4	70-130	1.97	25	
1,3,5-Trichlorobenzene	10.7	1.0	µg/L	10.0		107	70-130	1.21	25	
1,1,1-Trichloroethane	9.66	1.0	µg/L	10.0		96.6	70-130	0.00	25	
1,1,2-Trichloroethane	9.22	1.0	µg/L	10.0		92.2	70-130	2.15	25	
Trichloroethylene	9.77	1.0	µg/L	10.0		97.7	70-130	1.13	25	
Trichlorofluoromethane (Freon 11)	9.77	2.0	µg/L	10.0		97.7	70-130	0.410	25	
1,2,3-Trichloropropane	11.5	2.0	µg/L	10.0		115	70-130	5.63	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	10.9	1.0	µg/L	10.0		109	70-130	2.05	25	
1,2,4-Trimethylbenzene	9.77	1.0	µg/L	10.0		97.7	70-130	0.102	25	
1,3,5-Trimethylbenzene	9.56	1.0	µg/L	10.0		95.6	70-130	0.524	25	
Vinyl Chloride	11.5	2.0	µg/L	10.0		115	40-160	4.70	25	†
m+p Xylene	19.8	2.0	µg/L	20.0		99.0	70-130	0.151	25	
o-Xylene	9.83	1.0	µg/L	10.0		98.3	70-130	0.715	25	
Xylenes (total)	29.6	1.0	µg/L	30.0		98.8	0-200	0.135		
Surrogate: 1,2-Dichloroethane-d4	*25.4*		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	*25.2*		µg/L	25.0		101	70-130			
Surrogate: 4-Bromofluorobenzene	*24.8*		µg/L	25.0		99.3	70-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
RL-11	Elevated reporting limit due to high concentration of target compounds.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Water	
Acetone	CT,ME,NH,VA,NY
Acrylonitrile	CT,ME,NH,VA,NY
tert-Amyl Methyl Ether (TAME)	ME,NH,VA,NY
Benzene	CT,ME,NH,VA,NY
Bromobenzene	ME,NY
Bromochloromethane	ME,NH,VA,NY
Bromodichloromethane	CT,ME,NH,VA,NY
Bromoform	CT,ME,NH,VA,NY
Bromomethane	CT,ME,NH,VA,NY
2-Butanone (MEK)	CT,ME,NH,VA,NY
tert-Butyl Alcohol (TBA)	ME,NH,VA,NY
n-Butylbenzene	ME,VA,NY
sec-Butylbenzene	ME,VA,NY
tert-Butylbenzene	ME,VA,NY
tert-Butyl Ethyl Ether (TBEE)	ME,NH,VA,NY
Carbon Disulfide	CT,ME,NH,VA,NY
Carbon Tetrachloride	CT,ME,NH,VA,NY
Chlorobenzene	CT,ME,NH,VA,NY
Chlorodibromomethane	CT,ME,NH,VA,NY
Chloroethane	CT,ME,NH,VA,NY
Chloroform	CT,ME,NH,VA,NY
Chloromethane	CT,ME,NH,VA,NY
2-Chlorotoluene	ME,NH,VA,NY
4-Chlorotoluene	ME,NH,VA,NY
1,2-Dibromo-3-chloropropane (DBCP)	ME,NY
1,2-Dibromoethane (EDB)	ME,NY
Dibromomethane	ME,NH,VA,NY
1,2-Dichlorobenzene	CT,ME,NH,VA,NY
1,3-Dichlorobenzene	CT,ME,NH,VA,NY
1,4-Dichlorobenzene	CT,ME,NH,VA,NY
trans-1,4-Dichloro-2-butene	ME,NH,VA,NY
Dichlorodifluoromethane (Freon 12)	ME,NH,VA,NY
1,1-Dichloroethane	CT,ME,NH,VA,NY
1,2-Dichloroethane	CT,ME,NH,VA,NY
1,1-Dichloroethylene	CT,ME,NH,VA,NY
cis-1,2-Dichloroethylene	ME,NY
trans-1,2-Dichloroethylene	CT,ME,NH,VA,NY
1,2-Dichloropropane	CT,ME,NH,VA,NY
1,3-Dichloropropane	ME,VA,NY
2,2-Dichloropropane	ME,NH,VA,NY
1,1-Dichloropropene	ME,NH,VA,NY
cis-1,3-Dichloropropene	CT,ME,NH,VA,NY
trans-1,3-Dichloropropene	CT,ME,NH,VA,NY
Diethyl Ether	ME,NY
Diisopropyl Ether (DIPE)	ME,NH,VA,NY
1,4-Dioxane	ME,NY
Ethylbenzene	CT,ME,NH,VA,NY

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Water	
Hexachlorobutadiene	CT,ME,NH,VA,NY
2-Hexanone (MBK)	CT,ME,NH,VA,NY
Isopropylbenzene (Cumene)	ME,VA,NY
p-Isopropyltoluene (p-Cymene)	CT,ME,NH,VA,NY
Methyl Acetate	ME,NY
Methyl tert-Butyl Ether (MTBE)	CT,ME,NH,VA,NY
Methyl Cyclohexane	NY
Methylene Chloride	CT,ME,NH,VA,NY
4-Methyl-2-pentanone (MIBK)	CT,ME,NH,VA,NY
Naphthalene	ME,NH,VA,NY
n-Propylbenzene	CT,ME,NH,VA,NY
Styrene	CT,ME,NH,VA,NY
1,1,1,2-Tetrachloroethane	CT,ME,NH,VA,NY
1,1,2,2-Tetrachloroethane	CT,ME,NH,VA,NY
Tetrachloroethylene	CT,ME,NH,VA,NY
Toluene	CT,ME,NH,VA,NY
1,2,3-Trichlorobenzene	ME,NH,VA,NY
1,2,4-Trichlorobenzene	CT,ME,NH,VA,NY
1,3,5-Trichlorobenzene	ME
1,1,1-Trichloroethane	CT,ME,NH,VA,NY
1,1,2-Trichloroethane	CT,ME,NH,VA,NY
Trichloroethylene	CT,ME,NH,VA,NY
Trichlorofluoromethane (Freon 11)	CT,ME,NH,VA,NY
1,2,3-Trichloropropane	ME,NH,VA,NY
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	VA,NY
1,2,4-Trimethylbenzene	ME,VA,NY
1,3,5-Trimethylbenzene	ME,VA,NY
Vinyl Chloride	CT,ME,NH,VA,NY
m+p Xylene	CT,ME,NH,VA,NY
o-Xylene	CT,ME,NH,VA,NY
Xylenes (total)	ME,NY

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2023

23B0525 TLF

Pace Analytical®

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 1

Company Name:	APTIM
Address:	150 ROYALL ST, CANTON, MA 02021
Phone:	617-794-1767
Project Name:	TEXTRON / PROVIDENCE
Project Location:	333 ADELAIDE AVE PROV, RI
Project Number:	631010697
Project Manager:	CATHERINE JOE
Pace Quote Name/Number:	PO 216859
Invoice Recipient:	617-212-8276
Sampled By:	DANIEL C. LENNY

Requested Turnaround Time: 7-Day ☐ 10-Day ☑ PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required: 1-Day ☐ 3-Day ☐ 2-Day ☐ 4-Day ☐

Data Delivery: Format: PDF ✓ EXCEL ☐ Other: EQUIS FORMAT CLP Like Data Pkg Required: ☐ Email To: CATHERINE.JOE@APTIM.COM Fax To #:

Dissolved Metals Samples: ○ Field Filtered ○ Lab to Filter

Orthophosphate Samples: ○ Field Filtered ○ Lab to Filter

PCB ONLY: SOXHLET ☐ NON SOXHLET ☐

ANALYSIS REQUESTED: EPA 8260C (VOCs) — Preservation: H

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code[1]	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	EPA 8260C (VOCs)
1	MW-D-20230201	2/1/23	0900	G	GW	U	2					2

Relinquished by: (signature) [signature]	Date/Time: 2/1/23 1330
Received by: (signature) Paul Chastenay	Date/Time: 2-2-23 10:32
Relinquished by: (signature) Paul Chastenay	Date/Time: 2-2-23 15
Received by: (signature) [signature] 15:10	Date/Time: 2-2-23
Relinquished by: (signature) [signature] 17:00	Date/Time: 2-2-23
Received by: (signature) [signature] 4.9	Date/Time: 2/2/23 1700
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments: GIS KEY TO CATHERINE.JOE@APTIM.COM

Detection Limit Requirements: MA / CT / Other

Special Requirements:
☐ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above: H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity: Government ☐ Federal ☐ City ☐ Municipality ☐ 21 J ☐ Brownfield ☐ MWRA ☐ School ☐ MBTA ☐ WRTA ☐

Other: ☐ Chromatogram ☐ AIHA-LAP,LLC

Lab Comments:

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS 2
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? (Y) / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCl
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

Log In Back-Sheet

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

Pace PEOPLE ADVANCING SCIENCE

Client APTIM
Project Tex/Providence
MCP/RCP Required N/A
Deliverable Package Requirement N/A
Location RI
PWSID# (When Applicable) NA
Arrival Method Courier
Received By / Date / Time EGR/2-2-23/1700
Back-Sheet By / Date / Time AAM/2-3-23/0910
Temperature Method Temp Gun # 3
Temp ≤ 6° C ☑ Actual Temperature 4.9° C
Rush Samples: Yes / (No) _____ Notify _____
Short Hold: Yes / (No) _____ Notify _____

Notes regarding Samples/COC outside of SOP:

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
Is there enough Volume	☑	☐
Proper Media/Container Used	☑	☐
Splitting Samples Required	☐	☑
MS/MSD	☐	☑
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

COC Included: (Check all included)

Client	☑	Analysis	☑	Sampler Name	☑
Project	☑	IDs	☑	Collection Date/Time	☑

All Samples Proper PH N/A ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber Plastic								
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials	N/A		2						