89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

June 13, 2019

U.S. Environmental Protection Agency
Office of Ecosystem Protection
EPA/OEP RGP Applications Coordinator
5 Post Office Square, Suite 100 (OEP06-1)
Boston, Massachusetts 02109-3912

Reference: **Notice of Intent (NOI) - Remediation General Permit (RGP)**
Gateway Center Phase V
Everett Avenue
Chelsea, MA
LRT Reference # 2-1868

Dear Sir/Madam:

On behalf of Boston Environmental Corporation (BEC), Lockwood Remediation Technologies, LLC (LRT) has prepared this Notice of Intent (NOI) for coverage under the United States Environmental Protection Agency's (EPA's) Remediation General Permit (RGP) under EPA's National Pollutant Discharge Elimination System (NPDES) program. This NOI was prepared in accordance with the general requirements of the NPDES and related guidance documentation provided by EPA. The completed NOI form is provided in **Appendix A.**

Site Information/Work Summary

The proposed scope of work includes dewatering during the installation of utilities on Everett Avenue. These utilities include a new sewer, storm drain, water main and electrical conduit with associated laterals, service connections and appurtenances.

Please refer to **Figure 1** for a Locus Map and an overview of the immediate area surrounding the site. The site is depicted in **Figure 2** along with the proposed treatment system/outfall locations.

Discharge and Receiving Surface Water Information

A summary of the analytical results and a copy of the laboratory analytical report are provided in **Appendix B**. Concentrations of total suspended solids (TSS), metals, ammonia, and SVOCs were detected in groundwater. To meet the applicable NPDES RGP standards, Source Water will undergo treatment Details of the water treatment system are provided below. Please refer to figure 3 for discharge location and path.

Treatment System Monitoring

During the first week of discharge, influent and effluent samples will be collected two (2) times: one (1) sample of the influent and one (1) sample of the effluent collected on the first day of the discharge; and one (1) sample of the influent and one (1) sample of the effluent collected on one additional non-consecutive day within the first week of discharge. If the treatment system is operating as designed and achieving the effluent limitations in this general permit, sampling of the influent and effluent shall be as follows, thereafter:

1) One (1) influent and one (1) effluent sample / Week for three (3) additional weeks; and
2) One (1) influent and one (1) effluent sample / Month for the remaining term of the permit.

Dewatering and Water Treatment System

Water from the excavation area will be routed to a water treatment system designed to reduce total suspended solids (TSS) and CVOCs prior to discharge. Please refer to **Figure 4** for a system schematic and **Attachment C** for individual cut sheets of system components.

The treatment system is capable of treating water up to 75 gpm and consists of one (1) vacuum tight 21,000-gallon frac tank, one (1) vacuum tight 10,000-gallon closed-top weir tank, a submersible pump and various filtration components.

Two chemical additions; LRT-E-50 Coagulant and LRT-800 Series Flocculant will be added to aid in the settling process. The coagulant will be injected into the influent stream prior to entering the frac tank for rapid mixing while the flocculant will be injected into the weir tanks for a slow mixing. In addition, an antifoam system consisting of Foamtrol-100 will be added to the influent stream prior to entering the frac tank to counteract the impact of the Biosolve and Posi Shell products which will allow the applied LRT coagulant and flocculant to perform as designed. The chemical is contained in either plastic drums and/or poly mix tanks and injected via chemical feed pumps. The dose rate is set by the pumps and adjusted as necessary by the treatment system operator based on visual clues through the water treatment process and/or by additional jar testing.

The dosing concentration for these chemicals typically ranges from 25-50 mg/L. The actual dosing concentration is based on visual observations in the field. It is important to note that although the dosing concentration is 25-50 ppm, the detected concentration in the carryover (post bag filter) is in the ppt range (about 6 orders of magnitude less than the dosing concentration). This is because nearly all the applied chemical becomes incorporated in the sludge and removed from the waste stream as a solid from the weir tank and as part of typical system O&M.

A vacuum extraction blower equipped with a 4.5 hp motor capable of producing up to 206 scfm and a vacuum up to 98" H2O is proposed to extract potential vapors from within the weir and frac tank. Potential off-gas will be treated with two (2) vapor phase vessels plumbed in series, each containing 200 pounds of virgin vapor phase carbon, and then discharged to the atmosphere through a vent stack.

From the weir tank, water will be pumped via a 3-inch submersible pump to one (1) single bag filter skid with three (3) bag filter vessels plumbed in parallel such that two bag filter vessels can operate while one remains in standby. During a bag filter changeout, two vessels are opened while one remains closed so that water treatment never needs to be shut down. Each bag filter housing includes isolation valves, sample ports, and pressure gauges on the influent and effluent piping so that it is clear when a bag filter changeout

is required. Each filter is rated for a maximum flow rate of 75 GPM and a maximum pressure of 125 pounds per square inch (PSI).

From the bag filters, water is discharged to two (2) carbon vessels each containing 1,000 pounds of virgin coconut shell liquid phase carbon. Each vessel is rated for a maximum flow rate of 75 gpm and 75 PSI and includes isolation valves, sample ports and pressure gauges on the influent and effluent piping so that it is clear when backwashing is required. Prior to discharge to the approved NPDES discharge location depicted in figure 4, treated water will be monitored with a flow meter/totalizer.

Part F of the RGP NOI requires that chemical additives be identified if applied to the effluent prior to discharge. To satisfy the confirmation requirements of RGP Part 2.5.3.d.ii:

1. The addition of pH conditioners, flocculant, coagulant and antifoam will not add any pollutants in concentrations which exceed permit effluent limitations;
2. The use of these chemicals will not result in the exceedance of any applicable water quality standard; and
3. These chemicals will not add any pollutants that would justify the application of permit conditions that are different from or absent in this permit.

Safety Data Sheets for the chemical additions are provided in **Attachment D**.

Consultation with Federal Services

LRT reviewed online electronic data viewers and databases from the Massachusetts Geographical Information System (MassGIS), the Massachusetts Division of Fisheries and Wildlife (MassWildlife; Natural Heritage and Endangered Species Program), and the U.S. National Parks Service Natural Historic Places (NPS). Based on this review, the site and the point where the proposed discharge reaches the receiving surface water body are not located within an Area of Critical Environmental Concern (ACEC). The site and the proposed discharge point are not located within Habitats of Rare Wetland Wildlife, Habitats of Rare Species or Estimated Habitats of Rare Wildlife. There are no historic places documented within the work area. Therefore, the effluent water that will be discharged within a catch basin within that portion of the site is not anticipated to affect this historical property. Refer to **Appendix E** for database maps and information.

Coverage under NPDES RGP

It is our opinion that the proposed discharge is eligible for coverage under the NPDES RGP. On behalf of GTA and the City of Chelsea, we are requesting coverage under the NPDES RGP for the discharge of treated construction dewatering effluent during excavation activities to Mystic River.

The enclosed NOI form provides required information on the general site conditions, discharge, treatment system, receiving water, and consultation with federal services. For this project, GTA/BEC is the operator that has operational control over the construction plans and specifications, including the ability to make modifications to those plans and specifications.

Please feel free to contact us at 774-450-7177 if you have any questions or if you require additional information.

Sincerely,
Lockwood Remediation Technologies, LLC

Kim Gravelle

Kim Gravelle, PG
Senior Project Manager

Paul Lockwood

Paul Lockwood
President

Encl: Figure 1 – Locus Plan
Figure 2 – Site Layout
Figures 3 – Proposed Discharge Locations
Figures 4 – Water Treatment System Schematics
Appendix A – NOI Form
Appendix B – Laboratory Data
Appendix C – Cutsheets
Appendix D – Safety Data Sheets (SDS)
Appendix D – Supplemental Information

cc: Greg Antonelli, GTA Co., Inc.
Mike Toomey, Boston Environmental Company
Alex Train, City of Chelsea

Figures

Source: Base Map from MassGIS - OLIVER: Boston North - Massachusetts

Notes

1. Figure is not to scale.

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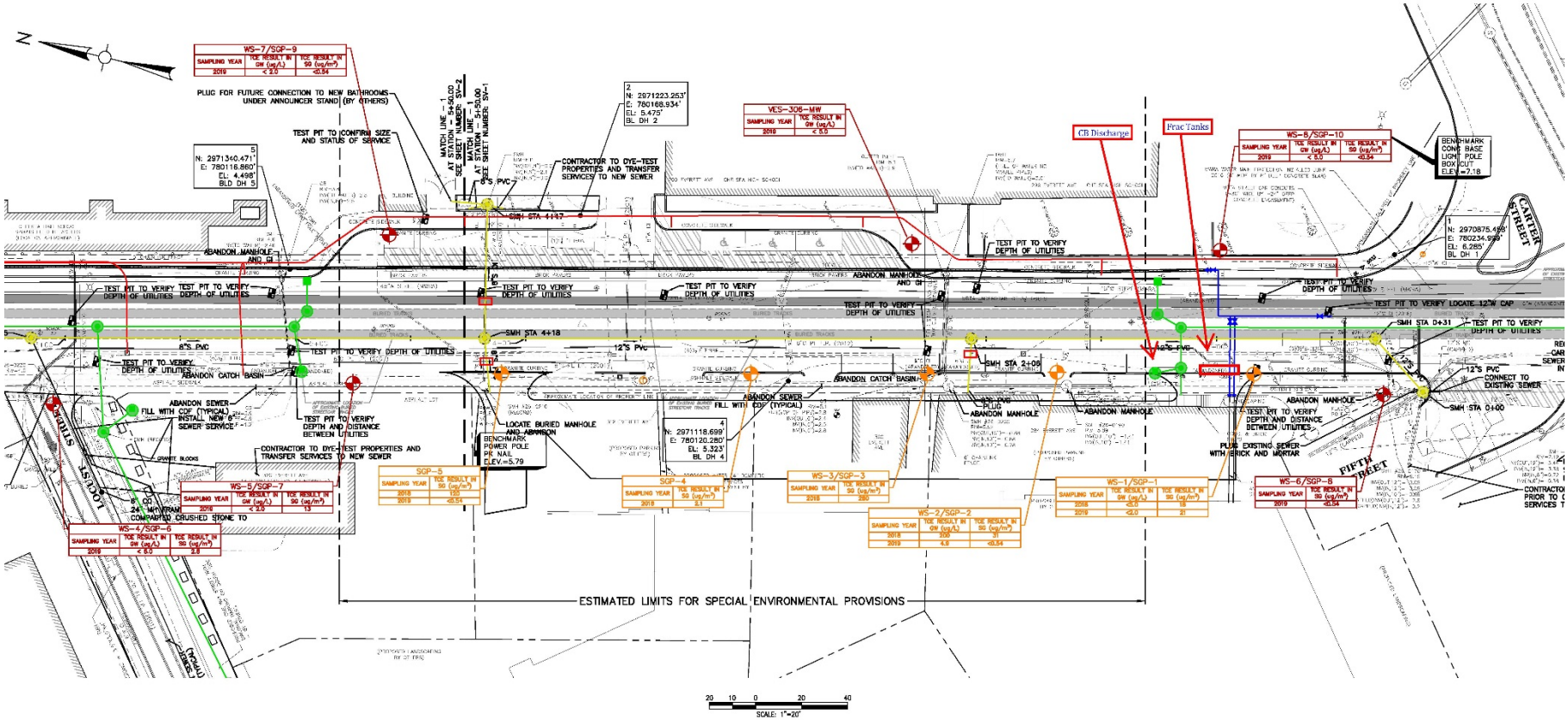
Figure 1 – Locus Plan
Gateway Center
Everett Avenue
Chelsea, Massachusetts



Source: SEP-1 – Special Environmental Provision Plan 1 of 1 – Weston & Sampson, dated August 15, 2018

Notes

1. Figure is not to scale.

Lockwood Remediation Technologies LLC

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Figure 2 – Site Plan
Gateway Center
Everett Avenue
Chelsea, Massachusetts

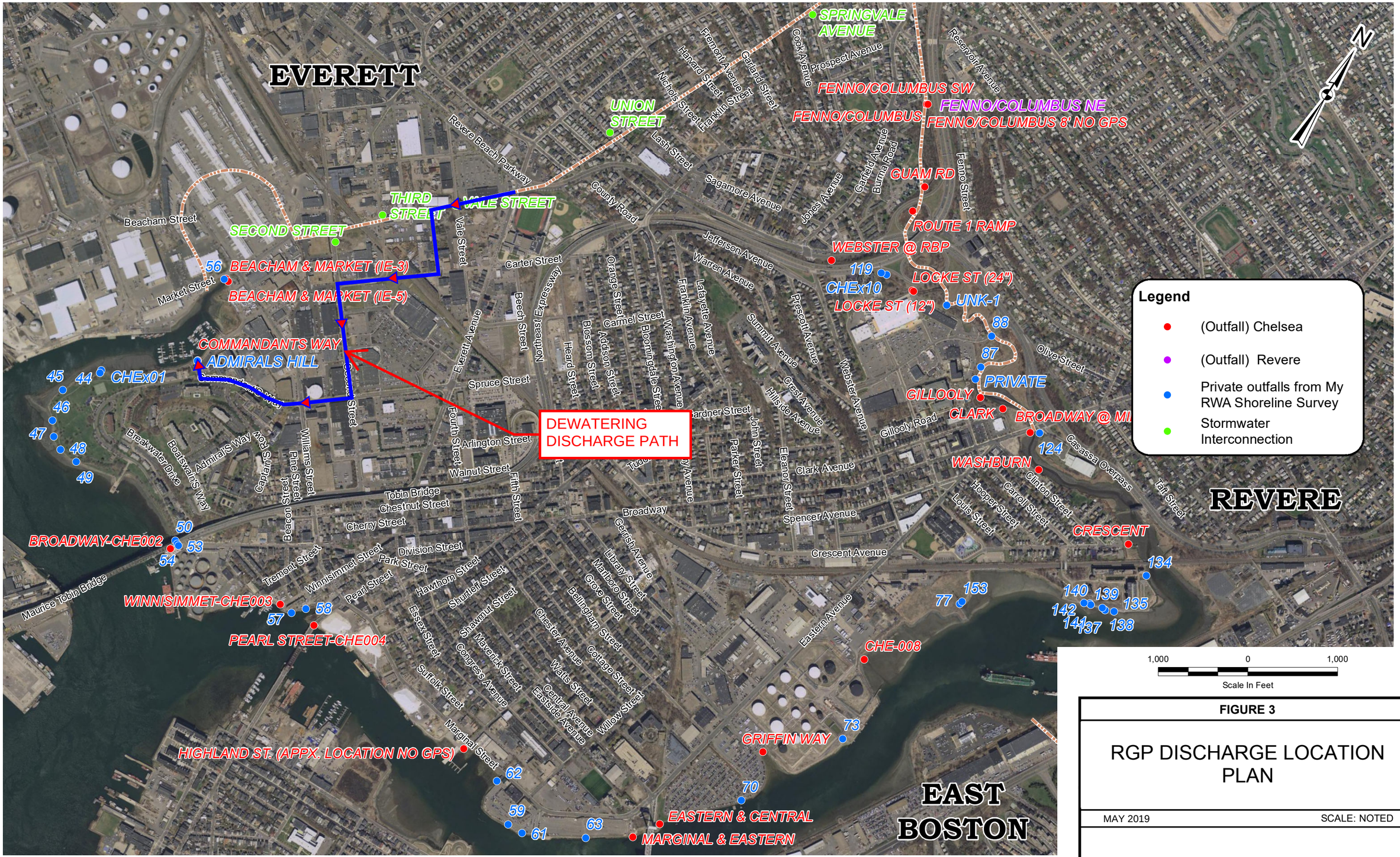
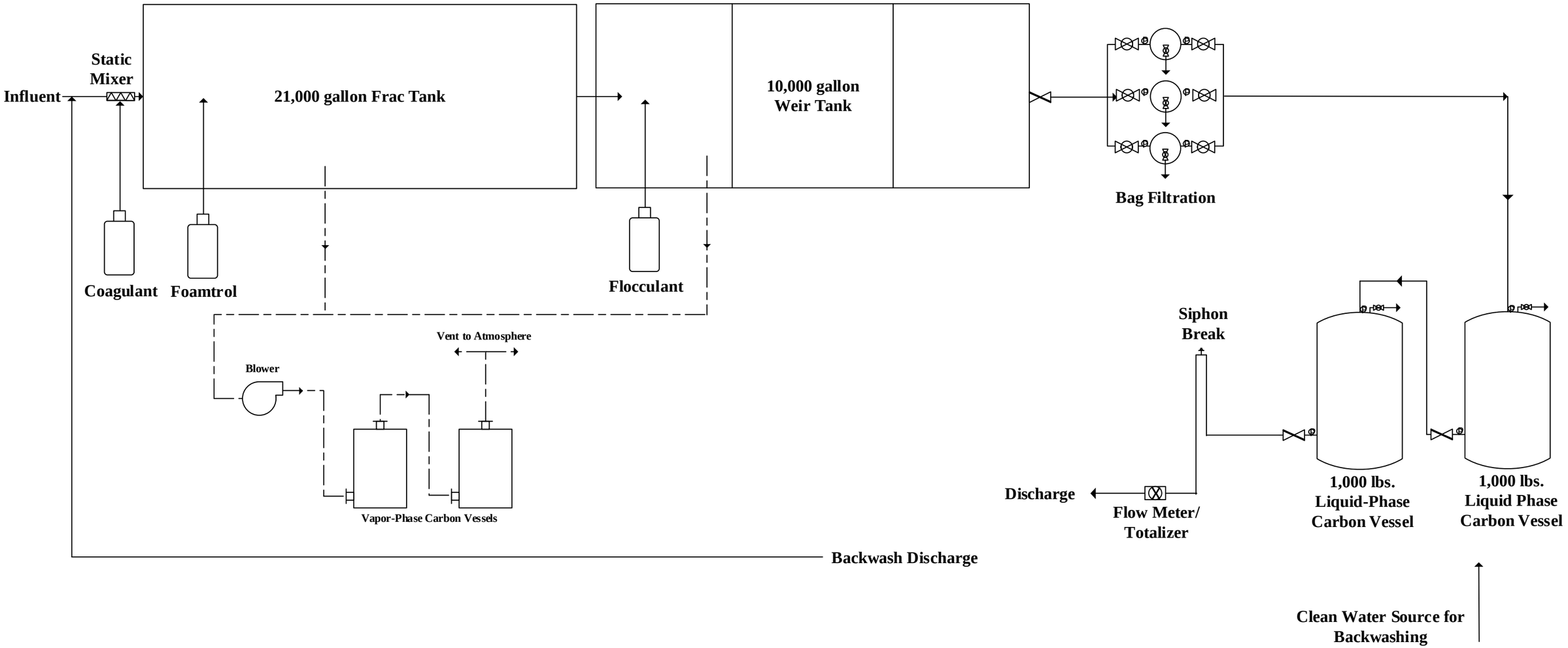


FIGURE 3

RGP DISCHARGE LOCATION PLAN

MAY 2019 SCALE: NOTED



Notes:

1. Figure not drawn to scale
2. System rated for 75 GPM
3. Sampling ports on all treatment system components

Key:

Piping/Hose ————

Vapor Line — – — – -

Lockwood Remediation Technologies, LLC 89 Crawford Street Leominster, MA 01453 Office: 774-450-7177		**Water Treatment System Schematic**	**Water Treatment System** Gateway Center Everett Avenue Chelsea, Massachusetts
DESIGNED BY: LRT	DRAWN BY: B.A.W.		**PROJECT No.** 2-1868
DATE:	REVISION:		**FIGURE No.** 4

Appendix A

NOI Form

II. Suggested Format for the Remediation General Permit Notice of Intent (NOI)

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:

Gateway Center Phase V</td><td colspan="3">Site address: 300 Everett Avenue

Street:</td></tr>
<tr><td>City: Chelsea</td><td>State: MA</td><td>Zip: 02150</td></tr>
<tr><td rowspan="4">2. Site owner
City of Chelsea

Owner is (check one): ☐ Federal ☐ State/Tribal ☐ Private
■ Other; if so, specify: City</td><td colspan="3">Contact Person: Thomas G. Ambrosino</td></tr>
<tr><td colspan="2">Telephone:</td><td>Email:</td></tr>
<tr><td colspan="3">Mailing address:

Street:</td></tr>
<tr><td>City: Chelsea</td><td>State: MA</td><td>Zip: 02150</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
GTA Co. Inc.</td><td colspan="3">Contact Person: Greg Antonelli</td></tr>
<tr><td colspan="2">Telephone:</td><td>Email:</td></tr>
<tr><td colspan="3">Mailing address:
Street: 140 Tremont Street</td></tr>
<tr><td>City: Everett</td><td>State: MA</td><td>Zip: 02149</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:

NPDES permit is (check all that apply: ■ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
■ MA Chapter 21e; list RTN(s):
URAM RTN 3-35018
☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:
☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Mystic River	MA71-03	SB(CSO)

Receiving water is (check any that apply): ☐ Outstanding Resource Water ☐ Ocean Sanctuary ☐ territorial sea ☐ Wild and Scenic River

2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): ■ Yes ☐ No

Are sensitive receptors present near the site? (check one): ☐ Yes ■ No
If yes, specify:

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP.

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	N/A
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	1

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ■ Yes ☐ No
If yes, indicate date confirmation received: Aprill 22, 2019 from Catherine Vakalopoulos, MassDEP

7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No

C. Source water information:

1. Source water(s) is (check any that apply):

■ Contaminated groundwater Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No	☐ Contaminated surface water Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ☐ Yes ☐ No	☐ The receiving water ☐ A surface water other than the receiving water; if so, indicate waterbody:	☐ Potable water; if so, indicate municipality or origin: ☐ Other; if so, specify:

2. Source water contaminants: TSS and VOCs	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): ☐ Yes ☐ No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII.	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): ☐ Yes ☐ No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): ☐ Yes ■ No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ☐ Existing discharge ■ New discharge ☐ New source	
Outfall(s): Commandant's Way	Outfall location(s): (Latitude, Longitude) Latitude (Y): 42° 23' 30.75" N Longitude (X): 71° 2' 56.88" W
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Treated effluent will be discharged to the City of Chelsea's storm water catch basins and will eventually discharge to the Mystic river via Island End River. ☐ A private storm sewer system ■ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ■ Yes ☐ No, if so, explain, with an estimated timeframe for obtaining permission: Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ■ No	
Provide the expected start and end dates of discharge(s) (month/year): June 2019 to July 2019 Indicate if the discharge is expected to occur over a duration of: ■ less than 12 months ☐ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="6">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
■ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

■ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
■ C. Halogenated Volatile Organic Compounds
■ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
■ F. Fuels Parameters</td></tr>
<tr><td colspan="2">b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)</td></tr>
<tr><td>■ G. Sites with Known Contamination</td><td>☐ H. Sites with Unknown Contamination</td></tr>
<tr><td>c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply)

☐ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
☐ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td><td>d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply</td></tr>
</table>

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia		✓	1	SM19-22 +	75	121	121	Report mg/L	---
Chloride		✓	1	EPA 300.0	100000	2,300,000	2,300,000	Report µg/l	---
Total Residual Chlorine		✓	1	SM21-22 +	20	<20	<20	0.2 mg/L	7.5 ug/L
Total Suspended Solids		✓	1	SM21-22 +	2800	2,800	2,800	30 mg/L	---
Antimony	✓		1	EPA 200.8	1.0	<1.0	<1.0	206 µg/L	
Arsenic		✓	1	EPA 200.8	1.0	<1.0	<1.0	104 µg/L	
Cadmium	✓		1	EPA 200.8	0.2	<0.2	<0.2	10.2 µg/L	
Chromium III	✓		1	EPA 200.8	10	<10	<10	323 µg/L	
Chromium VI	✓		1	SM21-22 +	4.0	0.0	0.0	323 µg/L	
Copper		✓	1	EPA 200.8	1.0	6.4	6.4	242 µg/L	3.7 ug/L
Iron		✓	1	EPA 200.7	50	400	400	5,000 µg/L	
Lead		✓	1	EPA 200.8	0.5	1.9	1.9	160 µg/L	
Mercury	✓		1	EPA 245.1	0.1	<0.1	<0.1	0.739 µg/L	
Nickel		✓	1	EPA 200.8	5.0	<5	<5	1,450 µg/L	
Selenium	✓		1	EPA 200.8	5.0	2.2	2.2	235.8 µg/L	
Silver	✓		1	EPA 200.8	0.2	<0.2	<0.2	35.1 µg/L	
Zinc		✓	1	EPA 200.8	20	22	22	420 µg/L	
Cyanide	✓		1	SM21-22 +	.001	<0.001	<0.001	178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX	✓		1	EPA 624.1	2.78	<2.78	<2.78	100 µg/L	---
Benzene	✓		1	EPA 624.1	0.36	<0.36	<0.36	5.0 µg/L	---
1,4 Dioxane	✓		1	EPA 624.1	45	<45	<45	200 µg/L	---
Acetone	✓		1	EPA 624.1	7.58	<7.58	<7.58	7.97 mg/L	---
Phenol	✓		1	EPA 420.1	0.05	<0.05	<0.05	1,080 µg/L	

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✓		1	EPA 624.1	.022	<0.22	<0.22	4.4 µg/L	
1,2 Dichlorobenzene	✓		1	EPA 624.1	.032	<0.32	<0.32	600 µg/L	---
1,3 Dichlorobenzene	✓		1	EPA 624.1	0.24	<0.24	<0.24	320 µg/L	---
1,4 Dichlorobenzene	✓		1	EPA 624.1	0.26	<0.26	<.26	5.0 µg/L	---
Total dichlorobenzene	✓		1	N/A	N/A	N/A	N/A	763 µg/L in NH	---
1,1 Dichloroethane	✓		1	EPA 624.1	0.32	9.0	9.0	70 µg/L	---
1,2 Dichloroethane	✓		1	EPA 624.1	0.82	<0.82	<0.82	5.0 µg/L	---
1,1 Dichloroethylene	✓		1	EPA 624.1	0.64	<0.64	<0.64	3.2 µg/L	---
Ethylene Dibromide	✓		1	EPA 624.1	.02	<0.02	<0.02	0.05 µg/L	---
Methylene Chloride	✓		1	EPA 624.1	0.68	<0.68	<0.68	4.6 µg/L	---
1,1,1 Trichloroethane		✓	1	EPA 624.1	0.4	4.94	4.94	200 µg/L	---
1,1,2 Trichloroethane	✓		1	EPA 624.1	0.32	<4.0	<4.0	5.0 µg/L	---
Trichloroethylene		✓	1	EPA 624.1	0.42	4.9	4.9	5.0 µg/L	---
Tetrachloroethylene	✓		1	EPA 624.1	0.36	<0.36	<0.36	5.0 µg/L	
cis-1,2 Dichloroethylene		✓	1	EPA 624.1	0.26	104	104	70 µg/L	---
Vinyl Chloride		✓	1	EPA 624.1	0.45	1.36	1.36	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✓		1	EPA 625.1	51	<51	<51	190 µg/L	
Diethylhexyl phthalate	✓		1	EPA 625.1	1.0	<1.0	<1.0	101 µg/L	
Total Group I PAHs		✓	1	EPA 625.1	1.0	0.068	0.068	1.0 µg/L	---
Benzo(a)anthracene	✓		1	EPA 625.1	0.05	<0.05	<0.05	As Total PAHs	
Benzo(a)pyrene	✓		1	EPA 625.1	0.10	<0.10	<0.10		
Benzo(b)fluoranthene		✓	1	EPA 625.1	.05	0.068	0.068		
Benzo(k)fluoranthene	✓		1	EPA 625.1	0.2	<0.20	<0.20		
Chrysene	✓		1	EPA 625.1	0.2	<0.20	<0.20		
Dibenzo(a,h)anthracene	✓		1	EPA 625.1	0.2	<0.20	<0.20		
Indeno(1,2,3-cd)pyrene	✓		1	EPA 625.1	0.2	<0.20	<0.20		

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs		✓	1	SW-846	4.85	0.1	0.1	100 µg/L	---
Naphthalene	✓		1	SW-846	1.0	<1.0	<1.0	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✓		1	EPA 625.1	.5864	<0.5864	<0.5864	0.000064 µg/L	---
Pentachlorophenol	✓		1	EPA 625.1	1.0	<1.0	<1.0	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✓		1	EPA 624.1	1400	<1400	<1400	5.0 mg/L	---
Ethanol	✓		1	EPA 624.1	0.0211	<0.0211	<0.0211	Report mg/L	---
Methyl-tert-Butyl Ether	✓		1	EPA 624.1	4.0	<4.0	<4.0	70 µg/L	
tert-Butyl Alcohol	✓		1	EPA 624.1	8.34	<8.34	<8.34	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✓		1	EPA 624.1	0.28	<0.28	<0.28	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									

E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)

☐ Adsorption/Absorption ☐ Advanced Oxidation Processes ☐ Air Stripping ■ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption
☐ Ion Exchange ■ Precipitation/Coagulation/Flocculation ■ Separation/Filtration ☐ Other; if so, specify:

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.

Pumped dewatering fluids will be directed and contained in at least two (2) vapor-tight frac tanks and treated prior to discharge to the City's storm drain system. Frac tanks shall be piped in series with the second liquid effluent port piped, manifolded and valved to a pump that discharges through two (2) bag filter assemblies plumbed in parallel and valved for independent or combined use. Two chemical additions; LRT-E-50 Coagulant and LRT-800 Series Flocculant will be added to aid in the settling process. The coagulant will be injected into the influent stream prior to entering the frac tank for rapid mixing while the flocculant will be injected into the weir tanks for a slow mixing. An antifoam system consisting +

Identify each major treatment component (check any that apply):

■ Fractionation tanks☐ Equalization tank ☐ Oil/water separator ☐ Mechanical filter ■ Media filter
■ Chemical feed tank ☐ Air stripping unit ■ Bag filter ☐ Other; if so, specify:

Indicate if either of the following will occur (check any that apply):

☐ Chlorination ☐ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Liquid-phase GAC vessels Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	75
Provide the proposed maximum effluent flow in gpm.	75
Provide the average effluent flow in gpm.	50
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	N/A

4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): ■ Yes ☐ No

F. Chemical and additive information

1. Indicate the type(s) of chemical or additive that will be applied to effluent prior to discharge or that may otherwise be present in the discharge(s): (check all that apply)

☐ Algaecides/biocides ■ Antifoams ■ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ■ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ☐ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ☐ Other; if so, specify:
N/A

2. Provide the following information for each chemical/additive, using attachments, if necessary:
LRT E50 Coagulant, LRT 823 Flocculant, Foamtrol 100 - please see attached cover letter and SDS sheets.
a. Product name, chemical formula, and manufacturer of the chemical/additive;
b. Purpose or use of the chemical/additive or remedial agent;
c. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
d. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;
e. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks; and
f. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

3. Has the operator attached an explanation which demonstrates that the addition of such chemicals/additives may be authorized under this general permit in accordance with the instructions in F, above? (check one): ■ Yes ☐ No; if no, has the operator attached data that demonstrates each of the 126 priority pollutants in CWA Section 307(a) and 40 CFR Part 423.15(j)(1) are non-detect in discharges with the addition of the proposed chemical/additive?
(check one): ☐ Yes ☐ No

G. Endangered Species Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

■ **FWS Criterion A**: No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".

☐ **FWS Criterion B**: Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): ☐ Yes ☐ No; if no, is consultation underway? (check one): ☐ Yes ☐ No

☐ **FWS Criterion C**: Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) ☐ the operator ☐ EPA ☐ Other; if so, specify:

☐ **NMFS Criterion**: A determination made by EPA is affirmed by the operator that the discharges and related activities will have "no effect" or are "not likely to adversely affect" any federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and will not result in any take of listed species. Has the operator previously completed consultation with NMFS? (check one): ☐ Yes ☐ No

2. Has the operator attached supporting documentation of ESA eligibility in accordance with the instructions in Appendix I, and G, above? (check one): ■ Yes ☐ No

Please also note the following: 1) No discharging to any restricted rivers. 2) The discharge is to a marine Environment. 3) There are no species listed, the jurisdiction of the NMFS is identical to the EPA's species distribution explained in the consultation completed for the RGP. 4) Have not had any direct consultation with NMFS.

Does the supporting documentation include any written concurrence or finding provided by the Services? (check one): ■ Yes ☐ No; if yes, attach.

H. National Historic Preservation Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

■ **Criterion A**: No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.

☐ **Criterion B**: Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.

☐ **Criterion C**: Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

2. Has the operator attached supporting documentation of NHPA eligibility in accordance with the instructions in H, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the operator will carry out to mitigate or prevent any adverse effects on historic properties? (check one): ☐ Yes ■ No

I. Supplemental information

Describe any supplemental information being provided with the NOI. Include attachments if required or otherwise necessary.

Has the operator attached data, including any laboratory case narrative and chain of custody used to support the application? (check one): ■ Yes ☐ No

Has the operator attached the certification requirement for the Best Management Practices Plan (BMPP)? (check one): ■ Yes ☐ No

J. Certification requirement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BMPP certification statement:	A BMPP will be developed and maintained that meets the requirements of this permit. The BMPP will be implemented on-site prior to initiation of discharge.
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested. **Notification will be provided upon EPA approval of NOI**	Check one: Yes ☐ No ■ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☐ No ☐ NA ■
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature:	Date: June 14, 2019
Print Name and Title: Greg Antonelli, President	City Manager, Chelsea, MA

Enter number values in green boxes below

Enter values in the units specified

↓

0	Q_R = Enter upstream flow in **MGD**
0.108	Q_P = Enter discharge flow in **MGD**
0	Downstream 7Q10

Enter a dilution factor, if other than zero

↓

0

Enter values in the units specified

↓

	C_d = Enter influent hardness in **mg/L** $CaCO_3$
	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

Enter **receiving water** concentrations in the units specified

↓

	pH in **Standard Units**
	Temperature in **°C**
0.121	Ammonia in **mg/L**
0	Hardness in **mg/L** $CaCO_3$
	Salinity in **ppt**
0	Antimony in **µg/L**
3.3	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
16	Copper in **µg/L**
130	Iron in **µg/L**
12	Lead in **µg/L**
0	Mercury in **µg/L**
5.1	Nickel in **µg/L**
4	Selenium in **µg/L**
0	Silver in **µg/L**
41	Zinc in **µg/L**

Enter **influent** concentrations in the units specified

↓

0	TRC in **µg/L**
1.68	Ammonia in **mg/L**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
6.4	Copper in **µg/L**
40	Iron in **µg/L**
1.9	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
2.2	Selenium in **µg/L**
0	Silver in **µg/L**
22	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0	Benzo(a)anthracene in **µg/L**
0	Benzo(a)pyrene in **µg/L**
0	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

Notes:

Freshwater: Q_R equal to the 7Q10; enter alternate Q_R if approved by the State; enter 0 if no dilution factor
Saltwater (estuarine and marine): enter Q_R if approved by the State; enter 0 if no entry

Discharge flow is equal to the design flow or 1 MGD, whichever is less
Only if approved by State as the entry for Q_R; leave 0 if no entry

Saltwater (estuarine and marine): only if approved by the State
Leave 0 if no entry

Freshwater only

pH, temperature, and ammonia required for all discharges
Hardness required for freshwater
Salinity required for saltwater (estuarine and marine)
Metals required for all discharges if present and if dilution factor is > 1
Enter 0 if non-detect or testing not required

if >1 sample, enter maximum
if >10 samples, may enter 95th percentile
Enter 0 if non-detect or testing not required

Dilution Factor	0.0					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**7.5**	µg/L	50	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	640	µg/L		
Arsenic	**104**	µg/L	36	µg/L		
Cadmium	**10.2**	µg/L	8.9	µg/L		
Chromium III	**323**	µg/L	100.0	µg/L		
Chromium VI	**323**	µg/L	50	µg/L		
Copper	242	µg/L	**3.7**	µg/L		
Iron	**5000**	µg/L	---	µg/L		
Lead	**160**	µg/L	8.5	µg/L		
Mercury	**0.739**	µg/L	1.11	µg/L		
Nickel	**1450**	µg/L	8.3	µg/L		
Selenium	**235.8**	µg/L	71	µg/L		
Silver	**35.1**	µg/L	2.2	µg/L		
Zinc	**420**	µg/L	86	µg/L		
Cyanide	**178**	mg/L	1.0	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7.97**	mg/L	---			
Phenol	**1,080**	µg/L	300	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**		1.6	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	3.3	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			

D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	2.2	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	20	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

Appendix B

Laboratory Data

Table 4
RGP Sample Analytical Results
MassWorks Phase V
Chelsea, MA

Parameter	Units	Reportable Concentrations (RCs)	RGP Concentrations		SAMPLING LOCATION	
		RCGW-2	TBEL	WQBEL	IER OUTFALL 3/21/2019	WS-2 3/20/2019
Inorganics						
AMMONIA AS N	mg/L	10	~	~	**0.121**	**1.68**
CHLORINE	µg/L	~	~	~	**10**	**2.3**
CHLORINE, RESIDUAL	µg/L	~	200	7.5	**0.00003**	<0.020
TOTAL SUSPENDED SOLIDS	mg/L	~	30	30	**46**	**2.8**
ANTIMONY	µg/L	8000	206	640	<1.0	<1.0
ARSENIC	µg/L	900	104	36	**3.3**	<1.0
CADMIUM	µg/L	4	10.2	8.8	<0.20	<0.20
CHROMIUM	µg/L	300	~	~	<10	<10
CHROMIUM III	mg/L	0.6	0.323	0.1	**0**	**0**
CHROMIUM VI	mg/L	0.3	0.323	0.05	<0.0040	<0.0040
COPPER	µg/L	100000	242	3.1	**16**	**6.4**
IRON	mg/L	~	5	~	**0.13**	**0.4**
LEAD	µg/L	10	160	8.1	**12**	**1.9**
MERCURY	mg/L	0.02	0.000739	0.00094	<0.00010	<0.00010
NICKEL	µg/L	200	1450	8.2	**5.1**	<5.0
SELENIUM	µg/L	100	235.8	71	**4**	**2.2**
SILVER	µg/L	7	35.1	1.9	<0.20	<0.20
ZINC	µg/L	900	420	81	**41**	**22**
CYANIDE	mg/L	0.03	178	0.001	<0.001	<0.001
Non-Halogenated Volatile Organic Carbons (VOCs)						
TOTAL BTEX	µg/L	~	100	100	<1.39	<2.78
BENZENE	µg/L	1000	5	5	<0.180	<0.360
1,4-DIOXANE	µg/L	6000	200	200	<22.5	<45.0
ACETONE	µg/L	50000	7.97	7.97	<3.79	<7.58
PHENOL	mg/L	2	1.08	0.3	<0.050	<0.050
Halogenated Volatile Organic Carbons (VOCs)						
CARBON TETRACHLORIDE	µg/L	2	4.4	1.6	<0.110	<0.220
1,2-DICHLOROBENZENE	µg/L	2000	600	600	<0.160	<0.320
1,3-DICHLOROBENZENE	µg/L	6000	320	320	<0.120	<0.240
1,4-DICHLOROBENZENE	µg/L	60	5	5	<0.130	<0.260
TOTAL DICHLOROBENZENE		~	~	~		
1,1-DICHLOROETHANE	µg/L	2000	70	70	<0.160	**9**
1,2-DICHLOROETHANE	µg/L	5	5	5	<0.410	<0.820
1,1-DICHLOROETHYLENE	µg/L	80	3.2	3.2	<0.320	<0.640
ETHYLENE DIBROMIDE / 1,2-DIBROMOETHANE (EDB)	µg/L	2	0.05	0.05	<0.020	<0.020
METHYLENE CHLORIDE	µg/L	2000	4.6	4.6	<0.340	<0.680
1,1,1-TRICHLOROETHANE	µg/L	4000	200	200	<0.200	**4.94**
1,1,2-TRICHLOROETHANE	µg/L	900	5	5	<0.160	<0.320
TRICHLOROETHYLENE	µg/L	5	5	5	<0.240	**4.9**
TETRACHLOROETHYLENE	µg/L	50	5	3.3	<0.180	<0.360
CIS-1,2-DICHLOROETHYLENE	µg/L	20	70	70	<0.130	**104**
VINYL CHLORIDE	µg/L	2	2	2	<0.450	**1.36**
Non-Halogenated Semi-Volatile Organic Carbons (SVOCs)						
TOTAL PHTHALATES		~	190	3.4	<51	<51
DIETHYLHEXYL PHTHALATE / BIS (2-ETHYLHEXYL)PHTHALATE (SIM)	µg/L	50000	101	2.2	<1.0	<1.0
TOTAL GROUP I POLYCYCLIC AROMATIC HYDROCARBONS	µg/L	~	1	~	**0.068**	<1
BENZO(A)ANTHRACENE (SIM)	µg/L	1000	~	0.0038	<0.050	<0.050
BENZO(A)PYRENE (SIM)	µg/L	500	~	0.0038	<0.10	<0.10
BENZO(B)FLUORANTHENE (SIM)	µg/L	400	~	0.0038	**0.068**	<0.050
BENZO(K)FLUORANTHENE (SIM)	µg/L	1	~	0.0038	<0.20	<0.20
CHRYSENE (SIM)	µg/L	70	~	0.0038	<0.20	<0.20
DIBENZ(A,H)ANTHRACENE (SIM)	µg/L	40	~	0.0038	<0.20	<0.20
INDENO(1,2,3-CD)PYRENE (SIM)	µg/L	100	~	0.0038	<0.20	<0.20
TOTAL GROUP II POLYCYCLIC AROMATIC HYDROCARBONS	µg/L	~	100	100	**0.1**	<4.85
NAPHTHALENE (SIM)	µg/L	700	20	20	<1.0	<1.0
Halogenated Semi-Volatile Organic Carbons (SVOCs)						
TOTAL POLYCHLORINATED BIPHENYLS (PCBs)	µg/L	5	0.000064	0.000064	<0.5836	<0.5864
PENTACHLOROPHENOL (SIM)	µg/L	200	1	1	<1.0	<1.0
Fuel Parameters						
TOTAL PETROLEUM HYDROCARBONS / SILICA GEL TREATED HEM (SGT-HEM)	mg/L	5	5	5	<1.6	<1.4
ETHANOL	µg/L	10000	~	~	<0.0105	<0.0211
METHYL TERT-BUTYL ETHER (MTBE)	µg/L	5000	70	20	<2.00	<4.00
TERT-BUTYL ALCOHOL (TBA)	µg/L	10000	120	120	<4.17	<8.34
TERT-AMYL METHYL ETHER (TAME)	µg/L	~	90	90	<0.140	<0.280
PCBs						
PCB 1016	µg/L	5	~	~	<0.0889	<0.0893
PCB 1221	µg/L	5	~	~	<0.0778	<0.0782
PCB 1232	µg/L	5	~	~	<0.0961	<0.0966
PCB 1242	µg/L	5	~	~	<0.0836	<0.0840
PCB 1248	µg/L	5	~	~	<0.0918	<0.0922
PCB 1254	µg/L	5	~	~	<0.0507	<0.0510
PCB 1260	µg/L	5	~	~	<0.0947	<0.0951

Table 4
RGP Sample Analytical Results
MassWorks Phase V
Chelsea, MA

Parameter	Units	Reportable Concentrations (RCs)	RGP Concentrations		SAMPLING LOCATION	
		RCGW-2	TBEL	WQBEL	IER OUTFALL 3/21/2019	WS-2 3/20/2019
VOCs (µg/L)						
BROMOBENZENE	µg/L	10000	~	~	NT	NT
BROMOCHLOROMETHANE	µg/L	~	~	~	NT	NT
BROMODICHLOROMETHANE	µg/L	20	~	~	NT	NT
BROMOFORM	µg/L	700	~	~	NT	NT
BROMOMETHANE	µg/L	7	~	~	NT	NT
2-BUTANONE (MEK)	µg/L	50000	~	~	NT	NT
N-BUTYLBENZENE	µg/L	~	~	~	NT	NT
SEC-BUTYLBENZENE	µg/L	~	~	~	NT	NT
TERT-BUTYLBENZENE	µg/L	10000	~	~	NT	NT
TERT-BUTYL ETHYL ETHER (TBEE)	µg/L	~	~	~	NT	NT
CARBON DISULFIDE	µg/L	10000	~	~	NT	NT
CHLOROBENZENE	µg/L	200	~	~	NT	NT
CHLORODIBROMOMETHANE	µg/L	20	~	~	NT	NT
CHLOROETHANE	µg/L	10000	~	~	NT	NT
CHLOROFORM	µg/L	50	~	~	NT	NT
CHLOROMETHANE	µg/L	10000	~	~	NT	NT
2-CHLOROTOLUENE	µg/L	10000	~	~	NT	NT
4-CHLOROTOLUENE	µg/L	~	~	~	NT	NT
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	µg/L	1000	~	~	NT	NT
DIBROMOMETHANE	µg/L	50000	~	~	NT	NT
DICHLORODIFLUOROMETHANE (FREON 12)	µg/L	100000			NT	NT
TRANS-1,2-DICHLOROETHYLENE	µg/L	80	~	~	NT	NT
1,2-DICHLOROPROPANE	µg/L	3	~	~	NT	NT
1,3-DICHLOROPROPANE	µg/L	50000	~	~	NT	NT
2,2-DICHLOROPROPANE	µg/L	~	~	~	NT	NT
1,1-DICHLOROPROPENE	µg/L	~	~	~	NT	NT
CIS-1,3-DICHLOROPROPENE	µg/L	5	~	~	NT	NT
TRANS-1,3-DICHLOROPROPENE	µg/L	5	~	~	NT	NT
DIETHYL ETHER	µg/L	10000	~	~	NT	NT
DIISOPROPYL ETHER (DIPE)	µg/L	10000	~	~	NT	NT
ETHYLBENZENE	µg/L	5000	~	~	<0.130	<0.260
HEXACHLOROBUTADIENE	µg/L	50	~	~	NT	NT
2-HEXANONE (MBK)	µg/L	10000	~	~	NT	NT
ISOPROPYLBENZENE (CUMENE)	µg/L	100000	~	~	NT	NT
P-ISOPROPYLTOLUENE (P-CYMENE)	µg/L	10000	~	~	NT	NT
4-METHYL-2-PENTANONE (MIBK)	µg/L	50000	~	~	NT	NT
NAPHTHALENE	µg/L	700	20	20	NT	NT
N-PROPYLBENZENE	µg/L	10000	~	~	NT	NT
STYRENE	µg/L	100	~	~	NT	NT
1,1,1,2-TETRACHLOROETHANE	µg/L	10	~	~	NT	NT
1,1,2,2-TETRACHLOROETHANE	µg/L	9	~	~	NT	NT
TETRAHYDROFURAN	µg/L	50000	~	~	NT	NT
TOLUENE	µg/L	40000	~	~	<0.140	<0.280
1,2,3-TRICHLOROBENZENE	µg/L	~	~	~	NT	NT
1,2,4-TRICHLOROBENZENE	µg/L	200	~	~	NT	NT
TRICHLOROFLUOROMETHANE (FREON 11)	µg/L	100000	~	~	NT	NT
1,2,3-TRICHLOROPROPANE	µg/L	10000	~	~	NT	NT
1,2,4-TRIMETHYLBENZENE	µg/L	100000	~	~	NT	NT
1,3,5-TRIMETHYLBENZENE	µg/L	1000	~	~	NT	NT
M+P XYLENE	µg/L	~	~	~	<0.300	<0.600
O-XYLENE	µg/L	~	~	~	<0.170	<0.340
TOTAL XYLENES	µg/L	3000	~	~	<0.470	<0.940
SVOCs (µg/L)			~	~		
ACENAPHTHENE (SIM)	µg/L	10000	~	~	<0.30	<0.30
ACENAPHTHYLENE (SIM)	µg/L	40	~	~	<0.30	<0.30
ANTHRACENE (SIM)	µg/L	30	~	~	<0.20	<0.20
BENZO(G,H,I)PERYLENE (SIM)	µg/L	20	~	~	<0.50	<0.50
FLUORANTHENE (SIM)	µg/L	200	~	~	<0.50	<0.50
FLUORENE (SIM)	µg/L	40	~	~	<1.0	<1.0
PHENANTHRENE (SIM)	µg/L	10000	~	~	**0.1**	<0.050
PYRENE (SIM)	µg/L	20	~	~	<1.0	<1.0
BUTYLBENZYLPHTHALATE	µg/L	10000	~	~	<10.0	<10.0
DI-N-BUTYLPHTHALATE	µg/L	50000	~	~	<10.0	<10.0
DIETHYLPHTHALATE	µg/L	9000	~	~	<10.0	<10.0
DIMETHYLPHTHALATE	µg/L	50000	~	~	<10.0	<10.0
DI-N-OCTYLPHTHALATE	µg/L	100000	~	~	<10.0	<10.0

\\wse03.local\WSE\Projects\MA\Chelsea MA\Massworks Phase 5\Construction\Environmental\Tables\[Table 4 - Groundwater Analytical Results RGP - May 2019.xls]RGP Table

NOTES:
1. For VOCs and SVOCs, only compounds with either at least one detection greater than the laboratory reporting limit, or with a specific RGP Permit Standard, are shown.
1. ND = Not detected above the lab reporting limits shown in parenthesis.
2. NT = Not tested.
3. ~ = No Method 1 Standard or UCL available
4. Yellow Shaded values exceed the MCP Reportable Concentrations (RCs).
5. Green Shaded values exceed the WQBEL under the RGP.
6. Bolded values exceed the Method 1 Cleanup Standards.

Abbreviations
mg/L = milligrams per liter
µg/L = micrograms per liter
RGP = Remediation General Permit
TBEL = Technology-Based Effluent Limitations
WQBEL = Water Quality-Based Effluent Limitations

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April 12, 2019

Daron Kurkjian
Weston & Sampson Engineers MA
55 Walkers Brook Drive
Reading, MA 01867

Project Location: Chelsea, MA
Client Job Number:
Project Number: [none]
Laboratory Work Order Number: 19C1063

Enclosed are results of analyses for samples received by the laboratory on March 21, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Meghan E. Kelley
Project Manager

Table of Contents

Table of Contents (continued)

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Weston & Sampson Engineers MA
55 Walkers Brook Drive
Reading, MA 01867
ATTN: Daron Kurkjian

REPORT DATE: 4/12/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: [none]

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19C1063

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

PROJECT LOCATION: Chelsea, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
IER OUTFALL	19C1063-01	Surface Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 420.1	
				EPA 504.1	
				SM19-22 4500 NH3 BH	MA M-MA-086/CT PH-0574/NY11148
				SM19-22 4500 NH3 C	MA M-MA-086/CT PH-0574/NY11148
				SM21-22 2540D	
				SM21-22 3500 Cr B	
				SM21-22 4500 CL G	
				SM21-22 4500 CN E	MA M-MA-086/CT PH-0574/NY11148
				Tri Chrome Calc.	
WS-2	19C1063-02	Ground Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 420.1	
				EPA 504.1	
				SM19-22 4500 NH3 BH	MA M-MA-086/CT PH-0574/NY11148
				SM19-22 4500 NH3 C	MA M-MA-086/CT PH-0574/NY11148
				SM21-22 2540D	
				SM21-22 3500 Cr B	
				SM21-22 4500 CL G	
				SM21-22 4500 CN E	MA M-MA-086/CT PH-0574/NY11148
				Tri Chrome Calc.	
VES-306-MW	19C1063-03	Ground Water		SW-846 8260C	
WS-5	19C1063-04	Ground Water		SW-846 8260C	
WS-8	19C1063-05	Ground Water		SW-846 8260C	

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Weston & Sampson Engineers MA
55 Walkers Brook Drive
Reading, MA 01867
ATTN: Daron Kurkjian

REPORT DATE: 4/12/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: [none]

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19C1063

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

PROJECT LOCATION: Chelsea, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
WS-1	19C1063-06	Ground Water		SW-846 8260C	
WS-7	19C1063-07	Ground Water		SW-846 8260C	
WS-4	19C1063-08	Ground Water		SW-846 8260C	

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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.

REVISED REPORT - 4/12/19 - MTBE added to 19C1063-01 & -02 per cleints request.

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624.1

Qualifications:

RL-11

Elevated reporting limit due to high concentration of target compounds.

Analyte & Samples(s) Qualified:

19C1063-02[WS-2]

EPA 300.0

Qualifications:

MS-07

Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery.Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.

Analyte & Samples(s) Qualified:

Chloride
19C1063-01[IER OUTFALL], B226777-MS1

SM21-22 3500 Cr B

Qualifications:

H-03

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:

Hexavalent Chromium
19C1063-02[WS-2]

SM21-22 4500 CL G

Qualifications:

H-03

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:

Chlorine, Residual
19C1063-02[WS-2]

Z-01

SM4500 test had a calibration point outside acceptable back calculation recovery. Reanalysis yielded similar non-conformance.

Analyte & Samples(s) Qualified:

Chlorine, Residual
19C1063-01[IER OUTFALL], 19C1063-02[WS-2]

SW-846 8260C

Qualifications:

L-04

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

Tetrahydrofuran
19C1063-03[VES-306-MW], 19C1063-04[WS-5], 19C1063-05[WS-8], 19C1063-06[WS-1], 19C1063-07[WS-7], 19C1063-08[WS-4], B226497-BLK1, B226497-BS1, B226497-BSD1, S033906-CCV1

L-07

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:

2,2-Dichloropropane
B226497-BS1

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PR-08

pH of sample (pH 5) is outside of method specified preservation criteria.

Analyte & Samples(s) Qualified:

19C1063-05[WS-8]

R-05

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

Analyte & Samples(s) Qualified:

Bromomethane

19C1063-03[VES-306-MW], 19C1063-04[WS-5], 19C1063-05[WS-8], 19C1063-06[WS-1], 19C1063-07[WS-7], 19C1063-08[WS-4], B226497-BLK1, B226497-BS1, B226497-BSD1, S033906-CCV1

RL-14

Elevated reporting limit due to foaming sample matrix. MA CAM reporting limit not met.

Analyte & Samples(s) Qualified:

19C1063-03[VES-306-MW], 19C1063-04[WS-5], 19C1063-05[WS-8], 19C1063-06[WS-1], 19C1063-07[WS-7], 19C1063-08[WS-4]

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:

2-Butanone (MEK)

19C1063-03[VES-306-MW], 19C1063-04[WS-5], 19C1063-05[WS-8], 19C1063-06[WS-1], 19C1063-07[WS-7], 19C1063-08[WS-4], B226497-BLK1, B226497-BS1, B226497-BSD1, S033906-CCV1

Diisopropyl Ether (DIPE)

19C1063-03[VES-306-MW], 19C1063-04[WS-5], 19C1063-05[WS-8], 19C1063-06[WS-1], 19C1063-07[WS-7], 19C1063-08[WS-4], B226497-BLK1, B226497-BS1, B226497-BSD1, S033906-CCV1

Tetrahydrofuran

19C1063-03[VES-306-MW], 19C1063-04[WS-5], 19C1063-05[WS-8], 19C1063-06[WS-1], 19C1063-07[WS-7], 19C1063-08[WS-4], B226497-BLK1, B226497-BS1, B226497-BSD1, S033906-CCV1

V-16

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.

Analyte & Samples(s) Qualified:

1,4-Dioxane

19C1063-03[VES-306-MW], 19C1063-04[WS-5], 19C1063-05[WS-8], 19C1063-06[WS-1], 19C1063-07[WS-7], 19C1063-08[WS-4], B226497-BLK1, B226497-BS1, B226497-BSD1, S033906-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:

2,2-Dichloropropane

B226497-BS1, B226497-BSD1, S033906-CCV1

Bromochloromethane

B226497-BS1, B226497-BSD1, S033906-CCV1

Dibromomethane

B226497-BS1, B226497-BSD1, S033906-CCV1

Dichlorodifluoromethane (Freon 12

B226497-BS1, B226497-BSD1, S033906-CCV1

Tetrachloroethylene

B226497-BS1, B226497-BSD1, S033906-CCV1

trans-1,3-Dichloropropene

B226497-BS1, B226497-BSD1, S033906-CCV1

Trichlorofluoromethane (Freon 11)

B226497-BS1, B226497-BSD1, S033906-CCV1

V-36

Initial calibration verification (ICV) 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:

Carbon Disulfide

B226497-BS1, B226497-BSD1, S033906-CCV1

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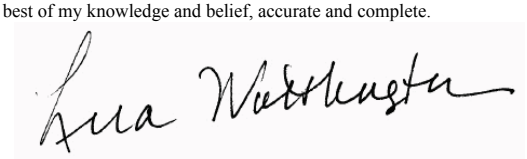
SW-846 8260C

Laboratory control sample recoveries for required MCP Data Enhancement 8260 compounds were all within limits specified by the method except for “difficult analytes” where recovery control limits of 40-160% are used and/or unless otherwise listed in this narrative. Difficult analytes: MIBK, MEK, acetone, 1,4-dioxane, chloromethane, dichlorodifluoromethane, 2-hexanone, and bromomethane.

The results of analyses reported only relate to samples submitted to the Con-Test 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.



Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: IER OUTFALL | Sampled: 3/21/2019 16:00

Sample ID: 19C1063-01

Sample Matrix: Surface Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	<50.0	50.0	3.79	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
tert-Amyl Methyl Ether (TAME)	<0.500	0.500	0.140	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Benzene	<1.00	1.00	0.180	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
tert-Butyl Alcohol (TBA)	<20.0	20.0	4.17	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Carbon Tetrachloride	<2.00	2.00	0.110	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,2-Dichlorobenzene	<2.00	2.00	0.160	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,3-Dichlorobenzene	<2.00	2.00	0.120	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,4-Dichlorobenzene	<2.00	2.00	0.130	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,2-Dichloroethane	<2.00	2.00	0.410	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
cis-1,2-Dichloroethylene	<1.00	1.00	0.130	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,1-Dichloroethane	<2.00	2.00	0.160	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,1-Dichloroethylene	<2.00	2.00	0.320	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,4-Dioxane	<50.0	50.0	22.5	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Ethanol	<50.0	50.0	10.5	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Ethylbenzene	<2.00	2.00	0.130	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Methyl tert-Butyl Ether (MTBE)	<2.00	2.00	0.250	µg/L	1		624.1	3/25/19	3/25/19 12:20	LBD
Methylene Chloride	<5.00	5.00	0.340	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Tetrachloroethylene	<2.00	2.00	0.180	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Toluene	<1.00	1.00	0.140	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,1,1-Trichloroethane	<2.00	2.00	0.200	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
1,1,2-Trichloroethane	<2.00	2.00	0.160	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Trichloroethylene	<2.00	2.00	0.240	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
Vinyl Chloride	<2.00	2.00	0.450	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
m+p Xylene	<2.00	2.00	0.300	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH
o-Xylene	<2.00	2.00	0.170	µg/L	1		624.1	3/25/19	3/25/19 12:20	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	105	70-130		3/25/19 12:20
Toluene-d8	99.9	70-130		3/25/19 12:20
4-Bromofluorobenzene	95.8	70-130		3/25/19 12:20

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: IER OUTFALL | Sampled: 3/21/2019 16:00

Sample ID: 19C1063-01

Sample Matrix: Surface Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	<0.30	0.30	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Acenaphthylene (SIM)	<0.30	0.30	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Anthracene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Benzo(a)anthracene (SIM)	<0.050	0.050	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Benzo(a)pyrene (SIM)	<0.10	0.10	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Benzo(b)fluoranthene (SIM)	0.068	0.050	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Benzo(g,h,i)perylene (SIM)	<0.50	0.50	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Benzo(k)fluoranthene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Bis(2-ethylhexyl)phthalate (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Chrysene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Dibenz(a,h)anthracene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Fluoranthene (SIM)	<0.50	0.50	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Fluorene (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Indeno(1,2,3-cd)pyrene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Naphthalene (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Pentachlorophenol (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Phenanthrene (SIM)	0.10	0.050	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA
Pyrene (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:06	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	44.5	15-110		3/26/19 22:06
Phenol-d6 (SIM)	30.0	15-110		3/26/19 22:06
Nitrobenzene-d5	90.1	30-130		3/26/19 22:06
2-Fluorobiphenyl	63.7	30-130		3/26/19 22:06
2,4,6-Tribromophenol (SIM)	96.5	15-110		3/26/19 22:06
p-Terphenyl-d14	76.7	30-130		3/26/19 22:06

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: IER OUTFALL | Sampled: 3/21/2019 16:00

Sample ID: 19C1063-01

Sample Matrix: Surface Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Butylbenzylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:12	BGL
Di-n-butylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:12	BGL
Diethylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:12	BGL
Dimethylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:12	BGL
Di-n-octylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:12	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	35.8	15-110		3/26/19 21:12
Phenol-d6	24.6	15-110		3/26/19 21:12
Nitrobenzene-d5	75.7	30-130		3/26/19 21:12
2-Fluorobiphenyl	82.1	30-130		3/26/19 21:12
2,4,6-Tribromophenol	91.8	15-110		3/26/19 21:12
p-Terphenyl-d14	89.2	30-130		3/26/19 21:12

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: IER OUTFALL | Sampled: 3/21/2019 16:00

Sample ID: 19C1063-01

Sample Matrix: Surface Water

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	<0.0966	0.0966	0.0889	µg/L	1		608.3	3/27/19	3/28/19 10:25	TG
Aroclor-1221 [1]	<0.0966	0.0966	0.0778	µg/L	1		608.3	3/27/19	3/28/19 10:25	TG
Aroclor-1232 [1]	<0.0966	0.0966	0.0961	µg/L	1		608.3	3/27/19	3/28/19 10:25	TG
Aroclor-1242 [1]	<0.0966	0.0966	0.0836	µg/L	1		608.3	3/27/19	3/28/19 10:25	TG
Aroclor-1248 [1]	<0.0966	0.0966	0.0918	µg/L	1		608.3	3/27/19	3/28/19 10:25	TG
Aroclor-1254 [1]	<0.0966	0.0966	0.0507	µg/L	1		608.3	3/27/19	3/28/19 10:25	TG
Aroclor-1260 [1]	<0.0966	0.0966	0.0947	µg/L	1		608.3	3/27/19	3/28/19 10:25	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	72.0	30-150		3/28/19 10:25
Decachlorobiphenyl [2]	76.4	30-150		3/28/19 10:25
Tetrachloro-m-xylene [1]	77.6	30-150		3/28/19 10:25
Tetrachloro-m-xylene [2]	83.7	30-150		3/28/19 10:25

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

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: IER OUTFALL | Sampled: 3/21/2019 16:00

Sample ID: 19C1063-01

Sample Matrix: Surface Water

Metals Analyses (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH
Arsenic	3.3	1.0		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH
Cadmium	ND	0.20		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH
Chromium	ND	10		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH
Chromium, Trivalent	0.0			mg/L	1		Tri Chrome Calc.	3/24/19	3/26/19 6:51	MJH
Copper	16	1.0		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH
Iron	0.13	0.050		mg/L	1		EPA 200.7	3/25/19	3/26/19 19:35	QNW
Lead	12	0.50		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH
Mercury	ND	0.00010		mg/L	1		EPA 245.1	3/26/19	3/27/19 13:02	TBC
Nickel	5.1	5.0		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH
Selenium	4.0	5.0	1.4	µg/L	1	J	EPA 200.8	3/24/19	3/25/19 13:57	MJH
Silver	ND	0.20		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH
Zinc	41	20		µg/L	1		EPA 200.8	3/24/19	3/25/19 13:57	MJH

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

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: IER OUTFALL | Sampled: 3/21/2019 16:00

Sample ID: 19C1063-01

Sample Matrix: Surface Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Chloride	10000	400		mg/L	400	MS-07	EPA 300.0	3/28/19	3/28/19 0:48	IS
Chlorine, Residual	0.030	0.020		mg/L	1	Z-01	SM21-22 4500 CL G	3/21/19	3/21/19 19:43	AIA
Hexavalent Chromium	ND	0.0040		mg/L	1		SM21-22 3500 Cr B	3/21/19	3/21/19 21:40	MJG
Phenol	ND	0.050		mg/L	1		EPA 420.1	3/26/19	3/27/19 12:30	LL
Total Suspended Solids	46	1.0		mg/L	1		SM21-22 2540D	3/22/19	3/22/19 18:25	LL
Silica Gel Treated HEM (SGT-HEM)	ND	1.6		mg/L	1		EPA 1664B	3/22/19	3/22/19 10:15	LL

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: IER OUTFALL | Sampled: 3/21/2019 16:00

Sample ID: 19C1063-01

Sample Matrix: Surface Water

Drinking Water Organics EPA 504.1

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,2-Dibromoethane (EDB) (2)	ND	0.020	µg/L	1		EPA 504.1	3/22/19	3/22/19 11:26	PJG

Surrogates	% Recovery	Recovery Limits	Flag/Qual				
1,3-Dibromopropane (2)	107	70-130					3/22/19 11:26

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: IER OUTFALL | Sampled: 3/21/2019 16:00

Sample ID: 19C1063-01

Sample Matrix: Surface Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ammonia as N	0.121	0.075	0.024	mg/L	1		SM19-22 4500 NH3 BH		3/25/19 0:00	AAL
Cyanide	ND	0.005	0.001	mg/L	1		SM21-22 4500 CN E		3/25/19 0:00	AAL

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-2 | Sampled: 3/20/2019 15:20

Sample ID: 19C1063-02

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	<100	100	7.58	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
tert-Amyl Methyl Ether (TAME)	<1.00	1.00	0.280	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Benzene	<2.00	2.00	0.360	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
tert-Butyl Alcohol (TBA)	<40.0	40.0	8.34	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Carbon Tetrachloride	<4.00	4.00	0.220	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,2-Dichlorobenzene	<4.00	4.00	0.320	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,3-Dichlorobenzene	<4.00	4.00	0.240	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,4-Dichlorobenzene	<4.00	4.00	0.260	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,2-Dichloroethane	<4.00	4.00	0.820	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
cis-1,2-Dichloroethylene	104	2.00	0.260	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,1-Dichloroethane	9.00	4.00	0.320	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,1-Dichloroethylene	<4.00	4.00	0.640	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,4-Dioxane	<100	100	45.0	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Ethanol	<100	100	21.1	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Ethylbenzene	<4.00	4.00	0.260	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Methyl tert-Butyl Ether (MTBE)	<4.00	4.00	0.500	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Methylene Chloride	<10.0	10.0	0.680	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Tetrachloroethylene	<4.00	4.00	0.360	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Toluene	<2.00	2.00	0.280	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,1,1-Trichloroethane	4.94	4.00	0.400	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
1,1,2-Trichloroethane	<4.00	4.00	0.320	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Trichloroethylene	4.90	4.00	0.480	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
Vinyl Chloride	1.36	4.00	0.900	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
m+p Xylene	<4.00	4.00	0.600	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD
o-Xylene	<4.00	4.00	0.340	µg/L	2		624.1	3/25/19	3/27/19 18:45	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	94.7	70-130		3/27/19 18:45
Toluene-d8	100	70-130		3/27/19 18:45
4-Bromofluorobenzene	100	70-130		3/27/19 18:45

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-2 | Sampled: 3/20/2019 15:20

Sample ID: 19C1063-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	<0.30	0.30	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Acenaphthylene (SIM)	<0.30	0.30	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Anthracene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Benzo(a)anthracene (SIM)	<0.050	0.050	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Benzo(a)pyrene (SIM)	<0.10	0.10	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Benzo(b)fluoranthene (SIM)	<0.050	0.050	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Benzo(g,h,i)perylene (SIM)	<0.50	0.50	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Benzo(k)fluoranthene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Bis(2-ethylhexyl)phthalate (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Chrysene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Dibenz(a,h)anthracene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Fluoranthene (SIM)	<0.50	0.50	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Fluorene (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Indeno(1,2,3-cd)pyrene (SIM)	<0.20	0.20	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Naphthalene (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Pentachlorophenol (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Phenanthrene (SIM)	<0.050	0.050	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA
Pyrene (SIM)	<1.0	1.0	µg/L	1		625.1	3/23/19	3/26/19 22:36	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	37.6	15-110		3/26/19 22:36
Phenol-d6 (SIM)	24.5	15-110		3/26/19 22:36
Nitrobenzene-d5	80.8	30-130		3/26/19 22:36
2-Fluorobiphenyl	57.3	30-130		3/26/19 22:36
2,4,6-Tribromophenol (SIM)	85.3	15-110		3/26/19 22:36
p-Terphenyl-d14	65.7	30-130		3/26/19 22:36

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-2 | Sampled: 3/20/2019 15:20

Sample ID: 19C1063-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Butylbenzylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:35	BGL
Di-n-butylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:35	BGL
Diethylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:35	BGL
Dimethylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:35	BGL
Di-n-octylphthalate	<10.0	10.0	µg/L	1		625.1	3/23/19	3/26/19 21:35	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	33.1	15-110		3/26/19 21:35
Phenol-d6	22.8	15-110		3/26/19 21:35
Nitrobenzene-d5	77.8	30-130		3/26/19 21:35
2-Fluorobiphenyl	79.0	30-130		3/26/19 21:35
2,4,6-Tribromophenol	84.4	15-110		3/26/19 21:35
p-Terphenyl-d14	80.3	30-130		3/26/19 21:35

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-2 | Sampled: 3/20/2019 15:20

Sample ID: 19C1063-02

Sample Matrix: Ground Water

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	<0.0971	0.0971	0.0893	µg/L	1		608.3	3/27/19	3/28/19 10:43	TG
Aroclor-1221 [1]	<0.0971	0.0971	0.0782	µg/L	1		608.3	3/27/19	3/28/19 10:43	TG
Aroclor-1232 [1]	<0.0971	0.0971	0.0966	µg/L	1		608.3	3/27/19	3/28/19 10:43	TG
Aroclor-1242 [1]	<0.0971	0.0971	0.0840	µg/L	1		608.3	3/27/19	3/28/19 10:43	TG
Aroclor-1248 [1]	<0.0971	0.0971	0.0922	µg/L	1		608.3	3/27/19	3/28/19 10:43	TG
Aroclor-1254 [1]	<0.0971	0.0971	0.0510	µg/L	1		608.3	3/27/19	3/28/19 10:43	TG
Aroclor-1260 [1]	<0.0971	0.0971	0.0951	µg/L	1		608.3	3/27/19	3/28/19 10:43	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	72.5	30-150		3/28/19 10:43
Decachlorobiphenyl [2]	77.0	30-150		3/28/19 10:43
Tetrachloro-m-xylene [1]	82.0	30-150		3/28/19 10:43
Tetrachloro-m-xylene [2]	88.7	30-150		3/28/19 10:43

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Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-2 | Sampled: 3/20/2019 15:20

Sample ID: 19C1063-02

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH
Arsenic	ND	1.0		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH
Cadmium	ND	0.20		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH
Chromium	ND	10		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH
Chromium, Trivalent	0.0			mg/L	1		Tri Chrome Calc.	3/24/19	3/26/19 6:51	MJH
Copper	6.4	1.0		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH
Iron	0.40	0.050		mg/L	1		EPA 200.7	3/25/19	3/26/19 19:51	QNW
Lead	1.9	0.50		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH
Mercury	ND	0.00010		mg/L	1		EPA 245.1	3/26/19	3/27/19 12:57	TBC
Nickel	ND	5.0		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH
Selenium	2.2	5.0	1.4	µg/L	1	J	EPA 200.8	3/24/19	3/25/19 14:01	MJH
Silver	ND	0.20		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH
Zinc	22	20		µg/L	1		EPA 200.8	3/24/19	3/25/19 14:01	MJH

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

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-2 | Sampled: 3/20/2019 15:20

Sample ID: 19C1063-02

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Chloride	2300	100		mg/L	100		EPA 300.0	3/27/19	3/27/19 10:33	IS
Chlorine, Residual	ND	0.020		mg/L	1	H-03, Z-01	SM21-22 4500 CL G	3/21/19	3/21/19 19:43	AIA
Hexavalent Chromium	ND	0.0040		mg/L	1	H-03	SM21-22 3500 Cr B	3/21/19	3/21/19 21:40	MJG
Phenol	ND	0.050		mg/L	1		EPA 420.1	3/26/19	3/27/19 12:30	LL
Total Suspended Solids	2.8	1.0		mg/L	1		SM21-22 2540D	3/22/19	3/22/19 18:25	LL
Silica Gel Treated HEM (SGT-HEM)	ND	1.4		mg/L	1		EPA 1664B	3/22/19	3/22/19 10:15	LL

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

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-2 | Sampled: 3/20/2019 15:20

Sample ID: 19C1063-02

Sample Matrix: Ground Water

Drinking Water Organics EPA 504.1

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,2-Dibromoethane (EDB) (2)	ND	0.020	µg/L	1		EPA 504.1	3/22/19	3/22/19 11:49	PJG

Surrogates	% Recovery	Recovery Limits	Flag/Qual				
1,3-Dibromopropane (2)	101	70-130					3/22/19 11:49

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

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-2 | Sampled: 3/20/2019 15:20

Sample ID: 19C1063-02

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ammonia as N	1.68	0.075	0.024	mg/L	1		SM19-22 4500 NH3 BH		3/25/19 0:00	AAL
Cyanide	ND	0.005	0.001	mg/L	1		SM21-22 4500 CN E		3/25/19 0:00	AAL

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

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: VES-306-MW | Sampled: 3/20/2019 13:45

Sample ID: 19C1063-03

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
tert-Amyl Methyl Ether (TAME)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Benzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Bromobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Bromochloromethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Bromodichloromethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Bromoform	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Bromomethane	ND	10	µg/L	5	R-05	SW-846 8260C	3/25/19	3/25/19 18:25	LBD
2-Butanone (MEK)	ND	50	µg/L	5	V-05	SW-846 8260C	3/25/19	3/25/19 18:25	LBD
n-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
sec-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
tert-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Carbon Disulfide	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Carbon Tetrachloride	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Chlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Chlorodibromomethane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Chloroethane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Chloroform	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Chloromethane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
2-Chlorotoluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
4-Chlorotoluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2-Dibromoethane (EDB)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Dibromomethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,3-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,4-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Dichlorodifluoromethane (Freon 12)	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,1-Dichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2-Dichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,1-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
cis-1,2-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
trans-1,2-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2-Dichloropropane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,3-Dichloropropane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
2,2-Dichloropropane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,1-Dichloropropene	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
cis-1,3-Dichloropropene	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
trans-1,3-Dichloropropene	ND	2.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Diethyl Ether	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Diisopropyl Ether (DIPE)	ND	2.5	µg/L	5	V-05	SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,4-Dioxane	ND	250	µg/L	5	V-16	SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Ethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: VES-306-MW | Sampled: 3/20/2019 13:45

Sample ID: 19C1063-03

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
2-Hexanone (MBK)	ND	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Isopropylbenzene (Cumene)	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
p-Isopropyltoluene (p-Cymene)	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Methyl tert-Butyl Ether (MTBE)	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Methylene Chloride	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
4-Methyl-2-pentanone (MIBK)	ND	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Naphthalene	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
n-Propylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Styrene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,1,2,2-Tetrachloroethane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Tetrachloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Tetrahydrofuran	ND	10	µg/L	5	L-04, V-05	SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Toluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2,3-Trichlorobenzene	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2,4-Trichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,1,1-Trichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,1,2-Trichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Trichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Trichlorofluoromethane (Freon 11)	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2,3-Trichloropropane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,2,4-Trimethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
1,3,5-Trimethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
Vinyl Chloride	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
m+p Xylene	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD
o-Xylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 18:25	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	96.7	70-130		3/25/19 18:25
Toluene-d8	102	70-130		3/25/19 18:25
4-Bromofluorobenzene	105	70-130		3/25/19 18:25

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-5 | Sampled: 3/20/2019 11:45

Sample ID: 19C1063-04

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
tert-Amyl Methyl Ether (TAME)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Benzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Bromobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Bromochloromethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Bromodichloromethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Bromoform	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Bromomethane	ND	4.0	µg/L	2	R-05	SW-846 8260C	3/25/19	3/25/19 18:56	LBD
2-Butanone (MEK)	ND	20	µg/L	2	V-05	SW-846 8260C	3/25/19	3/25/19 18:56	LBD
n-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
sec-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
tert-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Carbon Disulfide	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Carbon Tetrachloride	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Chlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Chlorodibromomethane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Chloroethane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Chloroform	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Chloromethane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
2-Chlorotoluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
4-Chlorotoluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Dibromomethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,3-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,4-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Dichlorodifluoromethane (Freon 12)	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,1-Dichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2-Dichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,1-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
cis-1,2-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
trans-1,2-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2-Dichloropropane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,3-Dichloropropane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
2,2-Dichloropropane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,1-Dichloropropene	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
cis-1,3-Dichloropropene	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
trans-1,3-Dichloropropene	ND	0.80	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Diethyl Ether	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Diisopropyl Ether (DIPE)	ND	1.0	µg/L	2	V-05	SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,4-Dioxane	ND	100	µg/L	2	V-16	SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Ethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-5 | Sampled: 3/20/2019 11:45

Sample ID: 19C1063-04

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
2-Hexanone (MBK)	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Isopropylbenzene (Cumene)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
p-Isopropyltoluene (p-Cymene)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Methyl tert-Butyl Ether (MTBE)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Methylene Chloride	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Naphthalene	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
n-Propylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Styrene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,1,1,2-Tetrachloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,1,2,2-Tetrachloroethane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Tetrachloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Tetrahydrofuran	ND	4.0	µg/L	2	L-04, V-05	SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Toluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2,3-Trichlorobenzene	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2,4-Trichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,1,1-Trichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,1,2-Trichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Trichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Trichlorofluoromethane (Freon 11)	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2,3-Trichloropropane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,2,4-Trimethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
1,3,5-Trimethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
Vinyl Chloride	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
m+p Xylene	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD
o-Xylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 18:56	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	96.4	70-130		3/25/19 18:56
Toluene-d8	101	70-130		3/25/19 18:56
4-Bromofluorobenzene	104	70-130		3/25/19 18:56

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-8 | Sampled: 3/21/2019 14:05

Sample ID: 19C1063-05

Sample Matrix: Ground Water

Sample Flags: PR-08, RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
tert-Amyl Methyl Ether (TAME)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Benzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Bromobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Bromochloromethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Bromodichloromethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Bromoform	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Bromomethane	ND	10	µg/L	5	R-05	SW-846 8260C	3/25/19	3/25/19 19:26	LBD
2-Butanone (MEK)	ND	50	µg/L	5	V-05	SW-846 8260C	3/25/19	3/25/19 19:26	LBD
n-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
sec-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
tert-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Carbon Disulfide	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Carbon Tetrachloride	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Chlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Chlorodibromomethane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Chloroethane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Chloroform	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Chloromethane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
2-Chlorotoluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
4-Chlorotoluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2-Dibromoethane (EDB)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Dibromomethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,3-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,4-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Dichlorodifluoromethane (Freon 12)	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,1-Dichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2-Dichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,1-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
cis-1,2-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
trans-1,2-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2-Dichloropropane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,3-Dichloropropane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
2,2-Dichloropropane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,1-Dichloropropene	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
cis-1,3-Dichloropropene	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
trans-1,3-Dichloropropene	ND	2.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Diethyl Ether	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Diisopropyl Ether (DIPE)	ND	2.5	µg/L	5	V-05	SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,4-Dioxane	ND	250	µg/L	5	V-16	SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Ethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-8 | Sampled: 3/21/2019 14:05

Sample ID: 19C1063-05

Sample Matrix: Ground Water

Sample Flags: PR-08, RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
2-Hexanone (MBK)	ND	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Isopropylbenzene (Cumene)	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
p-Isopropyltoluene (p-Cymene)	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Methyl tert-Butyl Ether (MTBE)	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Methylene Chloride	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
4-Methyl-2-pentanone (MIBK)	ND	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Naphthalene	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
n-Propylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Styrene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,1,2,2-Tetrachloroethane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Tetrachloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Tetrahydrofuran	ND	10	µg/L	5	L-04, V-05	SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Toluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2,3-Trichlorobenzene	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2,4-Trichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,1,1-Trichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,1,2-Trichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Trichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Trichlorofluoromethane (Freon 11)	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2,3-Trichloropropane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,2,4-Trimethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
1,3,5-Trimethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
Vinyl Chloride	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
m+p Xylene	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD
o-Xylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 19:26	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	99.2	70-130		3/25/19 19:26
Toluene-d8	101	70-130		3/25/19 19:26
4-Bromofluorobenzene	105	70-130		3/25/19 19:26

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-1 | Sampled: 3/21/2019 13:20

Sample ID: 19C1063-06

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
tert-Amyl Methyl Ether (TAME)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Benzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Bromobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Bromochloromethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Bromodichloromethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Bromoform	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Bromomethane	ND	4.0	µg/L	2	R-05	SW-846 8260C	3/25/19	3/25/19 19:57	LBD
2-Butanone (MEK)	ND	20	µg/L	2	V-05	SW-846 8260C	3/25/19	3/25/19 19:57	LBD
n-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
sec-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
tert-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Carbon Disulfide	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Carbon Tetrachloride	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Chlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Chlorodibromomethane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Chloroethane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Chloroform	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Chloromethane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
2-Chlorotoluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
4-Chlorotoluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Dibromomethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,3-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,4-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Dichlorodifluoromethane (Freon 12)	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,1-Dichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2-Dichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,1-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
cis-1,2-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
trans-1,2-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2-Dichloropropane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,3-Dichloropropane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
2,2-Dichloropropane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,1-Dichloropropene	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
cis-1,3-Dichloropropene	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
trans-1,3-Dichloropropene	ND	0.80	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Diethyl Ether	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Diisopropyl Ether (DIPE)	ND	1.0	µg/L	2	V-05	SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,4-Dioxane	ND	100	µg/L	2	V-16	SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Ethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-1 | Sampled: 3/21/2019 13:20

Sample ID: 19C1063-06

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
2-Hexanone (MBK)	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Isopropylbenzene (Cumene)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
p-Isopropyltoluene (p-Cymene)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Methyl tert-Butyl Ether (MTBE)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Methylene Chloride	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Naphthalene	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
n-Propylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Styrene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,1,1,2-Tetrachloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,1,2,2-Tetrachloroethane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Tetrachloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Tetrahydrofuran	ND	4.0	µg/L	2	L-04, V-05	SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Toluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2,3-Trichlorobenzene	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2,4-Trichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,1,1-Trichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,1,2-Trichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Trichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Trichlorofluoromethane (Freon 11)	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2,3-Trichloropropane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,2,4-Trimethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
1,3,5-Trimethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
Vinyl Chloride	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
m+p Xylene	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD
o-Xylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 19:57	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
1,2-Dichloroethane-d4	98.0	70-130		3/25/19	19:57
Toluene-d8	102	70-130		3/25/19	19:57
4-Bromofluorobenzene	105	70-130		3/25/19	19:57

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-7 | Sampled: 3/21/2019 12:15

Sample ID: 19C1063-07

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
tert-Amyl Methyl Ether (TAME)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Benzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Bromobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Bromochloromethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Bromodichloromethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Bromoform	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Bromomethane	ND	4.0	µg/L	2	R-05	SW-846 8260C	3/25/19	3/25/19 20:27	LBD
2-Butanone (MEK)	ND	20	µg/L	2	V-05	SW-846 8260C	3/25/19	3/25/19 20:27	LBD
n-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
sec-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
tert-Butylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Carbon Disulfide	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Carbon Tetrachloride	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Chlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Chlorodibromomethane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Chloroethane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Chloroform	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Chloromethane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
2-Chlorotoluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
4-Chlorotoluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Dibromomethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,3-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,4-Dichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Dichlorodifluoromethane (Freon 12)	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,1-Dichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2-Dichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,1-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
cis-1,2-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
trans-1,2-Dichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2-Dichloropropane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,3-Dichloropropane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
2,2-Dichloropropane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,1-Dichloropropene	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
cis-1,3-Dichloropropene	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
trans-1,3-Dichloropropene	ND	0.80	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Diethyl Ether	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Diisopropyl Ether (DIPE)	ND	1.0	µg/L	2	V-05	SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,4-Dioxane	ND	100	µg/L	2	V-16	SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Ethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-7 | Sampled: 3/21/2019 12:15

Sample ID: 19C1063-07

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
2-Hexanone (MBK)	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Isopropylbenzene (Cumene)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
p-Isopropyltoluene (p-Cymene)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Methyl tert-Butyl Ether (MTBE)	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Methylene Chloride	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
4-Methyl-2-pentanone (MIBK)	ND	20	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Naphthalene	ND	10	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
n-Propylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Styrene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,1,1,2-Tetrachloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,1,2,2-Tetrachloroethane	ND	1.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Tetrachloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Tetrahydrofuran	ND	4.0	µg/L	2	L-04, V-05	SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Toluene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2,3-Trichlorobenzene	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2,4-Trichlorobenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,1,1-Trichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,1,2-Trichloroethane	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Trichloroethylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Trichlorofluoromethane (Freon 11)	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2,3-Trichloropropane	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,2,4-Trimethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
1,3,5-Trimethylbenzene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
Vinyl Chloride	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
m+p Xylene	ND	4.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD
o-Xylene	ND	2.0	µg/L	2		SW-846 8260C	3/25/19	3/25/19 20:27	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	96.9	70-130		3/25/19 20:27
Toluene-d8	102	70-130		3/25/19 20:27
4-Bromofluorobenzene	102	70-130		3/25/19 20:27

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-4 | Sampled: 3/21/2019 11:00

Sample ID: 19C1063-08

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	92	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
tert-Amyl Methyl Ether (TAME)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Benzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Bromobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Bromochloromethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Bromodichloromethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Bromoform	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Bromomethane	ND	10	µg/L	5	R-05	SW-846 8260C	3/25/19	3/25/19 20:58	LBD
2-Butanone (MEK)	50	50	µg/L	5	V-05	SW-846 8260C	3/25/19	3/25/19 20:58	LBD
n-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
sec-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
tert-Butylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Carbon Disulfide	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Carbon Tetrachloride	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Chlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Chlorodibromomethane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Chloroethane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Chloroform	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Chloromethane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
2-Chlorotoluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
4-Chlorotoluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2-Dibromoethane (EDB)	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Dibromomethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,3-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,4-Dichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Dichlorodifluoromethane (Freon 12)	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,1-Dichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2-Dichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,1-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
cis-1,2-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
trans-1,2-Dichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2-Dichloropropane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,3-Dichloropropane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
2,2-Dichloropropane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,1-Dichloropropene	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
cis-1,3-Dichloropropene	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
trans-1,3-Dichloropropene	ND	2.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Diethyl Ether	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Diisopropyl Ether (DIPE)	ND	2.5	µg/L	5	V-05	SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,4-Dioxane	ND	250	µg/L	5	V-16	SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Ethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Chelsea, MA | Sample Description: | Work Order: 19C1063

Date Received: 3/21/2019

Field Sample #: WS-4 | Sampled: 3/21/2019 11:00

Sample ID: 19C1063-08

Sample Matrix: Ground Water

Sample Flags: RL-14

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
2-Hexanone (MBK)	ND	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Isopropylbenzene (Cumene)	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
p-Isopropyltoluene (p-Cymene)	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Methyl tert-Butyl Ether (MTBE)	6.4	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Methylene Chloride	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
4-Methyl-2-pentanone (MIBK)	ND	50	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Naphthalene	ND	25	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
n-Propylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Styrene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,1,2,2-Tetrachloroethane	ND	2.5	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Tetrachloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Tetrahydrofuran	ND	10	µg/L	5	L-04, V-05	SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Toluene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2,3-Trichlorobenzene	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2,4-Trichlorobenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,1,1-Trichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,1,2-Trichloroethane	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Trichloroethylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Trichlorofluoromethane (Freon 11)	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2,3-Trichloropropane	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,2,4-Trimethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
1,3,5-Trimethylbenzene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
Vinyl Chloride	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
m+p Xylene	ND	10	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD
o-Xylene	ND	5.0	µg/L	5		SW-846 8260C	3/25/19	3/25/19 20:58	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	96.2	70-130		3/25/19 20:58
Toluene-d8	101	70-130		3/25/19 20:58
4-Bromofluorobenzene	103	70-130		3/25/19 20:58

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 3510C-608.3

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226617	1040	5.00	03/27/19
19C1063-02 [WS-2]	B226617	1030	5.00	03/27/19

Prep Method: SW-846 5030B-624.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226492	5	5.00	03/25/19

Prep Method: SW-846 5030B-624.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-02 [WS-2]	B226552	2.5	5.00	03/25/19

Prep Method: SW-846 3510C-625.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226445	1000	1.00	03/23/19
19C1063-02 [WS-2]	B226445	1000	1.00	03/23/19

Prep Method: SW-846 3510C-625.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226623	1000	1.00	03/23/19
19C1063-02 [WS-2]	B226623	1000	1.00	03/23/19

EPA 1664B

Lab Number [Field ID]	Batch	Initial [mL]	Date
19C1063-01 [IER OUTFALL]	B226345	900	03/22/19
19C1063-02 [WS-2]	B226345	1000	03/22/19

Prep Method: EPA 200.7-EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226548	50.0	50.0	03/25/19
19C1063-02 [WS-2]	B226548	50.0	50.0	03/25/19

Prep Method: EPA 200.8-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226466	50.0	50.0	03/24/19
19C1063-02 [WS-2]	B226466	50.0	50.0	03/24/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 245.1-EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226612	6.00	6.00	03/26/19
19C1063-02 [WS-2]	B226612	6.00	6.00	03/26/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-02 [WS-2]	B226692	10.0	10.0	03/27/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226777	10.0	10.0	03/28/19

EPA 420.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226601	50.0	50.0	03/26/19
19C1063-02 [WS-2]	B226601	50.0	50.0	03/26/19

Prep Method: EPA 504 water-EPA 504.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226349	35.6	35.0	03/22/19
19C1063-02 [WS-2]	B226349	35.6	35.0	03/22/19

SM21-22 2540D

Lab Number [Field ID]	Batch	Initial [mL]	Date
19C1063-01 [IER OUTFALL]	B226412	500	03/22/19
19C1063-02 [WS-2]	B226412	500	03/22/19

SM21-22 3500 Cr B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226323	50.0	50.0	03/21/19
19C1063-02 [WS-2]	B226323	50.0	50.0	03/21/19

SM21-22 4500 CL G

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-01 [IER OUTFALL]	B226322	100	100	03/21/19
19C1063-02 [WS-2]	B226322	100	100	03/21/19

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

Sample Extraction Data

Prep Method: SW-846 5030B-SW-846 8260C

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19C1063-03 [VES-306-MW]	B226497	1	5.00	03/25/19
19C1063-04 [WS-5]	B226497	2.5	5.00	03/25/19
19C1063-05 [WS-8]	B226497	1	5.00	03/25/19
19C1063-06 [WS-1]	B226497	2.5	5.00	03/25/19
19C1063-07 [WS-7]	B226497	2.5	5.00	03/25/19
19C1063-08 [WS-4]	B226497	1	5.00	03/25/19

Prep Method: EPA 200.8-Tri Chrome Calc.

Lab Number [Field ID]	Batch	Initial [mL]	Date
19C1063-01 [IER OUTFALL]	B226466	50.0	03/24/19
19C1063-02 [WS-2]	B226466	50.0	03/24/19

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

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 B226497 - SW-846 5030B										
Blank (B226497-BLK1)				Prepared & Analyzed: 03/25/19						
Acetone	ND	10	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	1.0	µg/L							
Bromoform	ND	1.0	µg/L							
Bromomethane	ND	2.0	µg/L							R-05
2-Butanone (MEK)	ND	10	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	1.0	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	2.0	µg/L							
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							
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	0.50	µg/L							
cis-1,3-Dichloropropene	ND	0.40	µg/L							
trans-1,3-Dichloropropene	ND	0.40	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							V-05
1,4-Dioxane	ND	50	µg/L							V-16
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 tert-Butyl Ether (MTBE)	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							

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

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 B226497 - SW-846 5030B											
Blank (B226497-BLK1)				Prepared & Analyzed: 03/25/19							
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	2.0	µg/L							L-04, V-05	
Toluene	ND	1.0	µg/L								
1,2,3-Trichlorobenzene	ND	2.0	µg/L								
1,2,4-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								
1,2,4-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								
Surrogate: 1,2-Dichloroethane-d4	*25.0*		µg/L	25.0		100	70-130				
Surrogate: Toluene-d8	*25.5*		µg/L	25.0		102	70-130				
Surrogate: 4-Bromofluorobenzene	*26.2*		µg/L	25.0		105	70-130				
LCS (B226497-BS1)				Prepared & Analyzed: 03/25/19							
Acetone	132	10	µg/L	100		132	40-160			L-14	†
tert-Amyl Methyl Ether (TAME)	10.6	0.50	µg/L	10.0		106	70-130				
Benzene	10.3	1.0	µg/L	10.0		103	70-130				
Bromobenzene	10.6	1.0	µg/L	10.0		106	70-130				
Bromochloromethane	12.2	1.0	µg/L	10.0		122	70-130			V-20	
Bromodichloromethane	11.7	1.0	µg/L	10.0		117	70-130				
Bromoform	10.3	1.0	µg/L	10.0		103	70-130				
Bromomethane	6.44	2.0	µg/L	10.0		64.4	40-160			L-14, R-05	†
2-Butanone (MEK)	81.5	10	µg/L	100		81.5	40-160			V-05	†
n-Butylbenzene	9.49	1.0	µg/L	10.0		94.9	70-130				
sec-Butylbenzene	9.59	1.0	µg/L	10.0		95.9	70-130				
tert-Butylbenzene	9.39	1.0	µg/L	10.0		93.9	70-130				
tert-Butyl Ethyl Ether (TBEE)	9.85	0.50	µg/L	10.0		98.5	70-130				
Carbon Disulfide	11.3	5.0	µg/L	10.0		113	70-130			V-36	
Carbon Tetrachloride	11.5	1.0	µg/L	10.0		115	70-130				
Chlorobenzene	10.6	1.0	µg/L	10.0		106	70-130				
Chlorodibromomethane	12.2	0.50	µg/L	10.0		122	70-130				
Chloroethane	10.4	2.0	µg/L	10.0		104	70-130				
Chloroform	10.8	2.0	µg/L	10.0		108	70-130				
Chloromethane	7.31	2.0	µg/L	10.0		73.1	40-160				†
2-Chlorotoluene	10.6	1.0	µg/L	10.0		106	70-130				
4-Chlorotoluene	10.6	1.0	µg/L	10.0		106	70-130				
1,2-Dibromo-3-chloropropane (DBCP)	9.09	2.0	µg/L	10.0		90.9	70-130				
1,2-Dibromoethane (EDB)	11.0	0.50	µg/L	10.0		110	70-130				
Dibromomethane	11.8	1.0	µg/L	10.0		118	70-130			V-20	
1,2-Dichlorobenzene	10.0	1.0	µg/L	10.0		100	70-130				
1,3-Dichlorobenzene	10.2	1.0	µg/L	10.0		102	70-130				
1,4-Dichlorobenzene	9.94	1.0	µg/L	10.0		99.4	70-130				

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

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 B226497 - SW-846 5030B												
LCS (B226497-BS1)				Prepared & Analyzed: 03/25/19								
Dichlorodifluoromethane (Freon 12)	9.85	2.0	µg/L	10.0		98.5		40-160			V-20	†
1,1-Dichloroethane	10.8	1.0	µg/L	10.0		108		70-130				
1,2-Dichloroethane	11.0	1.0	µg/L	10.0		110		70-130				
1,1-Dichloroethylene	11.7	1.0	µg/L	10.0		117		70-130				
cis-1,2-Dichloroethylene	10.6	1.0	µg/L	10.0		106		70-130				
trans-1,2-Dichloroethylene	11.1	1.0	µg/L	10.0		111		70-130				
1,2-Dichloropropane	10.1	1.0	µg/L	10.0		101		70-130				
1,3-Dichloropropane	10.5	0.50	µg/L	10.0		105		70-130				
2,2-Dichloropropane	13.4	1.0	µg/L	10.0		**134**	*	70-130			L-07, V-20	
1,1-Dichloropropene	11.1	0.50	µg/L	10.0		111		70-130				
cis-1,3-Dichloropropene	11.5	0.40	µg/L	10.0		115		70-130				
trans-1,3-Dichloropropene	11.8	0.40	µg/L	10.0		118		70-130			V-20	
Diethyl Ether	10.2	2.0	µg/L	10.0		102		70-130				
Diisopropyl Ether (DIPE)	8.19	0.50	µg/L	10.0		81.9		70-130			V-05	
1,4-Dioxane	74.0	50	µg/L	100		74.0		40-160			V-16	†
Ethylbenzene	10.1	1.0	µg/L	10.0		101		70-130				
Hexachlorobutadiene	10.9	0.60	µg/L	10.0		109		70-130				
2-Hexanone (MBK)	85.5	10	µg/L	100		85.5		40-160				†
Isopropylbenzene (Cumene)	10.6	1.0	µg/L	10.0		106		70-130				
p-Isopropyltoluene (p-Cymene)	9.41	1.0	µg/L	10.0		94.1		70-130				
Methyl tert-Butyl Ether (MTBE)	11.0	1.0	µg/L	10.0		110		70-130				
Methylene Chloride	8.61	5.0	µg/L	10.0		86.1		70-130				
4-Methyl-2-pentanone (MIBK)	76.4	10	µg/L	100		76.4		40-160				†
Naphthalene	9.97	2.0	µg/L	10.0		99.7		70-130				
n-Propylbenzene	10.4	1.0	µg/L	10.0		104		70-130				
Styrene	10.5	1.0	µg/L	10.0		105		70-130				
1,1,1,2-Tetrachloroethane	11.0	1.0	µg/L	10.0		110		70-130				
1,1,2,2-Tetrachloroethane	10.6	0.50	µg/L	10.0		106		70-130				
Tetrachloroethylene	12.7	1.0	µg/L	10.0		127		70-130			V-20	
Tetrahydrofuran	6.90	2.0	µg/L	10.0		**69.0**	*	70-130			L-04, V-05	
Toluene	10.8	1.0	µg/L	10.0		108		70-130				
1,2,3-Trichlorobenzene	11.4	2.0	µg/L	10.0		114		70-130				
1,2,4-Trichlorobenzene	10.8	1.0	µg/L	10.0		108		70-130				
1,1,1-Trichloroethane	11.6	1.0	µg/L	10.0		116		70-130				
1,1,2-Trichloroethane	11.5	1.0	µg/L	10.0		115		70-130				
Trichloroethylene	11.1	1.0	µg/L	10.0		111		70-130				
Trichlorofluoromethane (Freon 11)	11.3	2.0	µg/L	10.0		113		70-130			V-20	
1,2,3-Trichloropropane	10.2	2.0	µg/L	10.0		102		70-130				
1,2,4-Trimethylbenzene	9.16	1.0	µg/L	10.0		91.6		70-130				
1,3,5-Trimethylbenzene	10.4	1.0	µg/L	10.0		104		70-130				
Vinyl Chloride	9.11	2.0	µg/L	10.0		91.1		70-130				
m+p Xylene	20.5	2.0	µg/L	20.0		103		70-130				
o-Xylene	10.4	1.0	µg/L	10.0		104		70-130				
Surrogate: 1,2-Dichloroethane-d4	*23.8*		µg/L	25.0		95.0		70-130				
Surrogate: Toluene-d8	*25.5*		µg/L	25.0		102		70-130				
Surrogate: 4-Bromofluorobenzene	*26.0*		µg/L	25.0		104		70-130				

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

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 B226497 - SW-846 5030B												
LCS Dup (B226497-BSD1)				Prepared & Analyzed: 03/25/19								
Acetone	127	10	µg/L	100		127	40-160	3.69		20		†
tert-Amyl Methyl Ether (TAME)	10.5	0.50	µg/L	10.0		105	70-130	0.949		20		
Benzene	10.3	1.0	µg/L	10.0		103	70-130	0.291		20		
Bromobenzene	10.5	1.0	µg/L	10.0		105	70-130	0.570		20		
Bromochloromethane	12.2	1.0	µg/L	10.0		122	70-130	0.164		20	V-20	
Bromodichloromethane	11.8	1.0	µg/L	10.0		118	70-130	0.426		20		
Bromoform	10.5	1.0	µg/L	10.0		105	70-130	1.73		20		
Bromomethane	7.98	2.0	µg/L	10.0		79.8	40-160	**21.4**	*	20	R-05	†
2-Butanone (MEK)	78.9	10	µg/L	100		78.9	40-160	3.19		20	V-05	†
n-Butylbenzene	9.28	1.0	µg/L	10.0		92.8	70-130	2.24		20		
sec-Butylbenzene	9.44	1.0	µg/L	10.0		94.4	70-130	1.58		20		
tert-Butylbenzene	9.22	1.0	µg/L	10.0		92.2	70-130	1.83		20		
tert-Butyl Ethyl Ether (TBEE)	9.68	0.50	µg/L	10.0		96.8	70-130	1.74		20		
Carbon Disulfide	10.9	5.0	µg/L	10.0		109	70-130	3.51		20	V-36	
Carbon Tetrachloride	11.4	1.0	µg/L	10.0		114	70-130	0.350		20		
Chlorobenzene	10.4	1.0	µg/L	10.0		104	70-130	2.66		20		
Chlorodibromomethane	12.2	0.50	µg/L	10.0		122	70-130	0.411		20		
Chloroethane	10.2	2.0	µg/L	10.0		102	70-130	2.13		20		
Chloroform	10.6	2.0	µg/L	10.0		106	70-130	2.15		20		
Chloromethane	7.26	2.0	µg/L	10.0		72.6	40-160	0.686		20		†
2-Chlorotoluene	10.5	1.0	µg/L	10.0		105	70-130	0.570		20		
4-Chlorotoluene	10.3	1.0	µg/L	10.0		103	70-130	2.58		20		
1,2-Dibromo-3-chloropropane (DBCP)	9.01	2.0	µg/L	10.0		90.1	70-130	0.884		20		
1,2-Dibromoethane (EDB)	11.2	0.50	µg/L	10.0		112	70-130	1.71		20		
Dibromomethane	12.1	1.0	µg/L	10.0		121	70-130	2.67		20	V-20	
1,2-Dichlorobenzene	9.96	1.0	µg/L	10.0		99.6	70-130	0.401		20		
1,3-Dichlorobenzene	10.2	1.0	µg/L	10.0		102	70-130	0.0981		20		
1,4-Dichlorobenzene	9.85	1.0	µg/L	10.0		98.5	70-130	0.910		20		
Dichlorodifluoromethane (Freon 12)	9.40	2.0	µg/L	10.0		94.0	40-160	4.68		20	V-20	†
1,1-Dichloroethane	10.3	1.0	µg/L	10.0		103	70-130	4.94		20		
1,2-Dichloroethane	11.3	1.0	µg/L	10.0		113	70-130	3.50		20		
1,1-Dichloroethylene	11.4	1.0	µg/L	10.0		114	70-130	1.90		20		
cis-1,2-Dichloroethylene	10.4	1.0	µg/L	10.0		104	70-130	2.19		20		
trans-1,2-Dichloroethylene	10.8	1.0	µg/L	10.0		108	70-130	2.66		20		
1,2-Dichloropropane	10.0	1.0	µg/L	10.0		100	70-130	0.892		20		
1,3-Dichloropropane	10.4	0.50	µg/L	10.0		104	70-130	1.05		20		
2,2-Dichloropropane	13.0	1.0	µg/L	10.0		130	70-130	2.94		20	V-20	
1,1-Dichloropropene	10.7	0.50	µg/L	10.0		107	70-130	4.13		20		
cis-1,3-Dichloropropene	11.5	0.40	µg/L	10.0		115	70-130	0.522		20		
trans-1,3-Dichloropropene	11.6	0.40	µg/L	10.0		116	70-130	0.855		20	V-20	
Diethyl Ether	10.7	2.0	µg/L	10.0		107	70-130	4.58		20		
Diisopropyl Ether (DIPE)	8.11	0.50	µg/L	10.0		81.1	70-130	0.982		20	V-05	
1,4-Dioxane	74.8	50	µg/L	100		74.8	40-160	1.20		20	V-16	†
Ethylbenzene	9.98	1.0	µg/L	10.0		99.8	70-130	0.997		20		
Hexachlorobutadiene	10.6	0.60	µg/L	10.0		106	70-130	2.69		20		
2-Hexanone (MBK)	80.9	10	µg/L	100		80.9	40-160	5.53		20		†
Isopropylbenzene (Cumene)	10.4	1.0	µg/L	10.0		104	70-130	2.19		20		
p-Isopropyltoluene (p-Cymene)	9.37	1.0	µg/L	10.0		93.7	70-130	0.426		20		
Methyl tert-Butyl Ether (MTBE)	10.8	1.0	µg/L	10.0		108	70-130	1.19		20		
Methylene Chloride	8.52	5.0	µg/L	10.0		85.2	70-130	1.05		20		
4-Methyl-2-pentanone (MIBK)	74.5	10	µg/L	100		74.5	40-160	2.47		20		†
Naphthalene	10.1	2.0	µg/L	10.0		101	70-130	1.69		20		

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

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 B226497 - SW-846 5030B											
LCS Dup (B226497-BSD1)				Prepared & Analyzed: 03/25/19							
n-Propylbenzene	10.3	1.0	µg/L	10.0		103		70-130	1.64	20	
Styrene	10.2	1.0	µg/L	10.0		102		70-130	2.22	20	
1,1,1,2-Tetrachloroethane	10.6	1.0	µg/L	10.0		106		70-130	3.61	20	
1,1,2,2-Tetrachloroethane	10.1	0.50	µg/L	10.0		101		70-130	5.10	20	
Tetrachloroethylene	12.4	1.0	µg/L	10.0		124		70-130	2.23	20	V-20
Tetrahydrofuran	6.19	2.0	µg/L	10.0		**61.9**	*	70-130	10.8	20	L-04, V-05
Toluene	10.6	1.0	µg/L	10.0		106		70-130	2.24	20	
1,2,3-Trichlorobenzene	11.2	2.0	µg/L	10.0		112		70-130	2.13	20	
1,2,4-Trichlorobenzene	11.1	1.0	µg/L	10.0		111		70-130	2.74	20	
1,1,1-Trichloroethane	11.3	1.0	µg/L	10.0		113		70-130	3.05	20	
1,1,2-Trichloroethane	11.4	1.0	µg/L	10.0		114		70-130	0.699	20	
Trichloroethylene	10.9	1.0	µg/L	10.0		109		70-130	2.36	20	
Trichlorofluoromethane (Freon 11)	10.9	2.0	µg/L	10.0		109		70-130	3.43	20	V-20
1,2,3-Trichloropropane	9.69	2.0	µg/L	10.0		96.9		70-130	4.64	20	
1,2,4-Trimethylbenzene	9.15	1.0	µg/L	10.0		91.5		70-130	0.109	20	
1,3,5-Trimethylbenzene	10.3	1.0	µg/L	10.0		103		70-130	1.83	20	
Vinyl Chloride	9.30	2.0	µg/L	10.0		93.0		70-130	2.06	20	
m+p Xylene	20.2	2.0	µg/L	20.0		101		70-130	1.42	20	
o-Xylene	10.2	1.0	µg/L	10.0		102		70-130	1.85	20	
Surrogate: 1,2-Dichloroethane-d4	*24.4*		µg/L	25.0		97.6		70-130			
Surrogate: Toluene-d8	*25.4*		µg/L	25.0		101		70-130			
Surrogate: 4-Bromofluorobenzene	*25.9*		µg/L	25.0		104		70-130			

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

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 B226492 - SW-846 5030B										
Blank (B226492-BLK1)				Prepared & Analyzed: 03/25/19						
Acetone	ND	50.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.500	µg/L							
Benzene	ND	1.00	µg/L							
tert-Butyl Alcohol (TBA)	ND	20.0	µg/L							
Carbon Tetrachloride	ND	2.00	µg/L							
1,2-Dichlorobenzene	ND	2.00	µg/L							
1,3-Dichlorobenzene	ND	2.00	µg/L							
1,4-Dichlorobenzene	ND	2.00	µg/L							
1,2-Dichloroethane	ND	2.00	µg/L							
cis-1,2-Dichloroethylene	ND	1.00	µg/L							
1,1-Dichloroethane	ND	2.00	µg/L							
1,1-Dichloroethylene	ND	2.00	µg/L							
1,4-Dioxane	ND	50.0	µg/L							
Ethanol	ND	50.0	µg/L							
Ethylbenzene	ND	2.00	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	2.00	µg/L							
Methylene Chloride	ND	5.00	µg/L							
Tetrachloroethylene	ND	2.00	µg/L							
Toluene	ND	1.00	µg/L							
1,1,1-Trichloroethane	ND	2.00	µg/L							
1,1,2-Trichloroethane	ND	2.00	µg/L							
Trichloroethylene	ND	2.00	µg/L							
Vinyl Chloride	ND	2.00	µg/L							
m+p Xylene	ND	2.00	µg/L							
o-Xylene	ND	2.00	µg/L							
Surrogate: 1,2-Dichloroethane-d4	*25.6*		µg/L	25.0		102	70-130			
Surrogate: Toluene-d8	*24.8*		µg/L	25.0		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	*23.6*		µg/L	25.0		94.5	70-130			
LCS (B226492-BS1)				Prepared & Analyzed: 03/25/19						
Acetone	280	50.0	µg/L	200		138	70-160			†
tert-Amyl Methyl Ether (TAME)	21	0.500	µg/L	20.0		103	70-130			
Benzene	18	1.00	µg/L	20.0		90.2	65-135			
tert-Butyl Alcohol (TBA)	170	20.0	µg/L	200		84.7	40-160			†
Carbon Tetrachloride	18	2.00	µg/L	20.0		89.2	70-130			
1,2-Dichlorobenzene	22	2.00	µg/L	20.0		110	65-135			
1,3-Dichlorobenzene	22	2.00	µg/L	20.0		111	70-130			
1,4-Dichlorobenzene	21	2.00	µg/L	20.0		106	65-135			
1,2-Dichloroethane	17	2.00	µg/L	20.0		83.0	70-130			
cis-1,2-Dichloroethylene	19	1.00	µg/L	20.0		94.4	70-130			
1,1-Dichloroethane	19	2.00	µg/L	20.0		95.4	70-130			
1,1-Dichloroethylene	21	2.00	µg/L	20.0		106	50-150			
1,4-Dioxane	190	50.0	µg/L	200		94.7	40-130			†
Ethanol	240	50.0	µg/L	200		120	40-160			
Ethylbenzene	20	2.00	µg/L	20.0		101	60-140			
Methyl tert-Butyl Ether (MTBE)	21	2.00	µg/L	20.0		107	70-130			
Methylene Chloride	23	5.00	µg/L	20.0		114	60-140			
Tetrachloroethylene	18	2.00	µg/L	20.0		91.4	70-130			
Toluene	19	1.00	µg/L	20.0		93.4	70-130			
1,1,1-Trichloroethane	18	2.00	µg/L	20.0		87.8	70-130			
1,1,2-Trichloroethane	20	2.00	µg/L	20.0		102	70-130			
Trichloroethylene	18	2.00	µg/L	20.0		89.6	65-135			

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

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 B226492 - SW-846 5030B										
LCS (B226492-BS1)				Prepared & Analyzed: 03/25/19						
Vinyl Chloride	22	2.00	µg/L	20.0		108	5-195			
m+p Xylene	41	2.00	µg/L	40.0		103	70-130			
o-Xylene	21	2.00	µg/L	20.0		107	70-130			
Surrogate: 1,2-Dichloroethane-d4	*25.2*		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	*24.7*		µg/L	25.0		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	*25.9*		µg/L	25.0		104	70-130			
Batch B226552 - SW-846 5030B										
Blank (B226552-BLK1)				Prepared: 03/25/19 Analyzed: 03/27/19						
Acetone	ND	50.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.500	µg/L							
Benzene	ND	1.00	µg/L							
tert-Butyl Alcohol (TBA)	ND	20.0	µg/L							
Carbon Tetrachloride	ND	2.00	µg/L							
1,2-Dichlorobenzene	ND	2.00	µg/L							
1,3-Dichlorobenzene	ND	2.00	µg/L							
1,4-Dichlorobenzene	ND	2.00	µg/L							
1,2-Dichloroethane	ND	2.00	µg/L							
cis-1,2-Dichloroethylene	ND	1.00	µg/L							
1,1-Dichloroethane	ND	2.00	µg/L							
1,1-Dichloroethylene	ND	2.00	µg/L							
1,4-Dioxane	ND	50.0	µg/L							
Ethanol	ND	50.0	µg/L							
Ethylbenzene	ND	2.00	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	2.00	µg/L							
Methylene Chloride	ND	5.00	µg/L							
Tetrachloroethylene	ND	2.00	µg/L							
Toluene	ND	1.00	µg/L							
1,1,1-Trichloroethane	ND	2.00	µg/L							
1,1,2-Trichloroethane	ND	2.00	µg/L							
Trichloroethylene	ND	2.00	µg/L							
Vinyl Chloride	ND	2.00	µg/L							
m+p Xylene	ND	2.00	µg/L							
o-Xylene	ND	2.00	µg/L							
Surrogate: 1,2-Dichloroethane-d4	*24.0*		µg/L	25.0		96.0	70-130			
Surrogate: Toluene-d8	*24.7*		µg/L	25.0		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	*25.8*		µg/L	25.0		103	70-130			
LCS (B226552-BS1)				Prepared: 03/25/19 Analyzed: 03/27/19						
Acetone	140	50.0	µg/L	200		72.5	70-160			†
tert-Amyl Methyl Ether (TAME)	17	0.500	µg/L	20.0		83.4	70-130			
Benzene	17	1.00	µg/L	20.0		83.3	65-135			
tert-Butyl Alcohol (TBA)	120	20.0	µg/L	200		57.5	40-160			†
Carbon Tetrachloride	19	2.00	µg/L	20.0		94.2	70-130			
1,2-Dichlorobenzene	19	2.00	µg/L	20.0		95.8	65-135			
1,3-Dichlorobenzene	19	2.00	µg/L	20.0		96.0	70-130			
1,4-Dichlorobenzene	19	2.00	µg/L	20.0		94.6	65-135			
1,2-Dichloroethane	19	2.00	µg/L	20.0		93.9	70-130			
cis-1,2-Dichloroethylene	16	1.00	µg/L	20.0		78.1	70-130			
1,1-Dichloroethane	17	2.00	µg/L	20.0		83.2	70-130			
1,1-Dichloroethylene	20	2.00	µg/L	20.0		99.2	50-150			
1,4-Dioxane	120	50.0	µg/L	200		59.9	40-130			†

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

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 B226552 - SW-846 5030B										
LCS (B226552-BS1)				Prepared: 03/25/19 Analyzed: 03/27/19						
Ethanol	93	50.0	µg/L	200		46.5	40-160			
Ethylbenzene	19	2.00	µg/L	20.0		93.0	60-140			
Methyl tert-Butyl Ether (MTBE)	17	2.00	µg/L	20.0		86.6	70-130			
Methylene Chloride	13	5.00	µg/L	20.0		66.6	60-140			
Tetrachloroethylene	22	2.00	µg/L	20.0		109	70-130			
Toluene	18	1.00	µg/L	20.0		91.4	70-130			
1,1,1-Trichloroethane	19	2.00	µg/L	20.0		93.8	70-130			
1,1,2-Trichloroethane	19	2.00	µg/L	20.0		94.2	70-130			
Trichloroethylene	19	2.00	µg/L	20.0		96.6	65-135			
Vinyl Chloride	16	2.00	µg/L	20.0		79.2	5-195			
m+p Xylene	38	2.00	µg/L	40.0		95.2	70-130			
o-Xylene	19	2.00	µg/L	20.0		95.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	*23.2*		µg/L	25.0		93.0	70-130			
Surrogate: Toluene-d8	*24.6*		µg/L	25.0		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	*24.9*		µg/L	25.0		99.8	70-130			

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

QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226623 - SW-846 3510C										
Blank (B226623-BLK1)				Prepared: 03/23/19 Analyzed: 03/26/19						
Acenaphthene (SIM)	ND	0.30	µg/L							
Acenaphthylene (SIM)	ND	0.30	µg/L							
Anthracene (SIM)	ND	0.20	µg/L							
Benzo(a)anthracene (SIM)	ND	0.050	µg/L							
Benzo(a)pyrene (SIM)	ND	0.10	µg/L							
Benzo(b)fluoranthene (SIM)	ND	0.050	µg/L							
Benzo(g,h,i)perylene (SIM)	ND	0.50	µg/L							
Benzo(k)fluoranthene (SIM)	ND	0.20	µg/L							
Bis(2-ethylhexyl)phthalate (SIM)	ND	1.0	µg/L							
Chrysene (SIM)	ND	0.20	µg/L							
Dibenz(a,h)anthracene (SIM)	ND	0.20	µg/L							
Fluoranthene (SIM)	ND	0.50	µg/L							
Fluorene (SIM)	ND	1.0	µg/L							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.20	µg/L							
Naphthalene (SIM)	ND	1.0	µg/L							
Pentachlorophenol (SIM)	ND	1.0	µg/L							
Phenanthrene (SIM)	ND	0.050	µg/L							
Pyrene (SIM)	ND	1.0	µg/L							
Surrogate: 2-Fluorophenol (SIM)	*119*		µg/L	200		59.3	15-110			
Surrogate: Phenol-d6 (SIM)	*80.0*		µg/L	200		40.0	15-110			
Surrogate: Nitrobenzene-d5	*95.1*		µg/L	100		95.1	30-130			
Surrogate: 2-Fluorobiphenyl	*67.6*		µg/L	100		67.6	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*204*		µg/L	200		102	15-110			
Surrogate: p-Terphenyl-d14	*81.5*		µg/L	100		81.5	30-130			
LCS (B226623-BS1)				Prepared: 03/23/19 Analyzed: 03/26/19						
Acenaphthene (SIM)	43.8	6.0	µg/L	50.0		87.6	40-140			
Acenaphthylene (SIM)	44.6	6.0	µg/L	50.0		89.2	40-140			
Anthracene (SIM)	46.5	4.0	µg/L	50.0		93.1	40-140			
Benzo(a)anthracene (SIM)	42.6	1.0	µg/L	50.0		85.2	40-140			
Benzo(a)pyrene (SIM)	48.9	2.0	µg/L	50.0		97.8	40-140			
Benzo(b)fluoranthene (SIM)	49.0	1.0	µg/L	50.0		98.0	40-140			
Benzo(g,h,i)perylene (SIM)	46.6	10	µg/L	50.0		93.3	40-140			
Benzo(k)fluoranthene (SIM)	48.6	4.0	µg/L	50.0		97.2	40-140			
Bis(2-ethylhexyl)phthalate (SIM)	48.2	20	µg/L	50.0		96.4	40-140			
Chrysene (SIM)	44.6	4.0	µg/L	50.0		89.1	40-140			
Dibenz(a,h)anthracene (SIM)	48.8	4.0	µg/L	50.0		97.6	40-140			
Fluoranthene (SIM)	44.1	10	µg/L	50.0		88.2	40-140			
Fluorene (SIM)	43.8	20	µg/L	50.0		87.6	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	48.9	4.0	µg/L	50.0		97.7	40-140			
Naphthalene (SIM)	40.6	20	µg/L	50.0		81.2	40-140			
Pentachlorophenol (SIM)	42.2	20	µg/L	50.0		84.4	40-140			
Phenanthrene (SIM)	44.8	1.0	µg/L	50.0		89.6	40-140			
Pyrene (SIM)	44.3	20	µg/L	50.0		88.6	40-140			
Surrogate: 2-Fluorophenol (SIM)	*104*		µg/L	200		51.8	15-110			
Surrogate: Phenol-d6 (SIM)	*72.9*		µg/L	200		36.4	15-110			
Surrogate: Nitrobenzene-d5	*89.1*		µg/L	100		89.1	30-130			
Surrogate: 2-Fluorobiphenyl	*73.6*		µg/L	100		73.6	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*194*		µg/L	200		96.9	15-110			
Surrogate: p-Terphenyl-d14	*82.2*		µg/L	100		82.2	30-130			

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

QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226623 - SW-846 3510C										
LCS Dup (B226623-BSD1)				Prepared: 03/23/19 Analyzed: 03/26/19						
Acenaphthene (SIM)	43.9	6.0	µg/L	50.0		87.8	40-140	0.228	20	
Acenaphthylene (SIM)	44.7	6.0	µg/L	50.0		89.5	40-140	0.358	20	
Anthracene (SIM)	46.4	4.0	µg/L	50.0		92.9	40-140	0.215	20	
Benzo(a)anthracene (SIM)	42.6	1.0	µg/L	50.0		85.2	40-140	0.00	20	
Benzo(a)pyrene (SIM)	48.6	2.0	µg/L	50.0		97.3	40-140	0.574	20	
Benzo(b)fluoranthene (SIM)	48.7	1.0	µg/L	50.0		97.5	40-140	0.573	20	
Benzo(g,h,i)perylene (SIM)	46.6	10	µg/L	50.0		93.2	40-140	0.0858	20	
Benzo(k)fluoranthene (SIM)	48.2	4.0	µg/L	50.0		96.4	40-140	0.826	20	
Bis(2-ethylhexyl)phthalate (SIM)	48.6	20	µg/L	50.0		97.2	40-140	0.785	20	
Chrysene (SIM)	44.6	4.0	µg/L	50.0		89.2	40-140	0.0449	20	
Dibenz(a,h)anthracene (SIM)	48.6	4.0	µg/L	50.0		97.1	40-140	0.452	20	
Fluoranthene (SIM)	44.3	10	µg/L	50.0		88.6	40-140	0.407	20	
Fluorene (SIM)	44.4	20	µg/L	50.0		88.9	40-140	1.40	20	
Indeno(1,2,3-cd)pyrene (SIM)	48.6	4.0	µg/L	50.0		97.2	40-140	0.534	20	‡
Naphthalene (SIM)	40.7	20	µg/L	50.0		81.3	40-140	0.148	20	
Pentachlorophenol (SIM)	42.4	20	µg/L	50.0		84.8	40-140	0.378	20	
Phenanthrene (SIM)	44.7	1.0	µg/L	50.0		89.4	40-140	0.223	20	
Pyrene (SIM)	44.2	20	µg/L	50.0		88.5	40-140	0.136	20	
Surrogate: 2-Fluorophenol (SIM)	*108*		µg/L	200		53.9	15-110			
Surrogate: Phenol-d6 (SIM)	*73.4*		µg/L	200		36.7	15-110			
Surrogate: Nitrobenzene-d5	*89.2*		µg/L	100		89.2	30-130			
Surrogate: 2-Fluorobiphenyl	*71.8*		µg/L	100		71.8	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*201*		µg/L	200		101	15-110			
Surrogate: p-Terphenyl-d14	*78.5*		µg/L	100		78.5	30-130			
Matrix Spike (B226623-MS1)		**Source: 19C1063-02**		Prepared: 03/23/19 Analyzed: 03/26/19						
Acenaphthene (SIM)	44.7	6.0	µg/L	50.0	ND	89.5	40-140			
Acenaphthylene (SIM)	45.2	6.0	µg/L	50.0	ND	90.4	40-140			
Anthracene (SIM)	46.4	4.0	µg/L	50.0	ND	92.8	40-140			
Benzo(a)anthracene (SIM)	42.8	1.0	µg/L	50.0	ND	85.5	40-140			
Benzo(a)pyrene (SIM)	48.5	2.0	µg/L	50.0	ND	97.0	40-140			
Benzo(b)fluoranthene (SIM)	48.3	1.0	µg/L	50.0	ND	96.5	40-140			
Benzo(g,h,i)perylene (SIM)	46.5	10	µg/L	50.0	ND	93.0	40-140			
Benzo(k)fluoranthene (SIM)	47.2	4.0	µg/L	50.0	ND	94.4	40-140			
Bis(2-ethylhexyl)phthalate (SIM)	49.7	20	µg/L	50.0	ND	99.3	40-140			
Chrysene (SIM)	44.5	4.0	µg/L	50.0	ND	89.0	40-140			
Dibenz(a,h)anthracene (SIM)	48.1	4.0	µg/L	50.0	ND	96.1	40-140			
Fluoranthene (SIM)	44.7	10	µg/L	50.0	ND	89.3	40-140			
Fluorene (SIM)	45.1	20	µg/L	50.0	ND	90.2	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	48.7	4.0	µg/L	50.0	ND	97.4	40-140			
Naphthalene (SIM)	41.7	20	µg/L	50.0	ND	83.5	40-140			
Pentachlorophenol (SIM)	46.7	20	µg/L	50.0	ND	93.4	40-140			
Phenanthrene (SIM)	44.6	1.0	µg/L	50.0	ND	89.1	40-140			
Pyrene (SIM)	45.3	20	µg/L	50.0	ND	90.6	40-140			
Surrogate: 2-Fluorophenol (SIM)	*84.9*		µg/L	200		42.4	15-110			
Surrogate: Phenol-d6 (SIM)	*56.1*		µg/L	200		28.1	15-110			
Surrogate: Nitrobenzene-d5	*93.4*		µg/L	100		93.4	30-130			
Surrogate: 2-Fluorobiphenyl	*72.9*		µg/L	100		72.9	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*207*		µg/L	200		104	15-110			
Surrogate: p-Terphenyl-d14	*83.1*		µg/L	100		83.1	30-130			

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

QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226623 - SW-846 3510C										
Matrix Spike Dup (B226623-MSD1)	**Source: 19C1063-02**			Prepared: 03/23/19 Analyzed: 03/26/19						
Acenaphthene (SIM)	41.3	6.0	µg/L	50.0	ND	82.6	40-140	8.04	30	
Acenaphthylene (SIM)	41.8	6.0	µg/L	50.0	ND	83.6	40-140	7.81	30	
Anthracene (SIM)	42.3	4.0	µg/L	50.0	ND	84.6	40-140	9.24	30	
Benzo(a)anthracene (SIM)	37.9	1.0	µg/L	50.0	ND	75.8	40-140	12.1	30	
Benzo(a)pyrene (SIM)	42.7	2.0	µg/L	50.0	ND	85.4	40-140	12.7	30	
Benzo(b)fluoranthene (SIM)	42.8	1.0	µg/L	50.0	ND	85.5	40-140	12.1	30	
Benzo(g,h,i)perylene (SIM)	40.7	10	µg/L	50.0	ND	81.4	40-140	13.3	30	
Benzo(k)fluoranthene (SIM)	41.8	4.0	µg/L	50.0	ND	83.6	40-140	12.2	30	
Bis(2-ethylhexyl)phthalate (SIM)	42.7	20	µg/L	50.0	ND	85.4	40-140	15.1	30	
Chrysene (SIM)	39.4	4.0	µg/L	50.0	ND	78.8	40-140	12.2	30	
Dibenz(a,h)anthracene (SIM)	41.7	4.0	µg/L	50.0	ND	83.3	40-140	14.3	30	
Fluoranthene (SIM)	40.9	10	µg/L	50.0	ND	81.8	40-140	8.79	30	
Fluorene (SIM)	42.1	20	µg/L	50.0	ND	84.3	40-140	6.83	30	
Indeno(1,2,3-cd)pyrene (SIM)	42.3	4.0	µg/L	50.0	ND	84.6	40-140	14.1	30	
Naphthalene (SIM)	38.7	20	µg/L	50.0	ND	77.3	40-140	7.66	30	
Pentachlorophenol (SIM)	44.1	20	µg/L	50.0	ND	88.2	40-140	5.72	30	
Phenanthrene (SIM)	40.5	1.0	µg/L	50.0	ND	81.0	40-140	9.55	30	
Pyrene (SIM)	39.0	20	µg/L	50.0	ND	77.9	40-140	15.0	30	
Surrogate: 2-Fluorophenol (SIM)	*78.1*		µg/L	200		39.0	15-110			
Surrogate: Phenol-d6 (SIM)	*50.7*		µg/L	200		25.4	15-110			
Surrogate: Nitrobenzene-d5	*84.3*		µg/L	100		84.3	30-130			
Surrogate: 2-Fluorobiphenyl	*66.9*		µg/L	100		66.9	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*198*		µg/L	200		98.8	15-110			
Surrogate: p-Terphenyl-d14	*70.1*		µg/L	100		70.1	30-130			

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

QUALITY CONTROL

Semivolatile Organic Compounds by - GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226445 - SW-846 3510C										
Blank (B226445-BLK1)				Prepared: 03/23/19 Analyzed: 03/25/19						
Butylbenzylphthalate	ND	10.0	µg/L							
Di-n-butylphthalate	ND	10.0	µg/L							
Diethylphthalate	ND	10.0	µg/L							
Dimethylphthalate	ND	10.0	µg/L							
Di-n-octylphthalate	ND	10.0	µg/L							
Bis(2-Ethylhexyl)phthalate	ND	10.0	µg/L							
Surrogate: 2-Fluorophenol	*117*		µg/L	200		58.5	15-110			
Surrogate: Phenol-d6	*78.3*		µg/L	200		39.1	15-110			
Surrogate: Nitrobenzene-d5	*92.7*		µg/L	100		92.7	30-130			
Surrogate: 2-Fluorobiphenyl	*98.8*		µg/L	100		98.8	30-130			
Surrogate: 2,4,6-Tribromophenol	*213*		µg/L	200		106	15-110			
Surrogate: p-Terphenyl-d14	*98.6*		µg/L	100		98.6	30-130			
LCS (B226445-BS1)				Prepared: 03/23/19 Analyzed: 03/25/19						
Butylbenzylphthalate	45.1	10.0	µg/L	50.0		90.3	10-152			
Di-n-butylphthalate	44.9	10.0	µg/L	50.0		89.9	10-120			
Diethylphthalate	44.5	10.0	µg/L	50.0		89.0	10-120			
Dimethylphthalate	45.6	10.0	µg/L	50.0		91.3	10-120			
Di-n-octylphthalate	44.4	10.0	µg/L	50.0		88.8	4-146			
Bis(2-Ethylhexyl)phthalate	46.7	10.0	µg/L	50.0		93.5	8-158			
Surrogate: 2-Fluorophenol	*117*		µg/L	200		58.3	15-110			
Surrogate: Phenol-d6	*79.4*		µg/L	200		39.7	15-110			
Surrogate: Nitrobenzene-d5	*91.6*		µg/L	100		91.6	30-130			
Surrogate: 2-Fluorobiphenyl	*97.9*		µg/L	100		97.9	30-130			
Surrogate: 2,4,6-Tribromophenol	*209*		µg/L	200		105	15-110			
Surrogate: p-Terphenyl-d14	*97.8*		µg/L	100		97.8	30-130			
LCS Dup (B226445-BSD1)				Prepared: 03/23/19 Analyzed: 03/25/19						
Butylbenzylphthalate	47.5	10.0	µg/L	50.0		95.0	10-152	5.12	60	
Di-n-butylphthalate	46.9	10.0	µg/L	50.0		93.9	10-120	4.33	47	
Diethylphthalate	46.0	10.0	µg/L	50.0		92.0	10-120	3.36	100	
Dimethylphthalate	46.9	10.0	µg/L	50.0		93.7	10-120	2.62	183	
Di-n-octylphthalate	47.5	10.0	µg/L	50.0		94.9	4-146	6.68	69	
Bis(2-Ethylhexyl)phthalate	48.7	10.0	µg/L	50.0		97.3	8-158	4.03	82	
Surrogate: 2-Fluorophenol	*116*		µg/L	200		58.0	15-110			
Surrogate: Phenol-d6	*80.3*		µg/L	200		40.1	15-110			
Surrogate: Nitrobenzene-d5	*89.8*		µg/L	100		89.8	30-130			
Surrogate: 2-Fluorobiphenyl	*97.2*		µg/L	100		97.2	30-130			
Surrogate: 2,4,6-Tribromophenol	*203*		µg/L	200		102	15-110			
Surrogate: p-Terphenyl-d14	*95.4*		µg/L	100		95.4	30-130			
Matrix Spike (B226445-MS1)	**Source: 19C1063-02**			Prepared: 03/23/19 Analyzed: 03/26/19						
Butylbenzylphthalate	46.6	10.0	µg/L	50.0	ND	93.3	10-152			
Di-n-butylphthalate	46.4	10.0	µg/L	50.0	ND	92.7	10-120			
Diethylphthalate	45.6	10.0	µg/L	50.0	ND	91.3	10-120			
Dimethylphthalate	45.6	10.0	µg/L	50.0	ND	91.1	10-120			
Di-n-octylphthalate	45.5	10.0	µg/L	50.0	ND	91.1	4-146			
Bis(2-Ethylhexyl)phthalate	45.5	10.0	µg/L	50.0	ND	91.0	8-158			
Surrogate: 2-Fluorophenol	*89.3*		µg/L	200		44.6	15-110			
Surrogate: Phenol-d6	*61.5*		µg/L	200		30.7	15-110			
Surrogate: Nitrobenzene-d5	*93.4*		µg/L	100		93.4	30-130			
Surrogate: 2-Fluorobiphenyl	*91.4*		µg/L	100		91.4	30-130			

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

QUALITY CONTROL

Semivolatile Organic Compounds by - GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226445 - SW-846 3510C										
Matrix Spike (B226445-MS1)	**Source: 19C1063-02**			Prepared: 03/23/19 Analyzed: 03/26/19						
Surrogate: 2,4,6-Tribromophenol	*197*		µg/L	200		98.5	15-110			
Surrogate: p-Terphenyl-d14	*92.4*		µg/L	100		92.4	30-130			
Matrix Spike Dup (B226445-MSD1)	**Source: 19C1063-02**			Prepared: 03/23/19 Analyzed: 03/26/19						
Butylbenzylphthalate	41.0	10.0	µg/L	50.0	ND	82.0	10-152	12.9	60	
Di-n-butylphthalate	40.8	10.0	µg/L	50.0	ND	81.6	10-120	12.7	47	
Diethylphthalate	40.6	10.0	µg/L	50.0	ND	81.2	10-120	11.7	100	
Dimethylphthalate	40.7	10.0	µg/L	50.0	ND	81.5	10-120	11.2	183	
Di-n-octylphthalate	40.2	10.0	µg/L	50.0	ND	80.5	4-146	12.3	69	
Bis(2-Ethylhexyl)phthalate	40.4	10.0	µg/L	50.0	ND	80.7	8-158	12.0	82	
Surrogate: 2-Fluorophenol	*81.5*		µg/L	200		40.7	15-110			
Surrogate: Phenol-d6	*54.6*		µg/L	200		27.3	15-110			
Surrogate: Nitrobenzene-d5	*83.4*		µg/L	100		83.4	30-130			
Surrogate: 2-Fluorobiphenyl	*82.4*		µg/L	100		82.4	30-130			
Surrogate: 2,4,6-Tribromophenol	*177*		µg/L	200		88.3	15-110			
Surrogate: p-Terphenyl-d14	*81.2*		µg/L	100		81.2	30-130			

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

QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226617 - SW-846 3510C										
Blank (B226617-BLK1)				Prepared: 03/27/19 Analyzed: 03/28/19						
Aroclor-1016	ND	0.100	µg/L							
Aroclor-1016 [2C]	ND	0.100	µg/L							
Aroclor-1221	ND	0.100	µg/L							
Aroclor-1221 [2C]	ND	0.100	µg/L							
Aroclor-1232	ND	0.100	µg/L							
Aroclor-1232 [2C]	ND	0.100	µg/L							
Aroclor-1242	ND	0.100	µg/L							
Aroclor-1242 [2C]	ND	0.100	µg/L							
Aroclor-1248	ND	0.100	µg/L							
Aroclor-1248 [2C]	ND	0.100	µg/L							
Aroclor-1254	ND	0.100	µg/L							
Aroclor-1254 [2C]	ND	0.100	µg/L							
Aroclor-1260	ND	0.100	µg/L							
Aroclor-1260 [2C]	ND	0.100	µg/L							
Surrogate: Decachlorobiphenyl	*0.736*		µg/L	1.00		73.6	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.774*		µg/L	1.00		77.4	30-150			
Surrogate: Tetrachloro-m-xylene	*0.778*		µg/L	1.00		77.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.820*		µg/L	1.00		82.0	30-150			
LCS (B226617-BS1)				Prepared: 03/27/19 Analyzed: 03/28/19						
Aroclor-1016	0.388	0.200	µg/L	0.500		77.6	50-140			
Aroclor-1016 [2C]	0.429	0.200	µg/L	0.500		85.8	50-140			
Aroclor-1260	0.364	0.200	µg/L	0.500		72.8	8-140			
Aroclor-1260 [2C]	0.374	0.200	µg/L	0.500		74.8	8-140			
Surrogate: Decachlorobiphenyl	*1.51*		µg/L	2.00		75.3	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.59*		µg/L	2.00		79.6	30-150			
Surrogate: Tetrachloro-m-xylene	*1.51*		µg/L	2.00		75.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.60*		µg/L	2.00		80.1	30-150			
LCS Dup (B226617-BSD1)				Prepared: 03/27/19 Analyzed: 03/28/19						
Aroclor-1016	0.420	0.200	µg/L	0.500		84.1	50-140	8.03		
Aroclor-1016 [2C]	0.461	0.200	µg/L	0.500		92.1	50-140	7.09		
Aroclor-1260	0.403	0.200	µg/L	0.500		80.6	8-140	10.2		
Aroclor-1260 [2C]	0.413	0.200	µg/L	0.500		82.7	8-140	10.0		
Surrogate: Decachlorobiphenyl	*1.68*		µg/L	2.00		83.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.77*		µg/L	2.00		88.6	30-150			
Surrogate: Tetrachloro-m-xylene	*1.61*		µg/L	2.00		80.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.68*		µg/L	2.00		84.0	30-150			
Matrix Spike (B226617-MS1)	**Source: 19C1063-01**			Prepared: 03/27/19 Analyzed: 03/28/19						
Aroclor-1016	0.191	0.0966	µg/L	0.242	ND	78.9	50-140			
Aroclor-1016 [2C]	0.202	0.0966	µg/L	0.242	ND	83.6	50-140			
Aroclor-1260	0.168	0.0966	µg/L	0.242	ND	69.4	8-140			
Aroclor-1260 [2C]	0.174	0.0966	µg/L	0.242	ND	72.2	8-140			
Surrogate: Decachlorobiphenyl	*0.659*		µg/L	0.966		68.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.696*		µg/L	0.966		72.1	30-150			
Surrogate: Tetrachloro-m-xylene	*0.677*		µg/L	0.966		70.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.735*		µg/L	0.966		76.1	30-150			

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

QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226617 - SW-846 3510C										
Matrix Spike Dup (B226617-MSD1)		**Source: 19C1063-01**		Prepared: 03/27/19 Analyzed: 03/28/19						
Aroclor-1016	0.217	0.0966	µg/L	0.242	ND	90.0	50-140	13.2	36	
Aroclor-1016 [2C]	0.217	0.0966	µg/L	0.242	ND	89.7	50-140	7.02	36	
Aroclor-1260	0.186	0.0966	µg/L	0.242	ND	77.2	8-140	10.6	38	
Aroclor-1260 [2C]	0.195	0.0966	µg/L	0.242	ND	80.9	8-140	11.4	38	
Surrogate: Decachlorobiphenyl	*0.748*		µg/L	0.966		77.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.785*		µg/L	0.966		81.3	30-150			
Surrogate: Tetrachloro-m-xylene	*0.772*		µg/L	0.966		79.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.824*		µg/L	0.966		85.2	30-150			

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

QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226466 - EPA 200.8										
Blank (B226466-BLK1)				Prepared: 03/24/19 Analyzed: 03/25/19						
Antimony	ND	1.0	µg/L							
Arsenic	ND	1.0	µg/L							
Cadmium	ND	0.20	µg/L							
Chromium	ND	10	µg/L							
Copper	ND	1.0	µg/L							
Lead	ND	0.50	µg/L							
Nickel	ND	5.0	µg/L							
Selenium	ND	5.0	µg/L							
Silver	ND	0.20	µg/L							
Zinc	ND	20	µg/L							
LCS (B226466-BS1)				Prepared: 03/24/19 Analyzed: 03/25/19						
Antimony	500	10	µg/L	500		100	85-115			
Arsenic	498	10	µg/L	500		99.5	85-115			
Cadmium	496	2.0	µg/L	500		99.1	85-115			
Chromium	515	100	µg/L	500		103	85-115			
Copper	1000	10	µg/L	1000		100	85-115			
Lead	570	5.0	µg/L	500		114	85-115			
Nickel	523	50	µg/L	500		105	85-115			
Selenium	486	50	µg/L	500		97.3	85-115			
Silver	497	2.0	µg/L	500		99.4	85-115			
Zinc	1010	200	µg/L	1000		101	85-115			
LCS Dup (B226466-BSD1)				Prepared: 03/24/19 Analyzed: 03/25/19						
Antimony	516	10	µg/L	500		103	85-115	3.11	20	
Arsenic	510	10	µg/L	500		102	85-115	2.48	20	
Cadmium	510	2.0	µg/L	500		102	85-115	2.86	20	
Chromium	527	100	µg/L	500		105	85-115	2.34	20	
Copper	1040	10	µg/L	1000		104	85-115	3.29	20	
Lead	502	5.0	µg/L	500		100	85-115	12.6	20	
Nickel	532	50	µg/L	500		106	85-115	1.63	20	
Selenium	504	50	µg/L	500		101	85-115	3.63	20	
Silver	509	2.0	µg/L	500		102	85-115	2.51	20	
Zinc	1040	200	µg/L	1000		104	85-115	2.79	20	
Batch B226548 - EPA 200.7										
Blank (B226548-BLK1)				Prepared: 03/25/19 Analyzed: 03/26/19						
Iron	ND	0.050	mg/L							
LCS (B226548-BS1)				Prepared: 03/25/19 Analyzed: 03/26/19						
Iron	3.98	0.050	mg/L	4.00		99.4	85-115			

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

QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226548 - EPA 200.7										
LCS Dup (B226548-BSD1)				Prepared: 03/25/19 Analyzed: 03/26/19						
Iron	3.95	0.050	mg/L	4.00		98.8	85-115	0.567	20	
Duplicate (B226548-DUP1)		**Source: 19C1063-01**		Prepared: 03/25/19 Analyzed: 03/26/19						
Iron	0.135	0.050	mg/L		0.128			5.10	20	
Matrix Spike (B226548-MS1)		**Source: 19C1063-01**		Prepared: 03/25/19 Analyzed: 03/26/19						
Iron	3.70	0.050	mg/L	4.00	0.128	89.4	70-130			
Batch B226612 - EPA 245.1										
Blank (B226612-BLK1)				Prepared: 03/26/19 Analyzed: 03/27/19						
Mercury	ND	0.00010	mg/L							
LCS (B226612-BS1)				Prepared: 03/26/19 Analyzed: 03/27/19						
Mercury	0.00388	0.00010	mg/L	0.00400		96.9	85-115			
LCS Dup (B226612-BSD1)				Prepared: 03/26/19 Analyzed: 03/27/19						
Mercury	0.00385	0.00010	mg/L	0.00400		96.3	85-115	0.670	20	
Duplicate (B226612-DUP1)		**Source: 19C1063-02**		Prepared: 03/26/19 Analyzed: 03/27/19						
Mercury	ND	0.00010	mg/L		ND			NC	30	
Matrix Spike (B226612-MS1)		**Source: 19C1063-02**		Prepared: 03/26/19 Analyzed: 03/27/19						
Mercury	0.00379	0.00010	mg/L	0.00400	ND	94.6	75-125			

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

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B226322 - SM21-22 4500 CL G										
Blank (B226322-BLK1)				Prepared & Analyzed: 03/21/19						
Chlorine, Residual	ND	0.020	mg/L							
LCS (B226322-BS1)				Prepared & Analyzed: 03/21/19						
Chlorine, Residual	1.1	0.020	mg/L	1.29		86.6	76-135			
LCS Dup (B226322-BSD1)				Prepared & Analyzed: 03/21/19						
Chlorine, Residual	1.2	0.020	mg/L	1.29		92.3	76-135	6.38	7.41	
Batch B226323 - SM21-22 3500 Cr B										
Blank (B226323-BLK1)				Prepared & Analyzed: 03/21/19						
Hexavalent Chromium	ND	0.0040	mg/L							
LCS (B226323-BS1)				Prepared & Analyzed: 03/21/19						
Hexavalent Chromium	0.11	0.0040	mg/L	0.100		106	83.2-114			
LCS Dup (B226323-BSD1)				Prepared & Analyzed: 03/21/19						
Hexavalent Chromium	0.11	0.0040	mg/L	0.100		106	83.2-114	0.00	7.51	
Batch B226345 - EPA 1664B										
Blank (B226345-BLK1)				Prepared & Analyzed: 03/22/19						
Silica Gel Treated HEM (SGT-HEM)	ND	1.4	mg/L							
LCS (B226345-BS1)				Prepared & Analyzed: 03/22/19						
Silica Gel Treated HEM (SGT-HEM)	9.5		mg/L	10.0		95.0	64-132			
Duplicate (B226345-DUP1)	**Source: 19C1063-01**			Prepared & Analyzed: 03/22/19						
Silica Gel Treated HEM (SGT-HEM)	ND	1.6	mg/L		ND			NC	18	
Matrix Spike (B226345-MS1)	**Source: 19C1063-01**			Prepared & Analyzed: 03/22/19						
Silica Gel Treated HEM (SGT-HEM)	84	14	mg/L	100	ND	84.0	64-132			
Batch B226412 - SM21-22 2540D										
Blank (B226412-BLK1)				Prepared & Analyzed: 03/22/19						
Total Suspended Solids	ND	2.5	mg/L							
LCS (B226412-BS1)				Prepared & Analyzed: 03/22/19						
Total Suspended Solids	154	10	mg/L	200		77.0	64.3-117			

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B226601 - EPA 420.1											
Blank (B226601-BLK1)				Prepared: 03/26/19 Analyzed: 03/27/19							
Phenol	ND	0.050	mg/L								
LCS (B226601-BS1)				Prepared: 03/26/19 Analyzed: 03/27/19							
Phenol	0.53	0.050	mg/L	0.500		106		72.7-125			
LCS Dup (B226601-BSD1)				Prepared: 03/26/19 Analyzed: 03/27/19							
Phenol	0.51	0.050	mg/L	0.500		102		72.7-125	4.40	9.52	
Duplicate (B226601-DUP1)		**Source: 19C1063-02**		Prepared: 03/26/19 Analyzed: 03/27/19							
Phenol	ND	0.050	mg/L		ND				NC	37.2	
Matrix Spike (B226601-MS1)		**Source: 19C1063-01**		Prepared: 03/26/19 Analyzed: 03/27/19							
Phenol	0.49	0.050	mg/L	0.500	ND	97.3		44.9-141			
Batch B226692 - EPA 300.0											
Blank (B226692-BLK1)				Prepared & Analyzed: 03/27/19							
Chloride	ND	1.0	mg/L								
LCS (B226692-BS1)				Prepared & Analyzed: 03/27/19							
Chloride	4.8	1.0	mg/L	5.00		95.1		90-110			
LCS Dup (B226692-BSD1)				Prepared & Analyzed: 03/27/19							
Chloride	4.7	1.0	mg/L	5.00		94.9		90-110	0.227	20	
Batch B226777 - EPA 300.0											
Blank (B226777-BLK1)				Prepared & Analyzed: 03/27/19							
Chloride	ND	1.0	mg/L								
LCS (B226777-BS1)				Prepared & Analyzed: 03/27/19							
Chloride	4.8	1.0	mg/L	5.00		96.0		90-110			
LCS Dup (B226777-BSD1)				Prepared & Analyzed: 03/27/19							
Chloride	4.8	1.0	mg/L	5.00		95.5		90-110	0.512	20	
Duplicate (B226777-DUP1)		**Source: 19C1063-01**		Prepared & Analyzed: 03/28/19							
Chloride	10000	400	mg/L		10000				0.686	20	
Matrix Spike (B226777-MS1)		**Source: 19C1063-01**		Prepared & Analyzed: 03/28/19							
Chloride	11000	400	mg/L	2000	10000	**45.3**	*	80-120			MS-07

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QUALITY CONTROL

Drinking Water Organics EPA 504.1 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B226349 - EPA 504 water											
Blank (B226349-BLK1)				Prepared & Analyzed: 03/22/19							
1,2-Dibromoethane (EDB)	ND	0.021	µg/L								
1,2-Dibromoethane (EDB) [2C]	ND	0.021	µg/L								
Surrogate: 1,3-Dibromopropane	*1.12*		µg/L	1.03		108		70-130			
Surrogate: 1,3-Dibromopropane [2C]	*1.07*		µg/L	1.03		104		70-130			
LCS (B226349-BS1)				Prepared & Analyzed: 03/22/19							
1,2-Dibromoethane (EDB)	0.202	0.021	µg/L	0.180		112		70-130			
1,2-Dibromoethane (EDB) [2C]	0.206	0.021	µg/L	0.180		114		70-130			
Surrogate: 1,3-Dibromopropane	*1.11*		µg/L	1.03		107		70-130			
Surrogate: 1,3-Dibromopropane [2C]	*1.04*		µg/L	1.03		101		70-130			
LCS Dup (B226349-BSD1)				Prepared & Analyzed: 03/22/19							
1,2-Dibromoethane (EDB)	0.241	0.021	µg/L	0.183		**131**	*	70-130	17.4		
1,2-Dibromoethane (EDB) [2C]	0.237	0.021	µg/L	0.183		130		70-130	14.1		
Surrogate: 1,3-Dibromopropane	*1.22*		µg/L	1.05		117		70-130			
Surrogate: 1,3-Dibromopropane [2C]	*1.19*		µg/L	1.05		114		70-130			

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

LCS

Lab Sample ID: B226349-BS1 Date(s) Analyzed: 03/22/2019 03/22/2019

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
1,2-Dibromoethane (EDB)	1	3.193	0.000	0.000	0.202	
	2	3.201	0.000	0.000	0.206	3.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

LCS Dup

Lab Sample ID: B226349-BSD1 Date(s) Analyzed: 03/22/2019 03/22/2019

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
1,2-Dibromoethane (EDB)	1	3.202	0.000	0.000	0.241	
	2	3.209	0.000	0.000	0.237	1.3

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

LCS

Lab Sample ID: B226617-BS1 Date(s) Analyzed: 03/28/2019 03/28/2019

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.388	
	2	0.000	0.000	0.000	0.429	9.5
Aroclor-1260	1	0.000	0.000	0.000	0.364	
	2	0.000	0.000	0.000	0.374	3.8

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

LCS Dup

Lab Sample ID: B226617-BSD1 Date(s) Analyzed: 03/28/2019 03/28/2019

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.420	
	2	0.000	0.000	0.000	0.461	9.3
Aroclor-1260	1	0.000	0.000	0.000	0.403	
	2	0.000	0.000	0.000	0.413	3.2

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

Matrix Spike

Lab Sample ID: B226617-MS1 Date(s) Analyzed: 03/28/2019 03/28/2019

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.191	
	2	0.000	0.000	0.000	0.202	6.1
Aroclor-1260	1	0.000	0.000	0.000	0.168	
	2	0.000	0.000	0.000	0.174	2.3

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

Matrix Spike Dup

Lab Sample ID: B226617-MSD1 Date(s) Analyzed: 03/28/2019 03/28/2019

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.217	
	2	0.000	0.000	0.000	0.217	1.4
Aroclor-1260	1	0.000	0.000	0.000	0.186	
	2	0.000	0.000	0.000	0.195	2.6

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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.
H-03	Sample received after recommended holding time was exceeded.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-04	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.
L-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
L-14	Compound classified by MA CAM as difficult with acceptable recoveries of 40-160%. Recovery does not meet 70-130% criteria but does meet difficult compound criteria.
MS-07	Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery.Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.
PR-08	pH of sample (pH 5) is outside of method specified preservation criteria.
R-05	Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.
RL-11	Elevated reporting limit due to high concentration of target compounds.
RL-14	Elevated reporting limit due to foaming sample matrix. MA CAM reporting limit not met.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-16	Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.
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.
V-36	Initial calibration verification (ICV) 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.
Z-01	SM4500 test had a calibration point outside acceptable back calculation recovery. Reanalysis yielded similar non-conformance.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
608.3 in Water	
Aroclor-1016	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1016 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1221	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1221 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1232	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1232 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1242	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1242 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1248	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1248 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1254	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1254 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1260	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1260 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
624.1 in Water	
Acetone	CT,NY,MA,NH
tert-Amyl Methyl Ether (TAME)	MA
Benzene	CT,NY,MA,NH,RI,NC,ME,VA
Bromodichloromethane	CT,NY,MA,NH,RI,NC,ME,VA
Bromoform	CT,NY,MA,NH,RI,NC,ME,VA
2-Butanone (MEK)	MA
Bromomethane	CT,NY,MA,NH,RI,NC,ME,VA
tert-Butyl Alcohol (TBA)	NY,MA
Carbon Disulfide	MA
Carbon Tetrachloride	CT,NY,MA,NH,RI,NC,ME,VA
Chlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
Chlorodibromomethane	CT,NY,MA,NH,RI,NC,ME,VA
Chloroethane	CT,NY,MA,NH,RI,NC,ME,VA
Chloroform	CT,NY,MA,NH,RI,NC,ME,VA
Chloromethane	CT,NY,MA,NH,RI,NC,ME,VA
Dibromomethane	MA
1,2-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
1,3-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
Dichlorodifluoromethane (Freon 12)	NY,MA
1,4-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
1,2-Dichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
cis-1,2-Dichloroethylene	NY,MA
1,1-Dichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
1,1-Dichloroethylene	CT,NY,MA,NH,RI,NC,ME,VA
trans-1,2-Dichloroethylene	CT,NY,MA,NH,RI,NC,ME,VA
1,2-Dichloropropane	CT,NY,MA,NH,RI,NC,ME,VA
cis-1,3-Dichloropropene	CT,NY,MA,NH,RI,NC,ME,VA
1,4-Dioxane	MA
trans-1,3-Dichloropropene	CT,NY,MA,NH,RI,NC,ME,VA
Ethanol	NY,MA
2-Hexanone (MBK)	MA

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
624.1 in Water	
Ethylbenzene	CT,NY,MA,NH,RI,NC,ME,VA
4-Methyl-2-pentanone (MIBK)	NY,MA
Methyl tert-Butyl Ether (MTBE)	NY,MA,NH,NC
Methylene Chloride	CT,NY,MA,NH,RI,NC,ME,VA
Styrene	NY,MA
Naphthalene	NY,MA,NC
1,1,2,2-Tetrachloroethane	CT,NY,MA,NH,RI,NC,ME,VA
Tetrachloroethylene	CT,NY,MA,NH,RI,NC,ME,VA
Toluene	CT,NY,MA,NH,RI,NC,ME,VA
1,2,4-Trichlorobenzene	MA,NC
1,2,4-Trimethylbenzene	MA
1,1,1-Trichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
1,3,5-Trimethylbenzene	MA
1,1,2-Trichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
Trichloroethylene	CT,NY,MA,NH,RI,NC,ME,VA
Trichlorofluoromethane (Freon 11)	CT,NY,MA,NH,RI,NC,ME,VA
Vinyl Chloride	CT,NY,MA,NH,RI,NC,ME,VA
m+p Xylene	CT,NY,MA,NH,RI,NC
o-Xylene	CT,NY,MA,NH,RI,NC
625.1 in Water	
Butylbenzylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
Di-n-butylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
1,3-Dichlorobenzene	MA,NC
1,4-Dichlorobenzene	MA,NC
1,2-Dichlorobenzene	MA,NC
Diethylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
Dimethylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
Di-n-octylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
Hexachlorobutadiene	CT,MA,NH,NY,NC,RI,ME,VA
Naphthalene	CT,MA,NH,NY,NC,RI,ME,VA
Phenol	CT,MA,NH,NY,NC,RI,ME,VA
1,2,4-Trichlorobenzene	CT,MA,NH,NY,NC,RI,ME,VA
2-Fluorophenol	NC
2-Fluorophenol	NC,VA
Phenol-d6	VA
Nitrobenzene-d5	VA
EPA 200.7 in Water	
Iron	CT,MA,NH,NY,RI,NC,ME,VA
EPA 200.8 in Water	
Antimony	CT,MA,NH,NY,RI,NC,ME,VA
Arsenic	CT,MA,NH,NY,RI,NC,ME,VA
Cadmium	CT,MA,NH,NY,RI,NC,ME,VA
Chromium	CT,MA,NH,NY,RI,NC,ME,VA
Copper	CT,MA,NH,NY,RI,NC,ME,VA
Lead	CT,MA,NH,NY,RI,NC,ME,VA
Nickel	CT,MA,NH,NY,RI,NC,ME,VA

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Selenium	CT,MA,NH,NY,RI,NC,ME,VA
Silver	CT,MA,NH,NY,RI,NC,ME,VA
Zinc	CT,MA,NH,NY,RI,NC,ME,VA
EPA 245.1 in Water	
Mercury	CT,MA,NH,RI,NY,NC,ME,VA
EPA 300.0 in Water	
Chloride	NC,NY,MA,VA,ME,NH,CT,RI
EPA 420.1 in Water	
Phenol	CT,MA,NH,NY,RI,NC,ME,VA
SM19-22 4500 NH3 C in Water	
Ammonia as N	NY,MA,CT,RI,VA,NC,ME
SM21-22 2540D in Water	
Total Suspended Solids	CT,MA,NH,NY,RI,NC,ME,VA
SM21-22 3500 Cr B in Water	
Hexavalent Chromium	NY,CT,NH,RI,ME,VA,NC
SM21-22 4500 CL G in Water	
Chlorine, Residual	CT,MA,RI,ME
SM21-22 4500 CN E in Water	
Cyanide	CT,MA,NH,NY,RI,NC,ME,VA
SW-846 8260C in Water	
Acetone	CT,NH,NY,ME
tert-Amyl Methyl Ether (TAME)	NH,NY,ME
Benzene	CT,NH,NY,ME
Bromobenzene	ME
Bromochloromethane	NH,NY,ME
Bromodichloromethane	CT,NH,NY,ME
Bromoform	CT,NH,NY,ME
Bromomethane	CT,NH,NY,ME
2-Butanone (MEK)	CT,NH,NY,ME
n-Butylbenzene	NY,ME
sec-Butylbenzene	NY,ME
tert-Butylbenzene	NY,ME
tert-Butyl Ethyl Ether (TBEE)	NH,NY,ME
Carbon Disulfide	CT,NH,NY,ME
Carbon Tetrachloride	CT,NH,NY,ME
Chlorobenzene	CT,NH,NY,ME
Chlorodibromomethane	CT,NH,NY,ME
Chloroethane	CT,NH,NY,ME
Chloroform	CT,NH,NY,ME
Chloromethane	CT,NH,NY,ME
2-Chlorotoluene	NY,ME
4-Chlorotoluene	NY,ME
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromoethane (EDB)	NY

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260C in Water	
Dibromomethane	NH,NY,ME
1,2-Dichlorobenzene	CT,NY,ME
1,3-Dichlorobenzene	CT,NH,NY,ME
1,4-Dichlorobenzene	CT,NH,NY,ME
Dichlorodifluoromethane (Freon 12)	NH,NY,ME
1,1-Dichloroethane	CT,NH,NY,ME
1,2-Dichloroethane	CT,NH,NY,ME
1,1-Dichloroethylene	CT,NH,NY,ME
cis-1,2-Dichloroethylene	NY,ME
trans-1,2-Dichloroethylene	CT,NH,NY,ME
1,2-Dichloropropane	CT,NH,NY,ME
1,3-Dichloropropane	NY,ME
2,2-Dichloropropane	NH,NY,ME
1,1-Dichloropropene	NH,NY,ME
cis-1,3-Dichloropropene	CT,NH,NY,ME
trans-1,3-Dichloropropene	CT,NH,NY,ME
Diisopropyl Ether (DIPE)	NH,NY,ME
Ethylbenzene	CT,NH,NY,ME
Hexachlorobutadiene	CT,NH,NY,ME
2-Hexanone (MBK)	CT,NH,NY,ME
Isopropylbenzene (Cumene)	NY,ME
p-Isopropyltoluene (p-Cymene)	CT,NH,NY,ME
Methyl tert-Butyl Ether (MTBE)	CT,NH,NY,ME
Methylene Chloride	CT,NH,NY,ME
4-Methyl-2-pentanone (MIBK)	CT,NH,NY,ME
Naphthalene	NH,NY,ME
n-Propylbenzene	CT,NH,NY,ME
Styrene	CT,NH,NY,ME
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME
Tetrachloroethylene	CT,NH,NY,ME
Toluene	CT,NH,NY,ME
1,2,3-Trichlorobenzene	NH,NY,ME
1,2,4-Trichlorobenzene	CT,NH,NY,ME
1,1,1-Trichloroethane	CT,NH,NY,ME
1,1,2-Trichloroethane	CT,NH,NY,ME
Trichloroethylene	CT,NH,NY,ME
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME
1,2,3-Trichloropropane	NH,NY,ME
1,2,4-Trimethylbenzene	NY,ME
1,3,5-Trimethylbenzene	NY,ME
Vinyl Chloride	CT,NH,NY,ME
m+p Xylene	CT,NH,NY,ME
o-Xylene	CT,NH,NY,ME

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The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2019
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2019
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2019
NJ	New Jersey DEP	MA007 NELAP	06/30/2019
FL	Florida Department of Health	E871027 NELAP	06/30/2019
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2019
ME	State of Maine	2011028	06/9/2019
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2019
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2019
NC-DW	North Carolina Department of Health	25703	07/31/2019

19C1068

con-test ANALYTICAL LABORATORY

Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com Doc # 381 Rev 1_03242017

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 2

Company Name: Weston + Sampson
Address: ~~xx~~
Phone: 1800 Sarpson
Project Name: Everett Ave Chelsea
Project Location: Chelsea
Project Number:
Project Manager: Daron Kurkjian
Con-Test Quote Name/Number:
Invoice Recipient:
Sampled By: TDS

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date: Std

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

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: Kurkjian@wseinc.com
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	¹Matrix Code	Conc Code	RCP Analytes	8260
1	IER Outfall	3/21	1600		✓	SW	L	✓	
2	~~xxx~~ WS-2	3/20	1520		✓	GW	L	✓	
3	VES-306-MW	3/20	1345				U		✓
4	WS-5	"	11:45				U		
5	WS-8	3/21	1405				U		
6	WS-1	3/21	1320				U		
7	WS-7		12:15				U		
8	WS-4		11:00						

# of Containers
² Preservation Code
³ Container Code

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

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)

³ **Container Codes:**
A = Amber Glass
G = Glass
P = Plastic
ST = Sterile
V = Vial
S = Summa Canister
T = Tedlar Bag
O = Other (please define)

Comments:

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

	Date/Time:
Relinquished by: (signature)	3/21
Received by: (signature) 3:30pm	3/21/19
Relinquished by: (signature) 6:25	3/21/19
Received by: (signature) 3.3, 2.6	3/21/19 1825
Relinquished by: (signature)	
Received by: (signature)	

Detection Limit Requirements
MA: ~~xxx~~ GW-2
CT:
Other:

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

con-test® ANALYTICAL LABORATORY www.contestlabs.com

NELAC and AIHA-LAP, LLC Accredited

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

Other
☐ Chromatogram
☐ *AIHA-LAP, LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

Client WS

Received By SL Date 3/21/19 Time 1605

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 33, 2.6 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? ~~F~~ SL T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? T On COC? F

Do all samples have the proper pH? Acid TSA Base DIW

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	16	1 Liter Plastic	4	16 oz Amb.	
HCL-	20	500 mL Amb.	2	500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	6	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

Client did not specify tests

2 Trip blanks received

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test Analytical Laboratory	Project #: 19C1063
Project Location: Chelsea, MA	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

19C1063-01 thru 19C1063-09

Matrices: Soil Water

CAM Protocol (check all that below)

8260 VOC CAM II A (X)	7470/7471 Hg CAM IIIB ( )	MassDEP VPH CAM IV A ( )	8082 PCB CAM V A ( )	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )
8270 SVOC CAM II B ( )	7010 Metals CAM III C ( )	MassDEP VPH CAM IV C ( )	8081 Pesticides CAM V B ( )	7196 Hex Cr CAM VI B ( )	MassDEP APH CAM IX A ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	MassDEP EPH CAM IV B ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )

Affirmative response to Questions A throughF is required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑ Yes	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specificed in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes	☑ No[1]

***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

H	Were all QC perfomance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

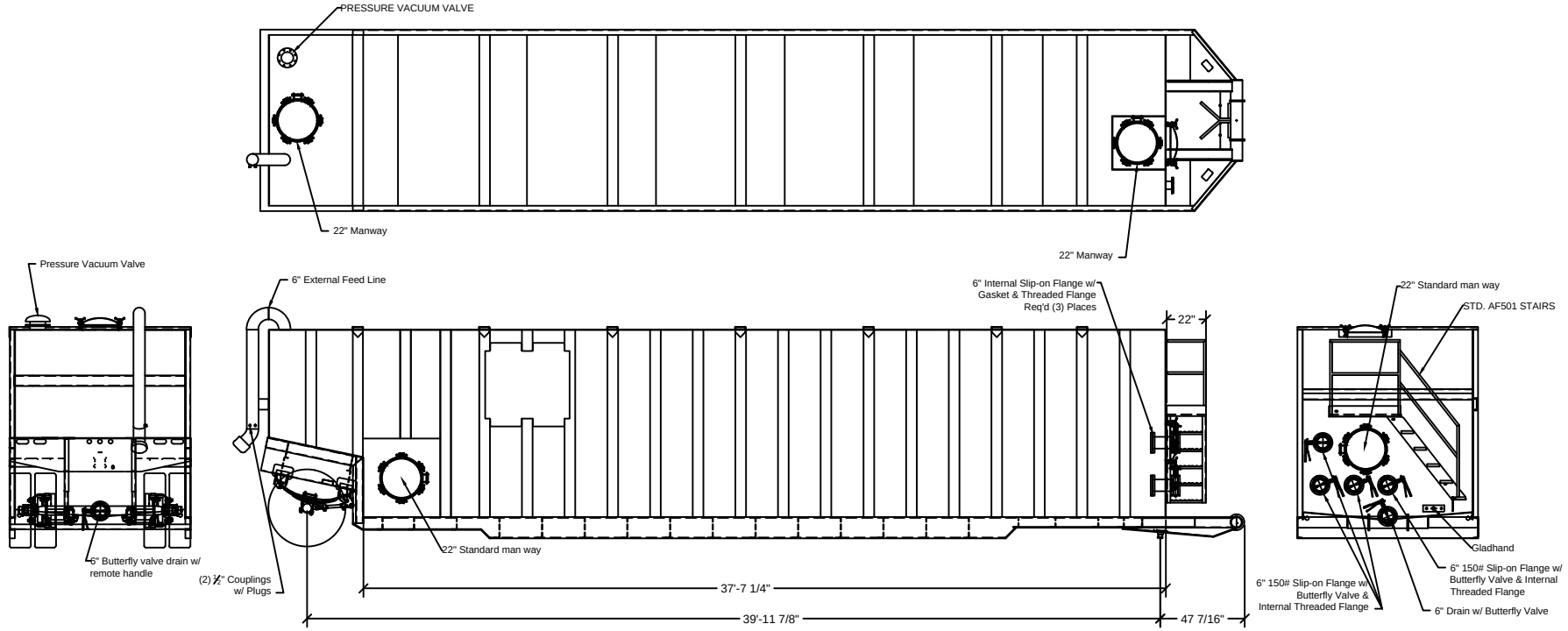
I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Lisa Worthington Position: Project Manager

Printed Name: Lisa A. Worthington Date: 03/28/19

Appendix C

Cutsheets



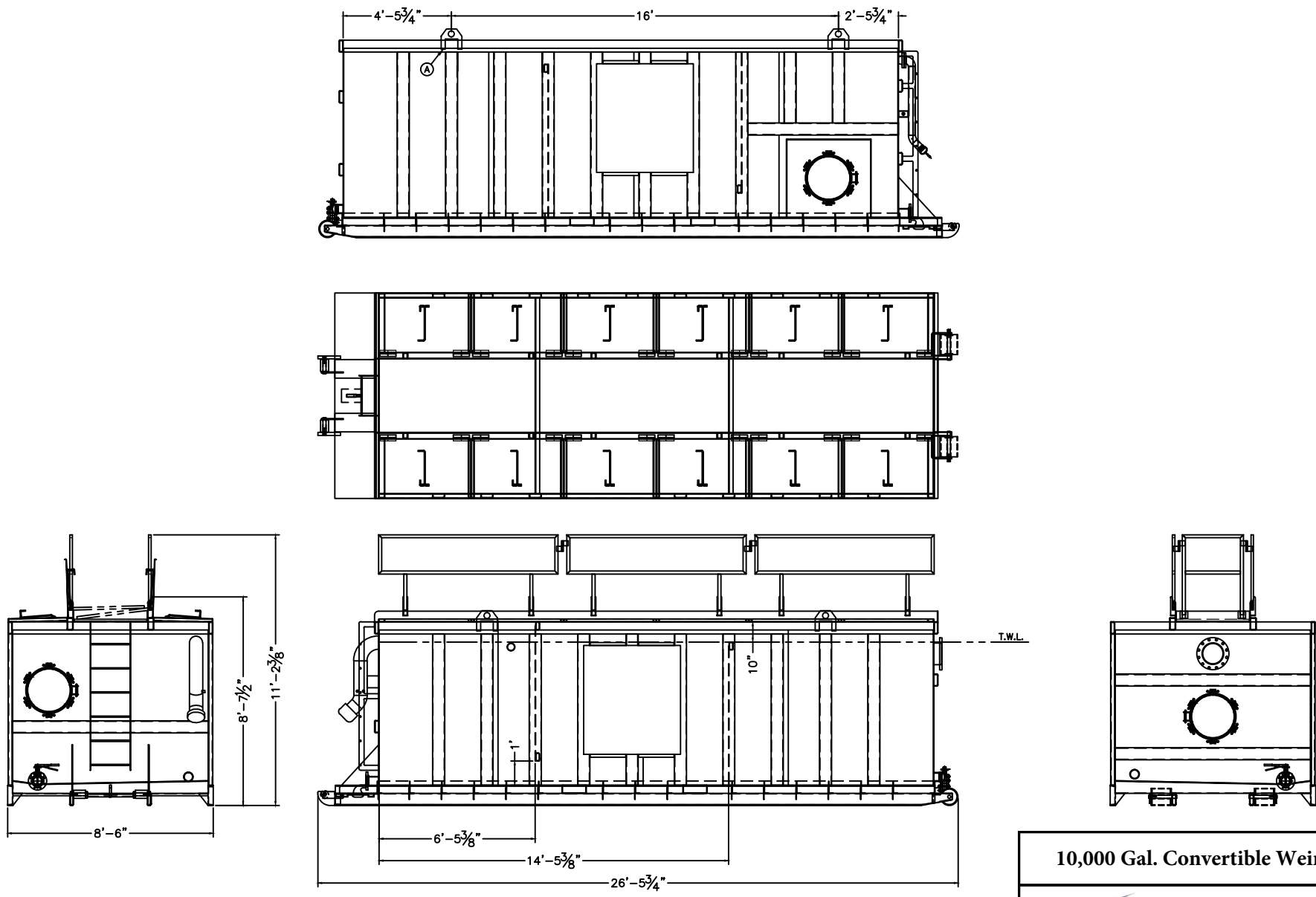
STANDARD SPECIFICATION

CAPACITY: .... 21,000 GALLONS (500 BBL)
SIDE SHEETS: .... 1/4" A36 PLATE
TOP SHEET: .... 1/4" A36 PLATE
FRONT SHEET: .... 1/4" A36 PLATE
REAR SHEET: .... 1/4" A36 PLATE
FLOOR: .... 1/4" A36 PLATE
MAIN FLOOR RAILS: .... 12" x 20.7# STRUCTURAL CHANNEL
FLOOR CROSSMEMBERS: .... 1/4" A36 PLATE
SIDE STAKES: .... ONE PIECE 3/16" A36 PLATE
SUSPENSION: .... 3 LEAF SPRING, 22,500 LBS. CACPACITY
AXLE: .... 77.5" TRACK, 22,500 LBS. CAPACITY
TIRES: 11R22.5
WHEELS: .... 8.25 x 22.5 STEEL
MANWAYS: .... 3 - 22" DIA. FRONT & TOP
1 - 22" DIA. CURB SIDE
VALVES: .... 1 - BLAYLOCK PRESSURE VALVE
5 - 6" BUTTERFLY (FRONT)
1 - 6" BUTTERFLY VALVE (REAR DRAIN)
INLET PIPING: .... 1 - 6" PIPE SYSTEM (REAR)
BLAST: .... (INTERIOR) SSPC-SP-10 (NEAR WHITE)
(EXTERIOR) SSPC-SP-6 (COMMERCIAL BLAST)
PAINT: .... (INTERIOR) EPOXYPHENOLIC 100% SOLID 20.0 MILS D.F.T.
(EXTERIOR) PRIMER COAT EPOXY 3.0 TO 4.0 MILS D.F.T.
(EXTERIOR) FINISH COAT POLURETHANE 3.0 TO 4.0 D.F.T.

21,000 Gal. Frac Tank

Lockwood Remediation Technologies, LLC

89 Crawford Street
Leominster, Massachusetts 01453
O: 774-450-7177
F: 888-835-0617

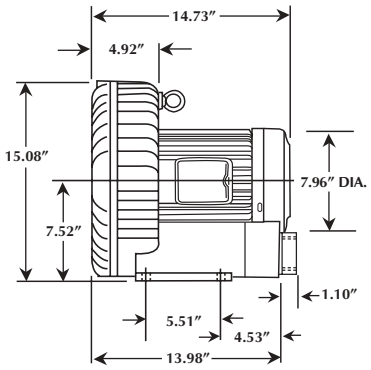


10,000 Gal. Convertible Weir Tank

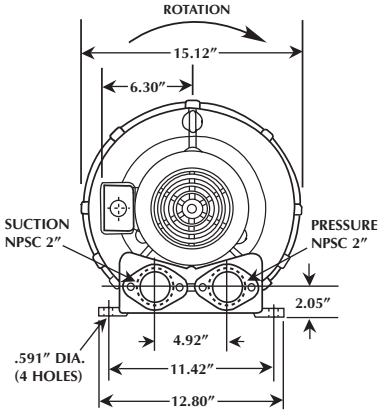
Lockwood Remediation Technologies, LLC

89 Crawford Street
Leominster, Massachusetts 01453
O: 774-450-7177
F: 888-835-0617

VFC600



3-Phase version shown
Contact factory for other versions



The VFC600 is a single-stage ring compressor with a maximum pressure of 118 in. H2O, a maximum vacuum of 98 in. H2O, and a maximum capacity of 206 SCFM. It comes complete with a direct-drive, 4.5 horsepower TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models. All versions have NEMA class B insulation, are UL recognized, CSA certified, and CE. 575 Volt units are CSA certified only.

Specifications

	Model No.	Hz	Voltage (Low Voltage/High Voltage)	Amps (Max. Rated) (Low Voltage/High Voltage)	Amps (Locked Rotor) (Low Voltage/High Voltage)	Max. Pressure in. H_2O	Max. Vacuum in. H_2O	Max. Airflow SCFM	Min. Airflow SCFM	Max. Temp Rise (ΔT) °F(°C)	Weight lbs.(kg)
3 Phase	**VFC600A-7W**	60	200-240/400-480	12-11/6.0-5.5	78-90/39-45	118	98	206	56	126(70)	114(52)
		50	190-230/380-460	9.2-10.5/4.6-5.2	88-102/44-51	86	72	175	28	108(65)	
	VFC600A-5W	60	575	4.4	36	118	98	206	56	126(70)	114(52)

Accessories

-For additional accessories: See pages 28-37.

Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Inlet Filter/Receiver	Exhaust Silencer/Muffler
Model No.	VV6	PV6	F-67	C-67	R30P2.0	VFY-026A
See Page No.	33	33	28	28	31	30

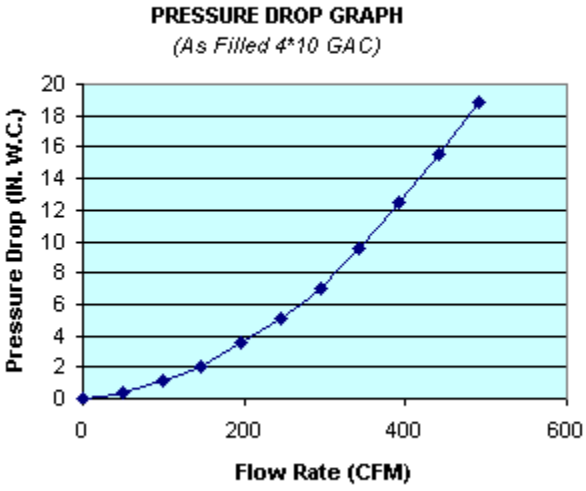
NOTE: Maximum allowable time at deadhead is 60 seconds.

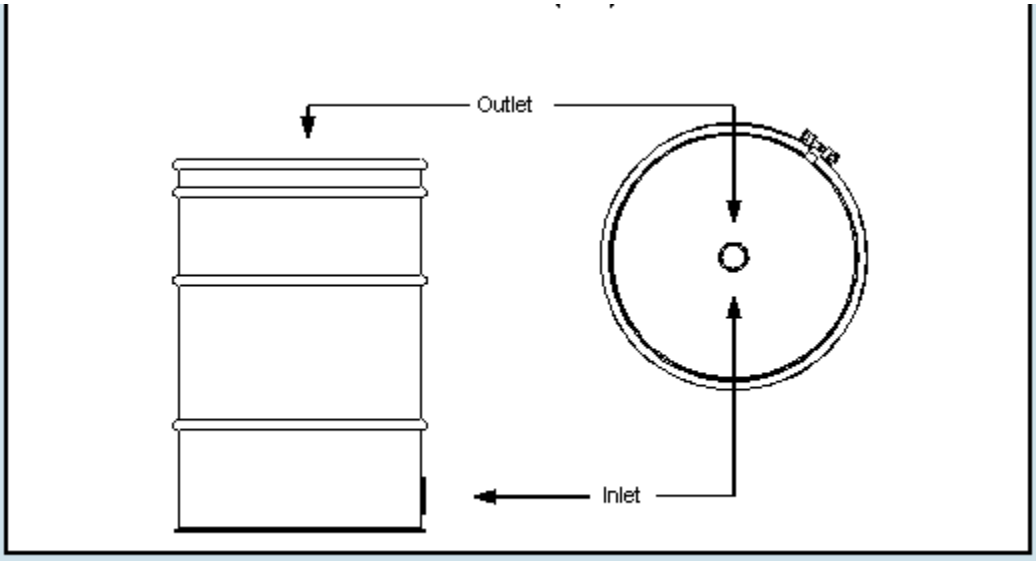
89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

VFD SERIES FILTERS
MODEL VFD-110

The VFD-110 filter is a media filter vessel designed to treat vapor streams. While the typical design application is a activated carbon adsorbtion unit, the filter can easily accommodate many medias. The sturdy construction makes these filter vessels ideal for long term treatment units. Some applications include:

- Soil Vapor Extraction Treatment
- Air Stripper Off Gas Treatment
- Odor Removal System
- Storage Tank Purge Vapor Treatment
- Pilot Study
- Industrial Process Treatment





VFD-110 SPECIFICATIONS			
Overall Height	3'7"	Vessel/Internal Piping Materials	CS/CS (False Floor)
Diameter	32"	Internal Coating	Polyamide Epoxy Resin
Inlet / Outlet (FNPT)	2"	External Coating	Urethane Enamel
Drain / Vent (FNPT)	OPT	Maximum Pressure / Temp	4 PSIG / 250° F
GAC Fill (lbs)	350	Cross Sectional Bed Area	4.9 FT^2
Shipping / Operational Weight (lbs)	450/600	Bed Depth/Volume	2.6 FT / 12.5 FT^3

The Pulsatron Series HV designed for high viscosity applications for precise and accurate metering control. The Series HV offers manual control over stroke length and stroke rate as standard with the option to choose between 4-20mA and external pace inputs for automatic control.

Five distinct models are available, having pressure capabilities to 150 PSIG (10 BAR) @ 12 GPD (1.9 lph), and flow capacities to 240 GPD (37.9 lph) @ 80 PSIG (5.6 BAR), with a turndown ratio of 100:1. Metering performance is reproducible to within ± 2% of maximum capacity.

Features

- Automatic Control, available with 4-20mADC direct or external pacing, with stop function.
- Manual Control by on-line adjustable stroke rate and stroke length.
- Auto-Off-Manual switch.
- Highly Reliable timing circuit.
- Circuit Protection against voltage and current upsets.
- Panel Mounted Fuse.
- Solenoid Protection by thermal overload with auto-reset.
- Water Resistant, for outdoor and indoor applications.
- Indicator Lights, panel mounted.
- Guided Ball Check Valve Systems, to reduce back flow and enhance outstanding priming characteristics.
- Viscosities to 20,000 CPS.

Controls

Manual Stroke Rate

- Turn-Down Ratio 10:1

Manual Stroke Length

- Turn-Down Ratio 10:1

4-20mA or 20-4mA Input

- Automatic Control

Operating Benefits

- Reliable metering performance.
- Rated "hot" for continuous duty.
- High viscosity capability.
- Leak-free, sealless, liquid end.

Aftermarket

- KOPkits
- Gauges
- Dampeners
- Pressure Relief Valves
- Tanks
- Pre-Engineered Systems
- Process Controllers (PULSAblue, MicroVision)

Series HV

Specifications and Model Selection

MODEL		LVB3	LVF4	LVG4	LVG5	LVH7
Capacity	GPH	0.50	1.00	2.00	4.00	10.00
nominal	GPD	12	24	48	96	240
(max.)	LPH	1.9	3.8	7.6	15.1	37.9
Pressure	PSIG	150	150	110	110	80
(max.)	BAR	10	10	7	7	5.6
Connections:	Tubing	(S) .50" I.D. X .75" O.D. .38" I.D. X .50" OD (LVB3 & F4 only) (S & D) .50" I.D. X .75" O.D. (LVG4,G5 & H7 only)				

Engineering Data

Pump Head Materials Available: GFPPL, PVC, PVDF, 316 SS

Diaphragm: PTFE-faced CSPE-backed

Check Valves Materials Available:

Seats/O-Rings: PTFE, CSPE, Viton

Balls: Ceramic, PTFE, 316 SS, Alloy C

Fittings Materials Available: GFPPL, PVC, PVDF

Bleed Valve: Same as fitting and check valve selected, except 316SS

Injection Valve & Foot Valve Assy: Same as fitting and check valve selected

Tubing: Clear PVC, White PE

Important: Material Code - GFPPL=Glass-filled Polypropylene, PVC=Polyvinyl Chloride, PE=Polyethylene, PVDF=Polyvinylidene Fluoride, CSPE=Generic formulation of Hypalon, a registered trademark of E.I. DuPont Company. Viton is a registered trademark of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Engineering Data

Reproducibility: +/- 2% at maximum capacity

Viscosity Max CPS: 20,000 CPS

Stroke Frequency Max SPM: 125

Stroke Frequency Turn-Down Ratio: 10:1

Stroke Length Turn-Down Ratio: 10:1

Power Input: 115 VAC/50-60 HZ/1 ph, 230 VAC/50-60 HZ/1 ph

Average Current Draw:

@ 115 VAC; Amps: 1.0 Amps

@ 230 VAC; Amps: 0.5 Amps @ 230 VAC

Peak Input Power: 300 Watts

Average Input Power @ Max SPM: 130 Watts

Custom Engineered Designs – Pre-Engineered Systems

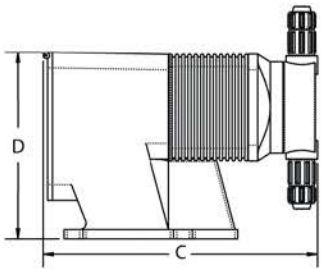
Pre-Engineered Systems

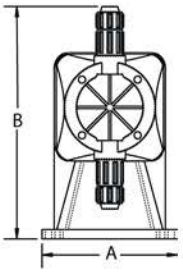
Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key simplicity and industrial-grade durability. The UV-stabilized, high-grade HDPE frame offers maximum chemical compatibility and structural rigidity. Each system is factory assembled and hydrostatically tested prior to shipment.

Dimensions

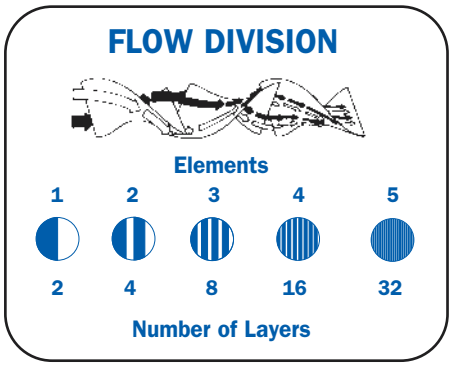
Series HV Dimensions (inches)					
Model No.	A	B	C	D	Shipping Weight
LVB3	5.4	9.3	9.5	7.5	13
LVF4	5.4	10.8	10.8	7.5	18
LVG4	5.4	9.5	10.6	7.5	18
LVG5	5.4	10.8	10.8	7.5	18
LVH7	6.1	11.5	11	8.2	25

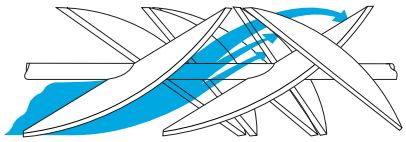
NOTE: Inches X 2.54 = cm

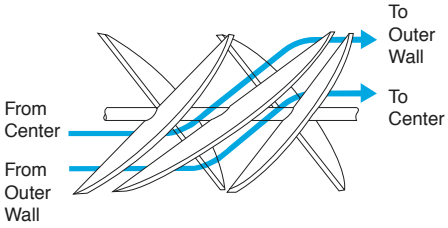


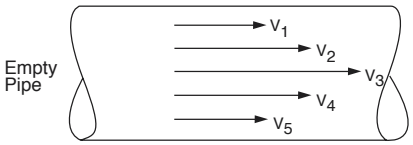


Principles of Operation









$V_3 > V_4 \backsim V_2 > V_5 \backsim V_1$

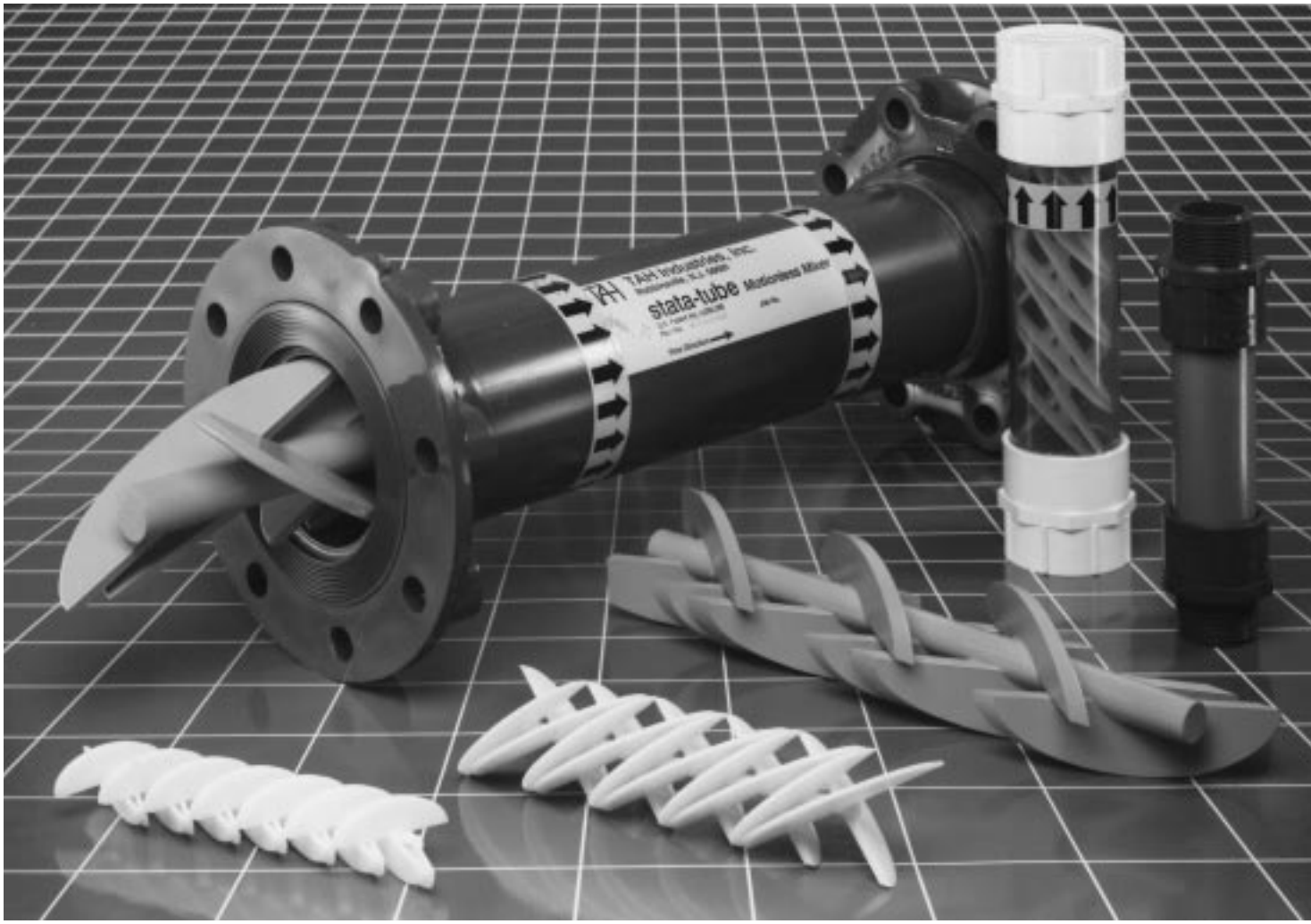
$V_1 \backsim V_2 \backsim V_3 \backsim V_4$

$$Blending = f\left\{\mathrm{Re}, \mu, \frac{\mu_1}{\mu_2}, \frac{p_1}{p_2}, \frac{V_1}{V_2}, v, n, \frac{L}{D}, Inj\right\}$$

Where Re = Reynolds Number
μ = Absolute viscosity
μ_1/μ_2 = Viscosity ration of unmixed streams
p_1/p_2 = Density ratio of unmixed streams
V_1/v_2 = Volumetric ratio of unmixed streams
v = Shear rate
n = Number of elements
L/D = Element length to diameter ratio
Inj = Injection method of additive stream

Reynolds No	Spiral Mixer No Elements	Flow Characteristics
<10	18	Laminar (creeping flow)
10 to 100	12	Laminar through Transitional
100 to 1000	6	Transitional
1000 to 5000	4	Turbulent
>5000	2	Turbulent

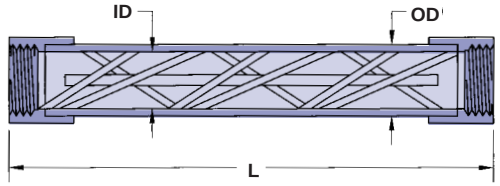
50 SERIES
Stata-tube™ PVC Mixer



*The Series 50 Stata-tube™ is an effective answer to your mixing requirements. Operating in-line, with **no moving parts**, this mixer blends and disperses treatment chemicals into waste water streams. Compared to competitive mixers, its unique baffling design ensures complete mixing in a shorter length and lower pressure drop.*

The Series 50 are easily installed in new or existing process lines. They are available in pipe sizes from 3/8" to 18" diameter. Construction materials include PVC, CPVC and Polypropylene.

PIPE MIXERS 3/8” through 2”



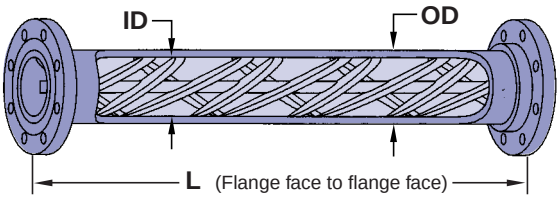
Elements: **Polypropylene, Non Removable**

Housing: PVC Type 1 (white or gray)

Clear PVC Housing **is available, contact factory.**
CPVC also Available.

PART NUMBER	NUMBER OF STAGES	ID INCH	OD INCH	END FNPT INCH	L INCH	PRESSURE LIMITATION psi @ 75°F	PIPE SCHEDULE
050-031F	7	0.43	0.675	3/8	5.7	850	80
050-032F	14	0.43	0.675	3/8	7.0	850	
050-061	7	0.69	1.050	3/4	7.0	690	80
050-062	14	0.69	1.050	3/4	10.5	690	
050-081	7	0.91	1.315	1	8.2	630	80
050-082	14	0.91	1.315	1	12.6	630	
050-121	7	1.38	1.660	1 1/4	10.3	370	40
050-122	14	1.38	1.660	1 1/4	17.5	370	
050-161	5	2.05	2.375	2	11.3	280	40
050-162	10	2.05	2.375	2	19.3	280	

PROCESS MIXERS 3” through 12”



Elements: PVC or CPVC Type 1, **Removable**

Housing: PVC, Type 1

Flanges: FFSO, Van Stone ASA #150 Drilling

Side Ports: Available upon request

Consult factory for Process Mixers greater than 12”

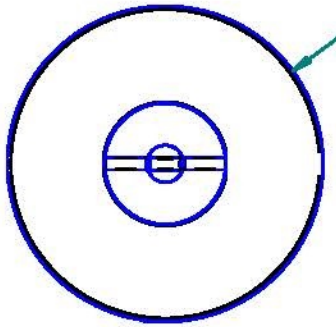
PART NUMBER	STATIC MIXER		HOUSING				
	Number of Stages	Material	Pipe	ID Inch	L Inch	Weight lbs.	Material
T-3-G57-H31	3	CPVC	3” Sch 80	2.90	17	9	PVC
T-3-G57-H61	6	CPVC	3” Sch 80	2.90	30	16	PVC
T-3-H57-H31	3	CPVC	3” Sch 80	2.90	17	9	CPVC
T-3-H57-H61	6	CPVC	3” Sch 80	2.90	30	16	CPVC
T-4-G57-H31	3	CPVC	4” Sch 80	3.83	20	16	PVC
T-4-G57-H61	6	CPVC	4” Sch 80	3.83	35	22	PVC
T-4-H57-H31	3	CPVC	4” Sch 80	3.83	20	16	CPVC
T-4-H57-H61	6	CPVC	4” Sch 80	3.83	35	22	CPVC
T-6-G57-H31	3	CPVC	6” Sch 80	5.76	28	33	PVC
T-6-G57-H61	6	CPVC	6” Sch 80	5.76	51	50	PVC
T-6-H57-H31	3	CPVC	6” Sch 80	5.76	28	33	CPVC
T-6-H57-H61	6	CPVC	6” Sch 80	5.76	51	50	CPVC
T-8-G57-G31	3	PVC	8” Sch 80	7.63	33	55	PVC
T-8-G57-G61	6	PVC	8” Sch 80	7.63	59	90	PVC
T-10-G57-G31	3	PVC	10” Sch 80	9.56	40	88	PVC
T-10-G57-G61	6	PVC	10” Sch 80	9.56	72	130	PVC
T-12-G57-G31	3	PVC	12” Sch 80	11.38	50	140	PVC
T-12-G57-G61	6	PVC	12” Sch 80	11.38	88.5	200	PVC

TAH Industries, Inc.
8 Applegate Drive
Robbinsville, NJ 08691
USA
Toll Free: 800-257-5238
Tel: 609-259-9222
Fax: 609-259-0957
Website: www.tah.com

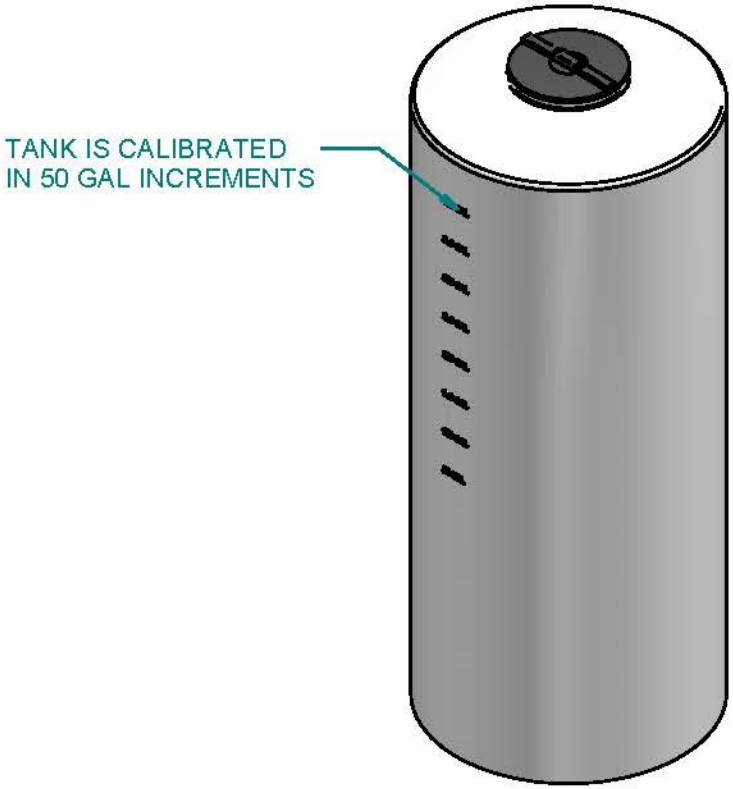
TAH Europe, Inc.
2 Francis Court
Wellingborough Road
Rushden, Northamptonshire NN10 6AY
Great Britain
Tel: 44 (0) 1933 413233
Fax: 44 (0) 1933 413194
Website: www.tah.com

Distributed By:

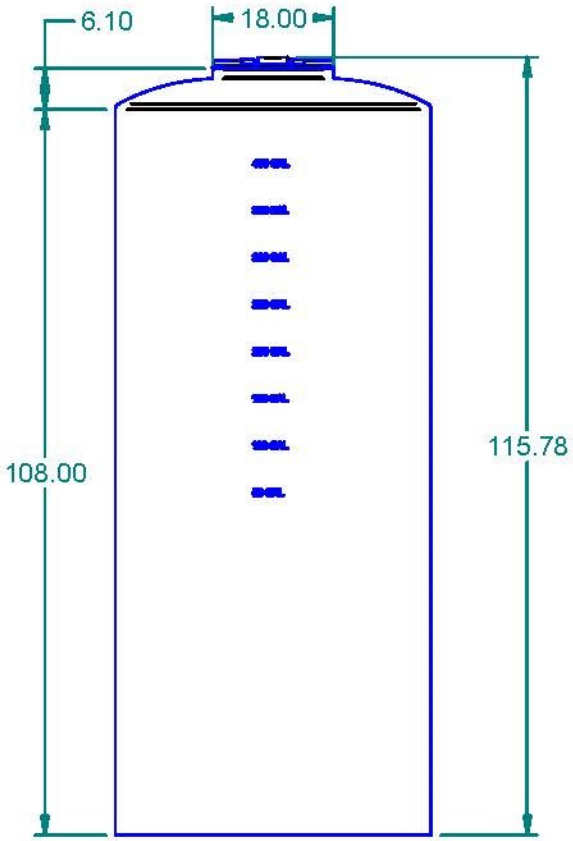
REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED



Top View



ISO View



Side View

wall thickness: 0.350"

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR		
MGR APPR		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
ANGLES ±0.5°
2 PL ±0.125" 3 PL ±0.060"

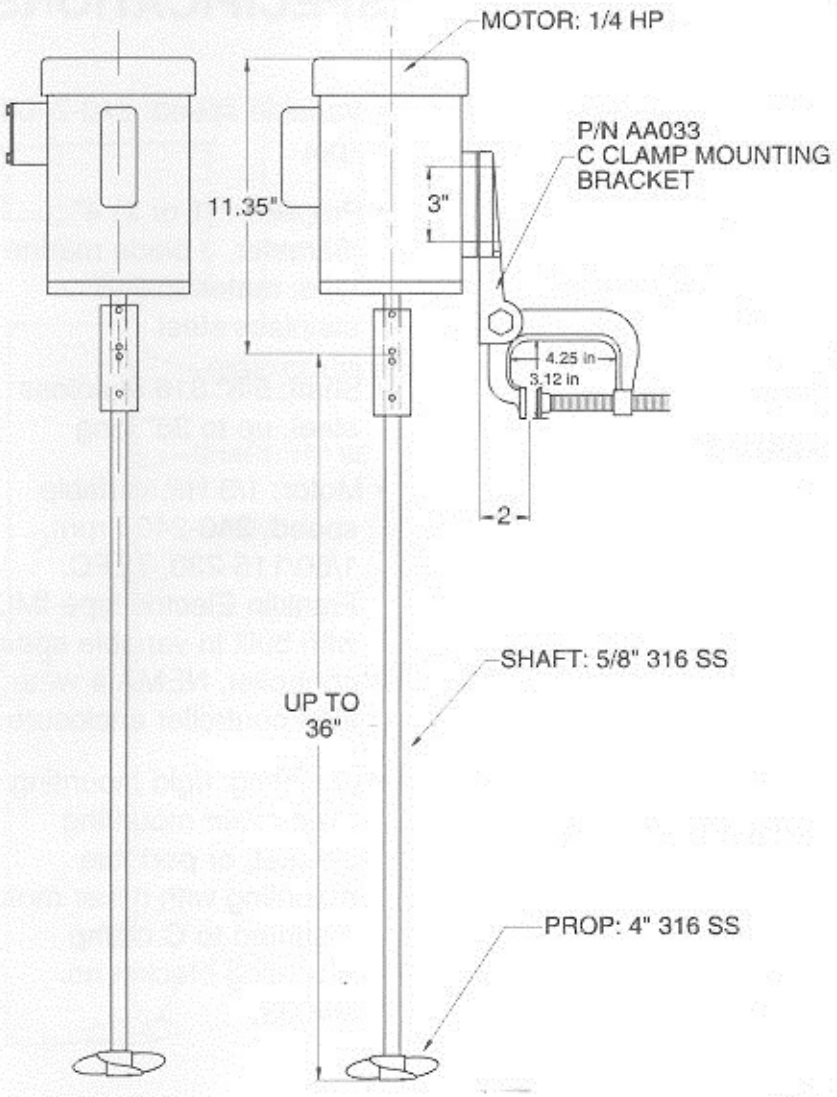
TITLE V-800 Gallon Tank

SIZE	MATERIAL: Error: No reference	REV
A		

FILE NAME: V-800 Vertical.dft

PART#: 900800	WEIGHT: Error: No reference	SHEET 1 OF 1

MIXER MODEL NO. AA102A



AA102A

SPECIFICATIONS

- Speed: 1,725 rpm
- Propeller: (1 or 2) 4" diameter, 3 blade marine type, material: 316 stainless steel
- Shaft: 5/8" 316 stainless steel, up to 36" long
- Motor: 1/4 HP, 1,725 rpm, 1/60/115-230, capacitor start, or 3/60/230-460, TEFC
- Mounting: rigid mounting to fixed mixer mounting bracket, or portable mounting with mixer motor mounted to C clamp mounting bracket no. AA033.

Centrifugal - Single Phase

Motor Protection

All models provide built-in thermal overload protection that shuts down the pump when operating temperature becomes too high, and automatically restarts once the motor cools and a proper temperature is met.

Quality and Safety

ST Series Single Phase Pumps are in accordance with ISO9001 Quality Management System standard. Also, all Single Phase models carry the Underwriters Laboratories (UL) Listing for compliance with both U.S. or Canadian electrical safety codes.

YELLSUB

1 1/4" Discharge
33 GPM - 15' HEAD

The Yellow Submarine is MQ's most lightweight, compact submersible pump. A great choice for common household moving water applications. One piece polymer pump casing body resists corrosion and heat. Includes internal thermal overload protection, dual shaft seals, and positive direct drive thermoplastic impeller secured with stainless steel fittings.

SS233

2" Discharge
60 GPM - 20' HEAD

This lightweight, compact submersible pump is the first choice for many applications: flooded rooms, flat roofs, fill tanks, basins, fountains and waterfalls. Hardy thermoplastic pump casing body resists corrosion and heat. Further, the SS233 incorporates internal thermal overload protection, dual shaft seals, and positive direct drive thermoplastic impeller secured with stainless steel fittings.

ST2038P

2" Discharge
60 GPM - 38' HEAD

This lightweight, compact submersible pump is ideal for moving water in multiple confined and open area applications. The unique casing design permits it to draw water to a level of 1/16" without having to place the pump in any kind of sump. The ST2038P incorporates a rugged cast aluminum housing, internal thermal overload protection, and sealed dual shaft seals and bearings .

ST2037

2" Discharge
73 GPM - 37' HEAD

The ST2037 incorporates a rugged cast aluminum housing, internal thermal overload protection, dual shaft seals, sealed ball bearings impeller and molded 25' Power Cable with strain relief. This is a powerful, versatile, low maintenance pump that is perfect for a wide range of operations supporting Contractors Service Utilities, Municipalities, and Homeowners.

ST2047

2" Discharge
87 GPM - 47' HEAD

A compact, powerful pump that tackles tough dewatering jobs. Perfect for Contractors, Service Utilities, Municipalities, and Homeowners. The ST2047 incorporates a rugged cast aluminum housing, internal thermal overload protection, dual shaft seals, sealed ball bearings impeller and molded 50' Power Cable with strain relief.

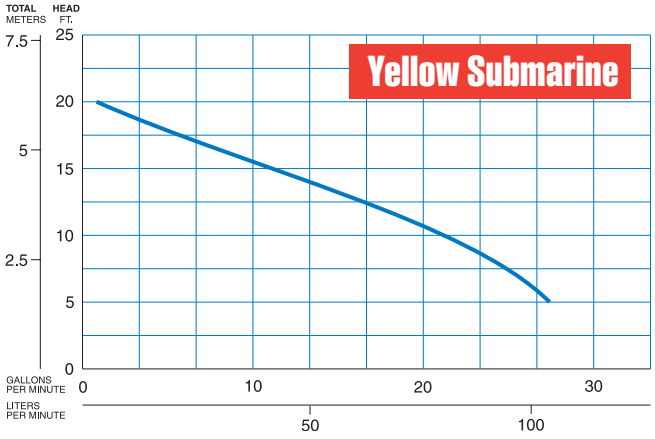
ST3020BCUL

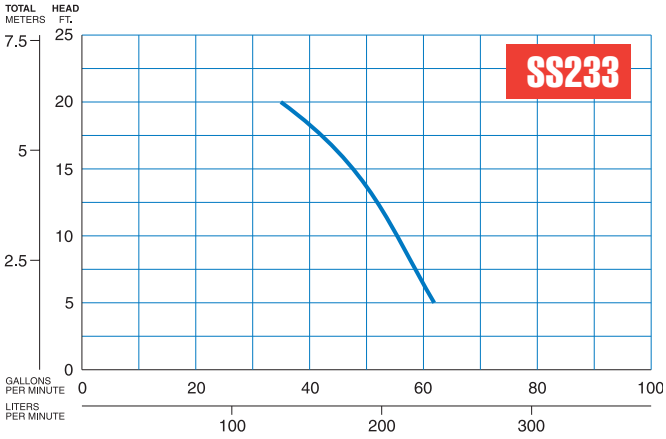
3" Discharge
170 GPM - 72' HEAD

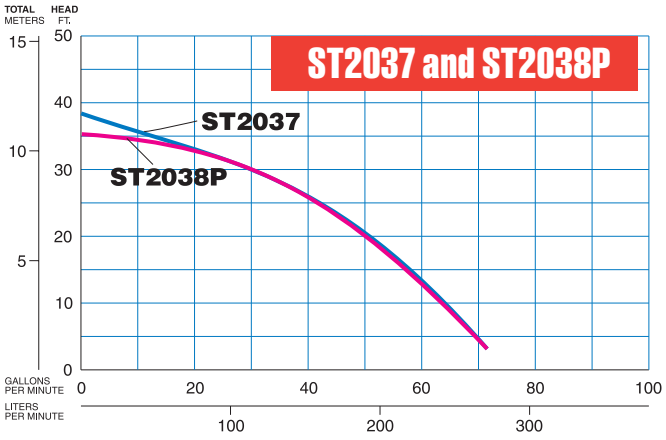
This is a rugged 2HP 230V pump with a heat conducting cast iron/steel motor casing. Pumps liquid up to 120° and de-waters surfaces up to 1/2. The ST3020BCUL incorporates reliable double mechanical oil-filled seals, internal thermal overload protection, sealed ball bearings, Ductile Iron impeller, carrying handle, and molded 50' Power Cable with strain relief. The 6.7" diameter design permits the pump to fit into tight spaces & conduits.

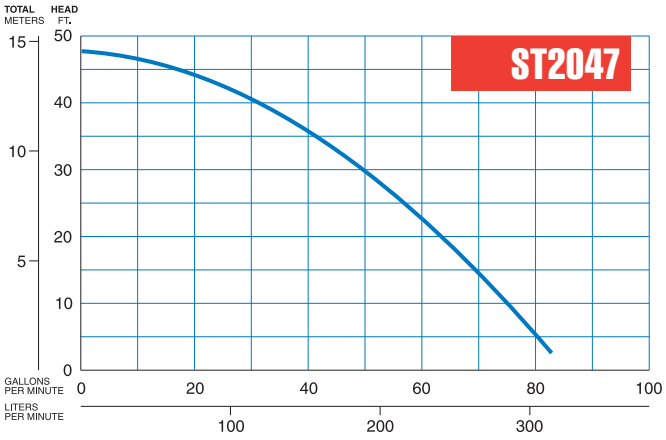
*** All Multiquip single phase submersible pumps do not require a Control Box for safe, efficient operations. However, a Control Box may be desired if operations call for a manual ON/OFF Switch option.**

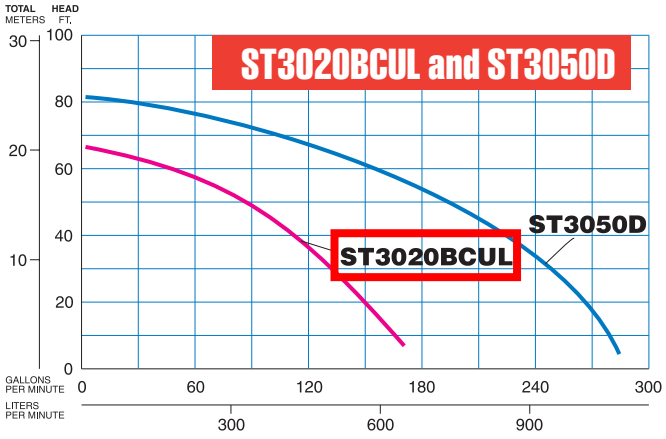
Pump Performance Curves

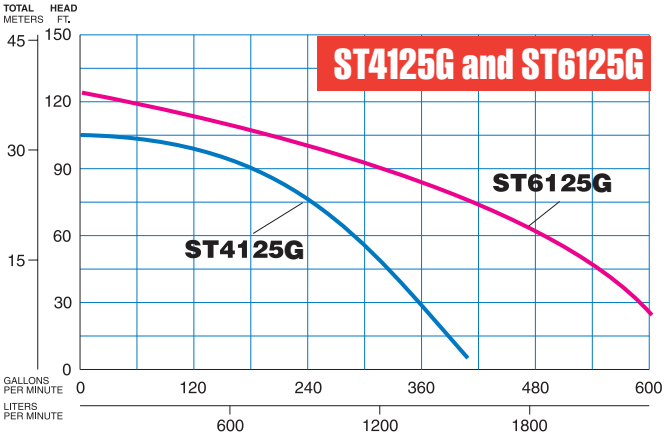


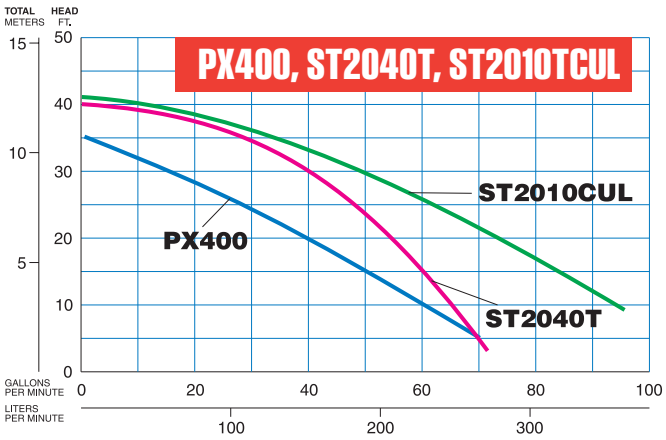






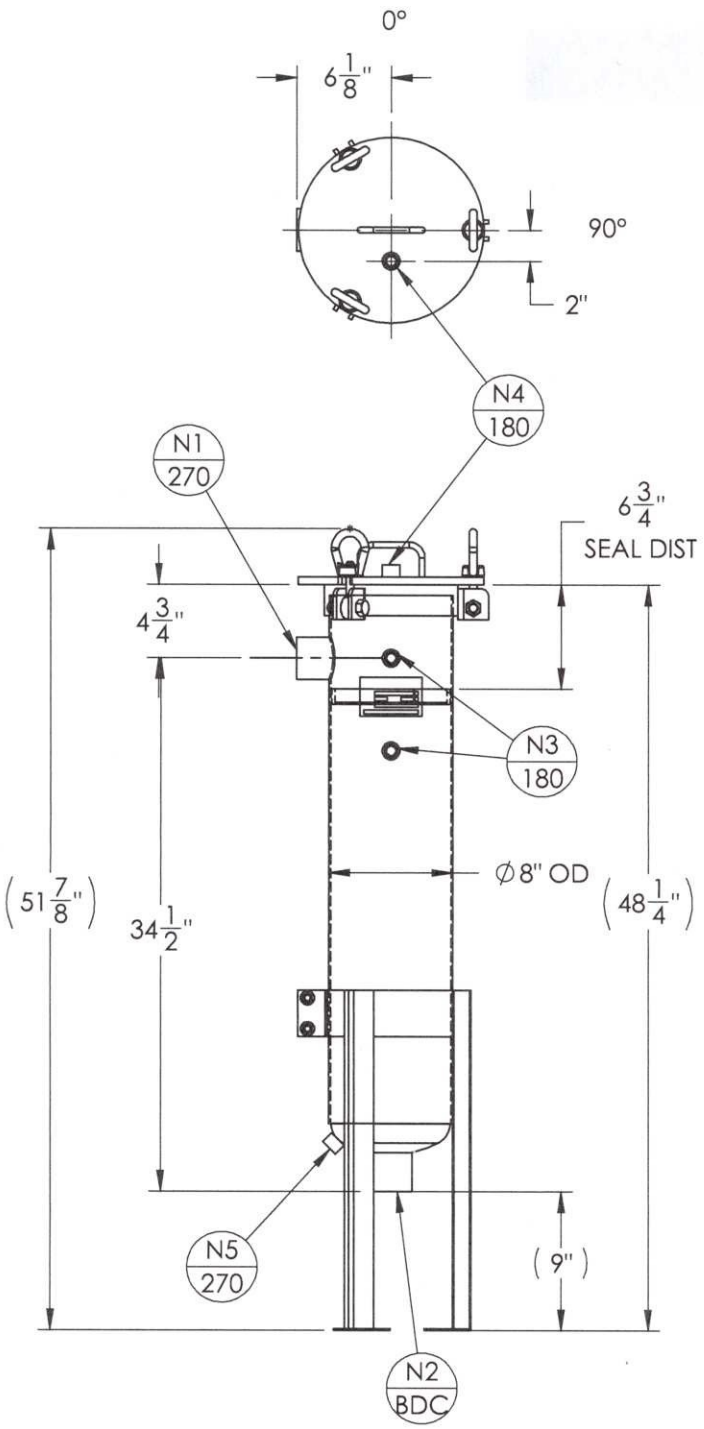




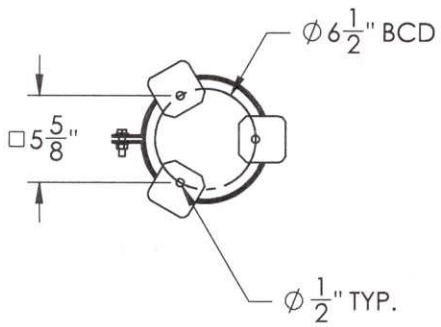


NOZZLE SCHEDULE			
MARK	QTY	SIZE / RATING	DESCRIPTION
N1	1	2" 150# NPT	INLET
N2	1	2" 150# NPT	OUTLET
N3	2	1/2" 3000# NPT	PRESS GA
N4	1	1/2" 3000# NPT	VENT
N5	1	1/2" 3000# NPT	CLEAN DRAIN
N6	-	-	DIRTY DRAIN

VESSEL DESIGN CONDITIONS			
CODE:	BEST COMMERCIAL PRACTICE		
M.A.W.P.:	150 PSI @ 250°F	M.D.M.T.:	-20° F @ 150 PSI
M.A.E.P.:	15 PSI @ 250°F		
CORROSION ALLOWANCE:	NONE	HYDROTEST PRESS:	195 PSI
STAMP:	'NC'	SERVICE:	NON LETHAL
PWHT:	N/A	RADIOGRAPHY:	N/A
MATERIAL:	SS 304/L	GASKET:	BUNA-N



DRY WEIGHT: 77.62 #'s
FLOODED WEIGHT: 140 #'s
SHIPPING WEIGHT: 100 #'s
VESSEL VOLUME: 1.0 C.F.



1:1

NOTES:
- VESSEL WILL HOUSE (QTY=1) DOUBLE LENGTH BASKET.

THIRD ANGLE PROJECTION

TOLERANCES-UNLESS OTHERWISE NOTED
DECIMAL .X =±.1" .XX =±.02" .XXX =±.005"
FRACTIONAL ≤24" =±1/16" >24" =±1/8"
ANGULAR =± 1°
MAX. MACHINED SURFACE FINISH 125

REV.	DATE	REVISION	DRAWN	APP'D

LRT Lockwood Remediation Technologies LLC
89 Crawford Street
Leominster, MA 01453
Tel: 774.450.7177
Fax: 888.835.0617

LRT Provided Bag Filter Housing

EQUIPMENT:	BAG FILTER HOUSING (EB SERIES)
MODEL NO:	S4EB112-2P-SW
CUSTOMER:	-

PARENT: NONE	DRAWN: CR	DATE: JAN 13 2011	JOB No. V-	DWG. No. 001-0123	REV. No. 0
PAGE: 1 OF 4	CHK'D: JM	SCALE: NTS			

Polyester Liquid Filter Bag

Features

* Polyester liquid bag filter are available with a carbon steel ring, stainless steel ring or plastic flanges.
* Heavy-duty handle eases installation and removal
* Metal ring sewn into bag top for increased durability and positive sealing
* Wide array of media fibers to meet needed temperature and micron specifications

Applications

Polyester liquid filter bags can be used in the filtering of a wide array of industrial and commercial process fluids

Sizes

Our liquid filter bags are available for all common liquid bag housings. Dimensions range from 4.12" diameter X 8" length thru 9" diameter X 32" length.

Micron Ratings

Available fibers range from 1 to 1500 microns

Options

* Bag finish or covers for strict migration requirements.
* Plastic top O.E.M. replacements
* Multi-layered filtering capabilities for higher dirt holding capacities

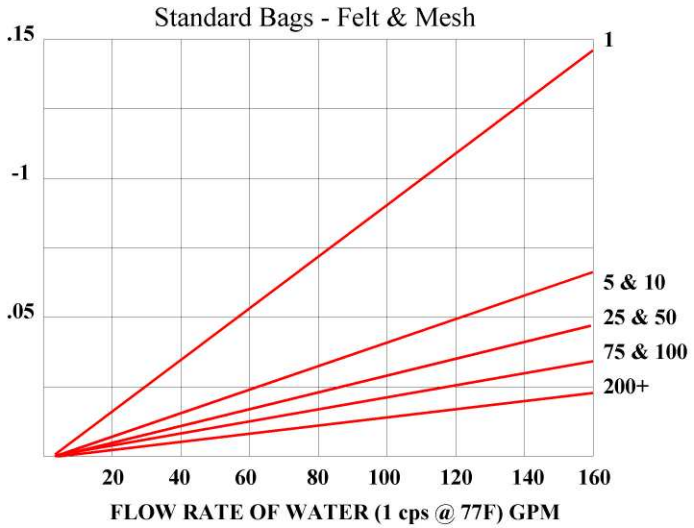
Optional Filter Media

Felt: Nomex, Polyester, Polypropylene

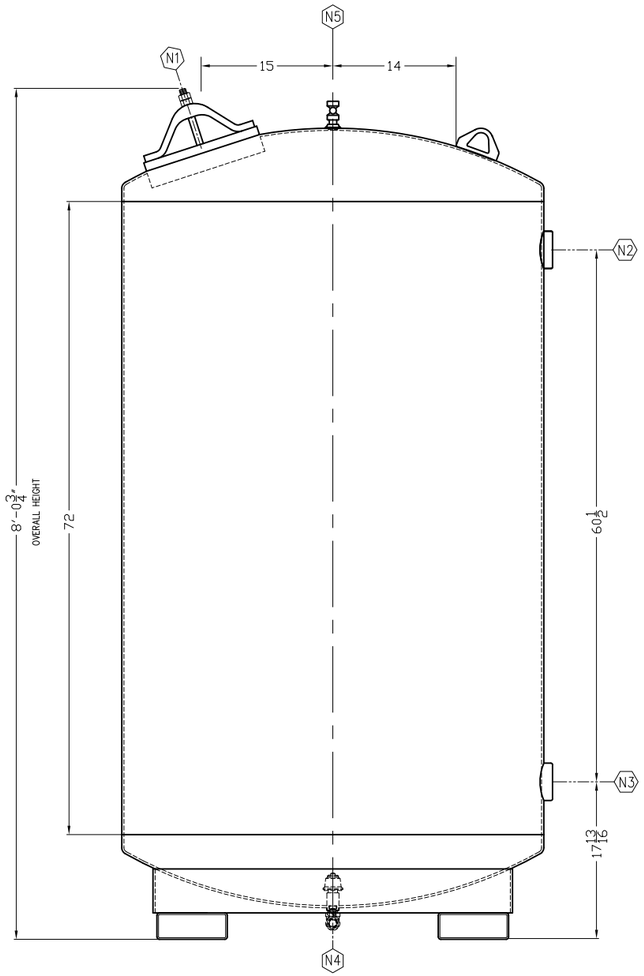
Monofilament: Nylon, Polyester, Polypropylene

Multifilament: Nylon, Polyester

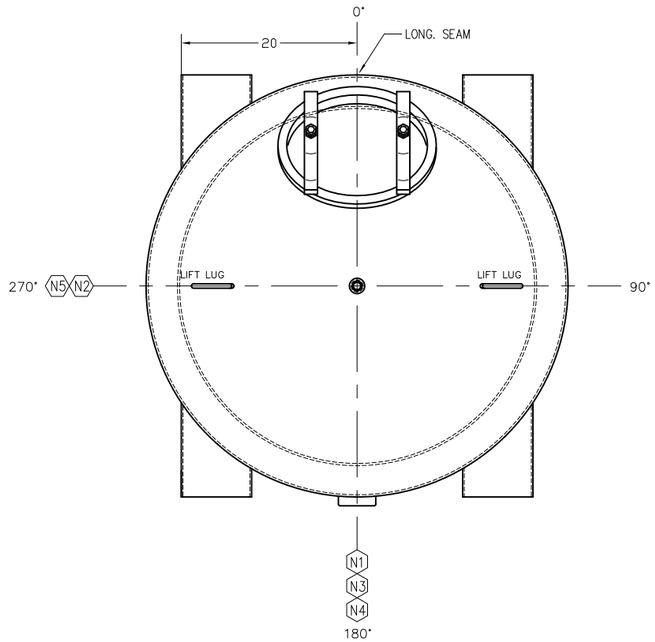
Polypropylene: Oil Removal



RevNo	Revision note	Date	Signature	Checked



ELEVATION VIEW
NOT TRUE ORIENTATION



PLAN VIEW
TRUE ORIENTATION

NOZZLE SCHEDULE

ID	*Description*	*Service*
N1	14" x 18" ELLIPTICAL MANWAY w/COVER	Upper bed access with Cover (SA-36), Bolts, Neoprene Gasket
N2	3" MNPT 3000# Coupling	Process Inlet
N3	3" MNPT 3000# Coupling	Process Outlet
N4	1/2" 150# Thrd Tank Flange	Drain w/1/2" Ball Valve
N5	1/4" 150# Thrd Tank Flange	VENT
N6		
N7		

COATINGS SCHEDULE

Surface	*Surface Preparation*	*Product Specification*
Internal - 1	SSPC-SP6	SW Macropoxy 646 10-20 mils DFT
Internal - 2	Inspect	SW Macropoxy 646 10-20 mils DFT
External - 1	SSPC-SP6	SW Macropoxy 646 5-10 mils DFT
External - 2	n/a	Carboline Carbothane 8845 3-5 mils DFT (Blue)
External - 3	n/a	n/a

NOTES

Item	*Details*
Construction	Non-Code Design Pressure: 75 PSIG @ 140 DEG F.
Mtrls Vessel	Shell: SA-36 Heads: SA-36 Pipe: SA-53 (see nozzle detail for others)
Mtrls Interls	Laterals (.012" Slot),: 304 SS Gaskets: Buna-N
n/a	n/a
n/a	n/a
Media	TBD

2,000 lb. High Pressure
Liquid Media Vessel

Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, Massachusetts 01453
O: 774-450-7177
F: 888-835-0617

ZENNER PERFORMANCE
Cast Iron Turbine Meters
Sizes 2” through 12”

INTRODUCTION: ZENNER PERFORMANCE Turbine Meters are designed for applications where flows are usually moderate to high and occasionally low. They are used in measurement of potable cold water in commercial and industrial services where flows are in one direction.

OPERATION: Water flows through the turbine section which causes the rotor to turn proportionately to the quantity of water flowing through the meter. A drive magnet transmits the motion of the rotor to a driven magnet located within the hermetically sealed register. The magnet is connected to a gear train which translates the rotations into volume totalization displayed on the register dial face. The only moving parts in the meter are the rotor assembly and vertical shaft .

CONSTRUCTION: ZENNER PERFORMANCE Turbine Meters consist of three basic components: Cast Iron Epoxy Coated main case, measuring element, and sealed register. The measuring element assembly includes the rotor assembly, vertical shaft and a calibration vane which eliminates the need for calibration change gears.

MAINTENANCE: ZENNER PERFORMANCE Turbine Meters are engineered and manufactured to provide long-term service and operate virtually maintenance free. If necessary the universal measuring element (UME) can be removed from the main case for maintenance. Interchangeability of certain parts between like sized meters minimizes spare parts inventory.

CONFORMANCE: ZENNER PERFORMANCE Turbine Meters are tested and comply with AWWA C701 Class II performance standards.

STRAINERS: ZENNER PERFORMANCE recommends the use of a separate strainer upstream from the turbine meter. Strainers reduce the chance of damage to the rotor as well as the frequency in which it must be removed for inspection. The lack of a strainer may void the warranty of the turbine meter.

CONNECTIONS: Companion flanges for installation of meters on various pipe types and sizes are available in bronze or cast iron.

PMT04

PMT06

ZENNER PERFORMANCE
15280 Addison Rd #340, Addison, TX 75001, (972) 386-6611, Fax (972) 386-1814
www.zennerusa.com

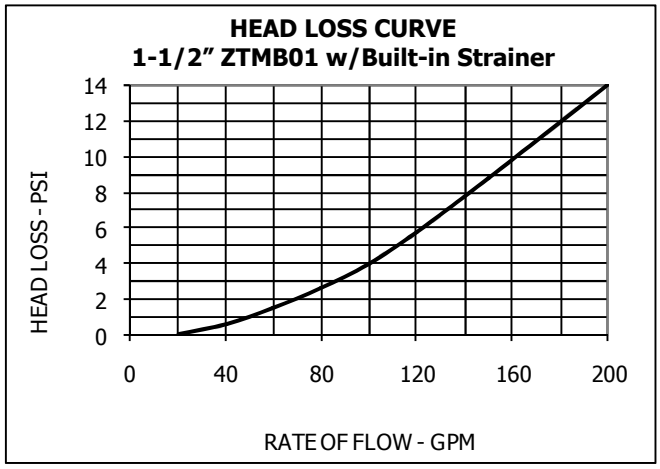
MODEL		PMT02	PMT03	PMT04	PMT06	PMT08	PMT10	PMT12
SIZE		2"	3"	4"	6"	8"	10"	12"
Flow rate maximum intermittent	USGPM	400	550	1250	2500	4500	7000	8800
Maximum continuous	USGPM	200	450	1000	2000	3500	5500	6200
Optimum operating flow range	USGPM	3 - 200	5 - 550	10 - 1250	20 - 2500	30 - 4500	50 - 7000	90 - 8800
Low flow rate	USGPM	2	2-1/2	5	12	20	45	65
Start-up flow rate	USGPM	7/8	1-1/8	1-3/8	7-1/2	8	15	15
Maximum Working Pressure	P.S.I.	160	160	160	160	160	160	160
Maximum Temperature	Deg. F	140	140	140	140	140	140	140
Length	Inches	7-7/8	8-7/8	9-7/8	11-7/8	13-3/4	17-3/4	19-5/8
Height	Inches	9-1/2	10-1/4	11	12-7/8	14-1/4	19	20-1/4
Width	Inches	7	7-1/2	9	11	13-1/2	16	19
Weight	Pounds	24	32	38	84	126	225	255
Number of holes per flange		4	4	8	8	8	12	12

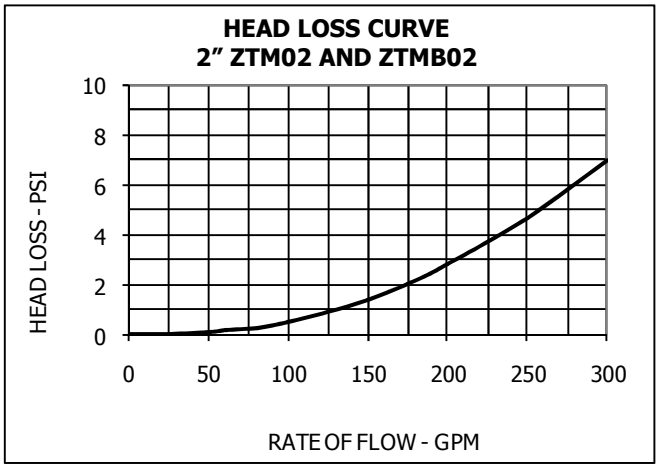
ZENNER PERFORMANCE
15280 Addison Rd #340, Addison, TX 75001, (972) 386-6611, Fax (972) 386-1814
www.zennerusa.com

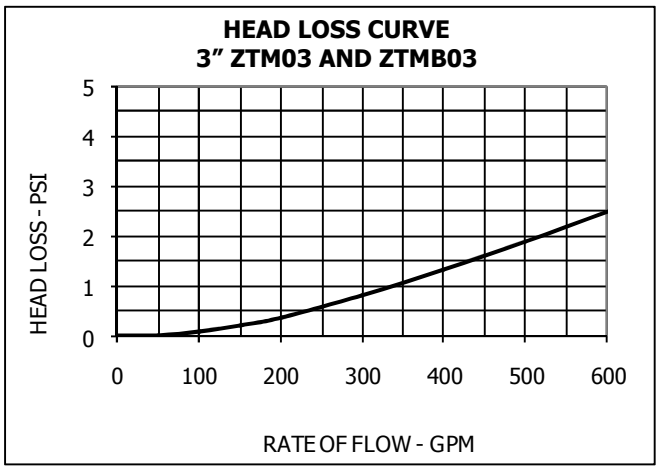
ZENNER ZTM and ZTMB Turbine Water Meters

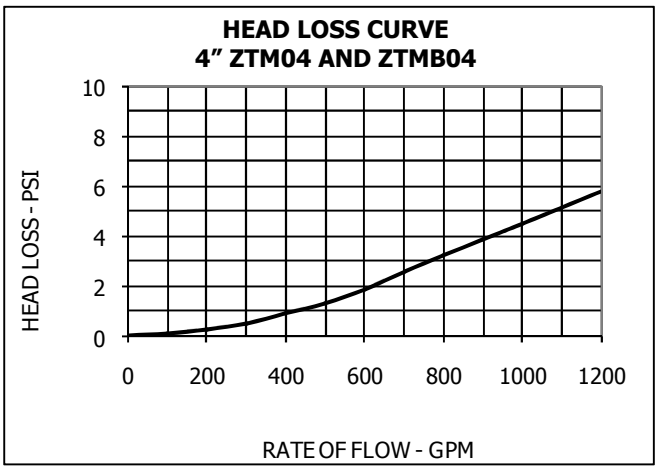
(Without Strainer)

Typical Head Loss Curves









ZENNER USA
15280 Addison Rd #340, Addison, TX 75001, (972) 386-6611, Fax (972) 386-1814
www.zennerusa.com

Appendix D
Safety Data Sheets (SDS)

Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product ID:	Redux-823
Product Name:	Processing aid for industrial applications
Revision Date:	Apr 15, 2019
Supersedes Date:	Jan 25, 2018
Manufacturer's Name:	Azure Water Services
Address:	280 Callegari Drive West Haven, CT, US, 06516
Emergency Phone:	Chemtrec 800-424-9300, in US and Canada only

SECTION 2) HAZARDS IDENTIFICATION

Classification of the substance or mixture

Not a hazardous substance or mixture according to United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

None of the chemicals in this product are hazardous according to the GHS.

SECTION 4) FIRST-AID MEASURES

Inhalation

Remove source of exposure or move person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor/. If breathing has stopped, trained personnel should begin rescue breathing or, if the heart has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED).

Eye Contact

Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a flushing duration of 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER/doctor.

Skin Contact

Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse skin with lukewarm, gently flowing water/shower for a duration of 30 minutes or until medical aid is available. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before re-use or discard.

Ingestion

Rinse mouth with water. Do NOT induce vomiting. Give 1 to 2 cups of milk or water to drink. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, lie on your side, in the recovery position. Immediately call a POISON CENTER/doctor.

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical, foam, carbon dioxide. Sand or earth may be used for small fires only.

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

Do not use direct water stream since this may cause fire to spread.

Specific Hazards in Case of Fire

In case of fire, hazardous decomposition products may include sulphur oxides.

Fire-Fighting Procedures

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

Special Protective Actions

Wear protective pressure self-contained breathing apparatus (SCBA) and full turnout gear.

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

Absorb spill with absorbent material or vacuum spill into polyethylene lined steel or plastic drums.

Do not touch or walk through spilled material.

If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

Recommended Equipment

Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

Personal Precautions

Avoid breathing vapor or mist. Avoid contact with skin, eye or clothing. Ensure adequate ventilation. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

Methods and Materials for Containment and Cleaning Up

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilled product.

SECTION 7) HANDLING AND STORAGE

General

Wash hands after use.
Do not get in eyes, on skin or on clothing.
Do not breathe vapors or mists.
Use good personal hygiene practices.
Eating, drinking and smoking in work areas is prohibited.
Remove contaminated clothing and protective equipment before entering eating areas.
Eyewash stations and showers should be available in areas where this material is used and stored.

Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

Storage Room Requirements

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight and strong oxidizers. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous.
Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers.

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	6.26 lb/gal
Specific Gravity	0.6 - 0.9
Appearance	granular, white solid
pH	5 - 9 @ 5 g/L
Odor Threshold	N/A
Odor Description	N/A
Water Solubility	Complete
Viscosity	N/A
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	<32 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Will not burn

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

Avoid heat, sparks, flame, high temperature and contact with incompatible materials.

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

No Data Available

Acute Toxicity

Inhalation, Testing: Not expected to be toxic by inhalation.
Ingestion, Testing: LD50, Rat > 5,00 mg/kg
Dermal, Testing: LD50, Rat > 5,000 mg/kg

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

No Data Available

Skin Corrosion/Irritation

No Data Available

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Acute Ecotoxicity

Danio Rerio: 96 hr LC50 >100 mg/l (OECD 203)

Fathead Minnow (pimephales promelas): 96hr LC50 >100 mg/l (OECD 203)

Daphnia Magna: 48hr EC50 >100 mg/l (OECD 202)

Scenedesmus Subspicatus: 72hr IC50 >100 mg/l (OECD 201)

Mobility in Soil

No data available.

Bio-accumulative Potential

Not bioaccumulating.

Persistence and Degradability

Not readily biodegradable.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.
Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

For all transportation accidents, call CHEMTREC at 800/424-9300. All spills and leaks of this material must be handled in accordance with local, state, and federal regulations.

DOT Shipping Designation:

Non-hazardous under 29-CFR 1910.1200. Water treatment compound

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
No applicable CAS	No applicable chemical	-	-

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDGCanadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

Additional Information

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Version 1.0:

Revision Date: Jan 25, 2018
First Edition.

DISCLAIMER

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product Name:	Redux E50
Product Use:	Water and Wastewater Treatment Coagulant/Flocculant
Revision Date:	Apr 15, 2019
Supersedes Date:	Mar 5, 2015
Manufacturer's Name:	Azure Water Services
Address:	280 Callegari Dr. West Haven CT, 06516
Emergency Phone:	Chemtrec, (1) 800-424-9300, in US and Canada only

SECTION 2) HAZARDS IDENTIFICATION

Classification

Corrosive to metals - Category 1

Eye Irritation - Category 2

Skin Irritation - Category 2

Pictograms

Signal Word

Warning

Hazardous Statements - Health

Causes serious eye irritation

Causes skin irritation

Hazardous Statements - Physical

May be corrosive to metals

Precautionary Statements - General

If medical advice is needed, have product container or label at hand.

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Keep only in original packaging.

Wash thoroughly after handling.

Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statements - Response

Absorb spillage to prevent material damage.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

Specific treatment (see first-aid on this SDS).

If skin irritation occurs: Get medical advice/attention.

Take off contaminated clothing. And wash it before reuse.

Precautionary Statements - Storage

Store in a corrosive resistant container with a resistant inner liner.

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Chemical Name	% By Weight
PROPRIETARY	Trade Secret Ingredient	45 - 55%

Specific chemical identity and/or exact percentage (concentration) of the composition has been withheld to protect confidentiality.

SECTION 4) FIRST-AID MEASURES

Inhalation

Remove source of exposure or move person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor/. If breathing has stopped, trained personnel should begin rescue breathing or, if the heart has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED).

Eye Contact

Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a flushing duration of 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER/doctor.

Skin Contact

Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse skin with lukewarm, gently flowing water/shower for a duration of 30 minutes or until medical aid is available. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before re-use or discard.

Ingestion

Rinse mouth with water. Do NOT induce vomiting. Give 1 to 2 cups of milk or water to drink. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, lie on your side, in the recovery position. Immediately call a POISON CENTER/doctor.

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical, foam, carbon dioxide. Sand or earth may be used for small fires only.

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

Do not use direct water stream since this may cause fire to spread.

Specific Hazards in Case of Fire

In case of fire, hazardous decomposition products may include sulphur oxides.

Fire-Fighting Procedures

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

Special Protective Actions

Wear protective pressure self-contained breathing apparatus (SCBA) and full turnout gear.

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

Absorb spill with absorbent material or vacuum spill into polyethylene lined steel or plastic drums.

Do not touch or walk through spilled material.

If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

Recommended Equipment

Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

Personal Precautions

Avoid breathing vapor or mist. Avoid contact with skin, eye or clothing. Ensure adequate ventilation. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

Methods and Materials for Containment and Cleaning Up

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilled product.

SECTION 7) HANDLING AND STORAGE

General

Wash hands after use.
Do not get in eyes, on skin or on clothing.
Do not breathe vapors or mists.
Use good personal hygiene practices.
Eating, drinking and smoking in work areas is prohibited.
Remove contaminated clothing and protective equipment before entering eating areas.
Eyewash stations and showers should be available in areas where this material is used and stored.

Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

Storage Room Requirements

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight and strong oxidizers. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous.

Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers.

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	11.10 lb/gal
Specific Gravity	1.33 - 1.35
Appearance	Colorless to yellow liquid
pH	3 - 4
Odor Threshold	N/A
Odor Description	N/A
Water Solubility	complete
Viscosity	< 100cps @20C
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	<19 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Will not burn

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

Avoid heat, sparks, flame, high temperature and contact with incompatible materials.

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation LC50 : Not Available
Oral LD50 : Not Available
Dermal LD50 : Not Available

Acute Toxicity

Component	weight-%	Oral LD50	Dermal LD50	Inhalation LC50
Trade Secret Ingredient	45 - 55%	= 9187 mg/kg (Rat)	> 2000 mg/k (Rat)	--

Aspiration Hazard

No Data Available

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye irritation

Skin Corrosion/Irritation

Causes skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Ecotoxicity

Acute aquatic toxicity - Product Information

Fish
LC 50 (96 hour, static) 776.4 mg/L *Pimephales promelas* (Fathead Minnow) [1]
EC 50 (96 hour, static) 265.5 mg/L *Pimephales promelas* (Fathead Minnow) [1]

Crustacea
LC 50 (48 hour, static) 803.8 mg/L *Ceriodaphnia dubia* (Water Flea) [1]
EC 50 (48 hour, static) 33.2 mg/L *Ceriodaphnia dubia* (Water Flea) [1]

Algae/aquatic plants
No information available

Acute aquatic toxicity - Component Information

Component	weight-%	Algae/aquatic plants	Fish	Toxicity to daphnia and other aquatic invertebrates
Trade Secret Ingredient	45 - 55%	--	LC50 (96 h static) 100 - 500 mg/L (Brachydanio rerio)	--

Mobility in Soil

No data available.

Bio-accumulative Potential

No data available.

Persistence and Degradability

No data available.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.
Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

NOT REGULATED FOR TRANSPORTATION

This product is excepted from DOT regulations under 49 CFR 173.154(d) when shipped by road or railway. The product exception is referenced in 49 CFR 172.101 Table. Packaging material must not be aluminum, steel or be degraded by this product

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
No applicable CAS	No applicable chemical	-	-

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDGCanadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

Additional Information

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Version 1.0:

Revision Date: Apr 15,2019

First Edition.

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SAFETY DATA SHEET

Revision date 2019-04-15 **Revision number** 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product ID: FOAMTROL-100
Product Name: Blended Water Treatment.

Revision Date: Apr15,2019
Supersedes Date: Dec 11, 2018

Manufacturer's Name: Azure Water Services
Address: 280 Callegari Drive West Haven, CT, US, 06516
Emergency Phone: Chemtrec 800-424-9300, in US and Canada only

SECTION 2) HAZARDS IDENTIFICATION

Classification of the substance or mixture

Not a hazardous substance or mixture according to United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

All of the product's ingredients are either listed or exempt from the TSCA Inventory.

Specific chemical identity is being withheld as a trade secrets

None of the chemicals in this product are hazardous according to the GHS.

SECTION 4) FIRST-AID MEASURES

Inhalation

Remove source of exposure or move person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor/. If breathing has stopped, trained personnel should begin rescue breathing or, if the heart has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED).

Eye Contact

Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a flushing duration of 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER/doctor.

Skin Contact

Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse skin with lukewarm, gently flowing water/shower for a duration of 30 minutes or until medical aid is available. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before re-use or discard.

Ingestion

Rinse mouth with water. Do NOT induce vomiting. Give 1 to 2 cups of milk or water to drink. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, lie on your side, in the recovery position. Immediately call a POISON CENTER/doctor.

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical, foam, carbon dioxide. Sand or earth may be used for small fires only.

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

Do not use direct water stream since this may cause fire to spread.

Specific Hazards in Case of Fire

In case of fire, hazardous decomposition products may include sulphur oxides.

Fire-Fighting Procedures

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

Special Protective Actions

Wear protective pressure self-contained breathing apparatus (SCBA) and full turnout gear.

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

Absorb spill with absorbent material or vacuum spill into polyethylene lined steel or plastic drums.

Do not touch or walk through spilled material.

If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

Recommended Equipment

Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

Personal Precautions

Avoid breathing vapor or mist. Avoid contact with skin, eye or clothing. Ensure adequate ventilation. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

Methods and Materials for Containment and Cleaning Up

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilled product.

SECTION 7) HANDLING AND STORAGE

General

Wash hands after use.
Do not get in eyes, on skin or on clothing.
Do not breathe vapors or mists.
Use good personal hygiene practices.
Eating, drinking and smoking in work areas is prohibited.
Remove contaminated clothing and protective equipment before entering eating areas.
Eyewash stations and showers should be available in areas where this material is used and stored.

Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

Storage Room Requirements

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight and strong oxidizers. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous.
Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers.

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	8.18 lb/gal
Specific Gravity	0.98

Appearance	milky, white liquid
pH	6.75 - 7.25
Odor Threshold	N/A
Odor Description	characteristic
Water Solubility	complete
Viscosity	500 - 3,000 cps 65F
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	32 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Will not burn

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

Avoid heat, sparks, flame, high temperature and contact with incompatible materials.

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation, ingestion, skin absorption.

Acute Toxicity

Not Established.

Chronic Exposure Toxicity

The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness,

Carcinogenicity

This product does not contain any known or anticipated carcinogens according to the criteria of the NTP Annual Report on carcinogens and OSHA 29 CFR 1910,Z.

SECTION 12) ECOLOGICAL INFORMATION

Toxicity

No data available.

No Data Available

Mobility in Soil

No data available.

Bio-accumulative Potential

No data available.

Persistence and Degradability

No data available.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.
Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

For all transportation accidents, call CHEMTREC at 800/424-9300. All spills and leaks of this material must be handled in accordance with local, state, and federal regulations.

DOT Shipping Designation:

Non-hazardous under 29-CFR 1910.1200. Water treatment compound

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
No applicable CAS	No applicable chemical	-	-

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDGCanadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

Additional Information

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Version 1.0:

Revision Date: Dec 11, 2018

First Edition.

DISCLAIMER

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Appendix E

Supplemental Information

MassDEP - Bureau of Waste Site Cleanup

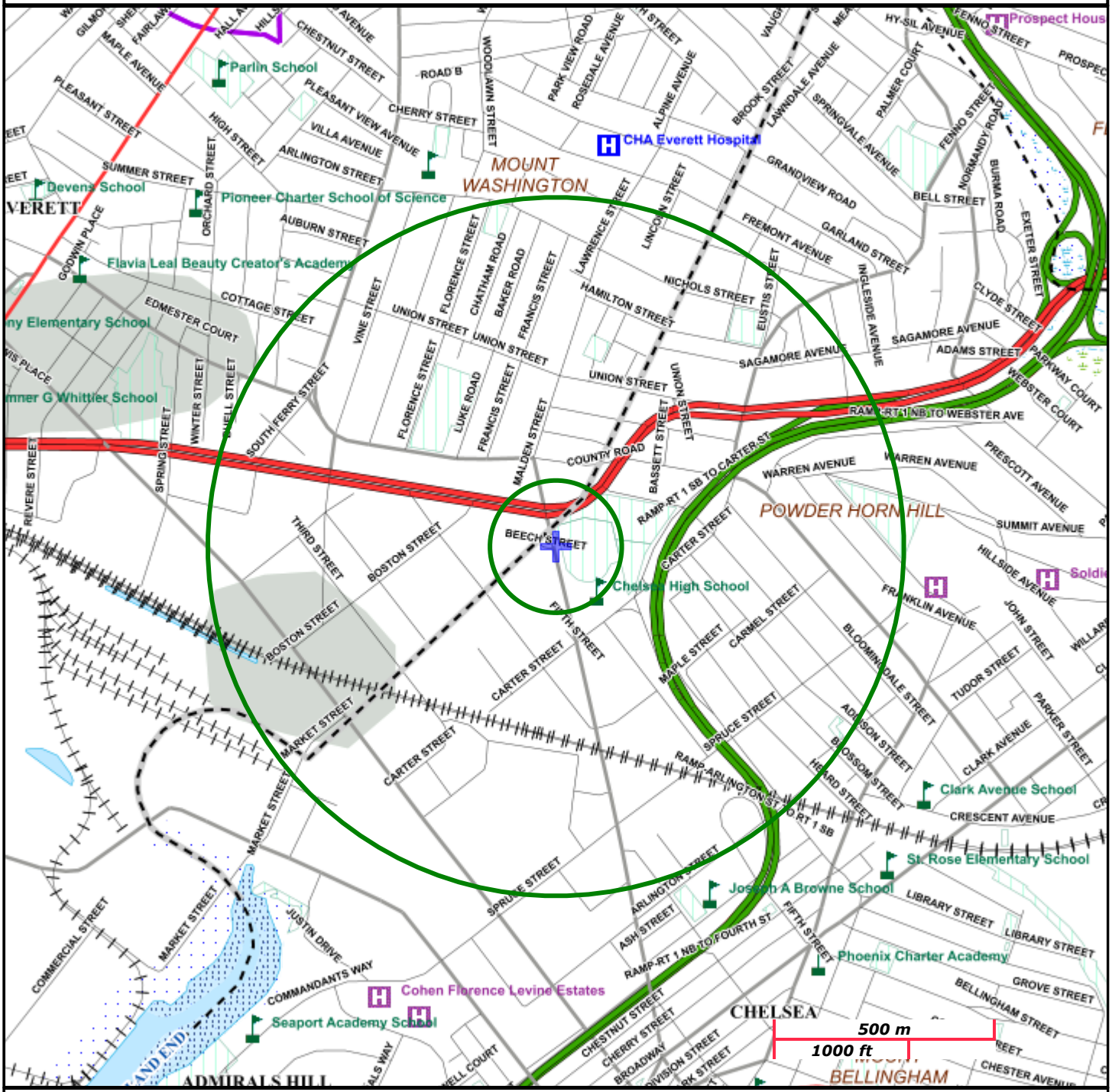
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
GATEWAY CENTER PHASE V
340 EVERETT AVE CHELSEA, MA

NAD83 UTM Meters:
4696320mN , 332010mE (Zone: 19)
June 4, 2019

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: http://www.mass.gov/mgis/.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct
Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam
Aquifers: Medium Yield, High Yield, EPA Sole Source
Non Potential Drinking Water Source Area: Medium, High (Yield)
PWS Protection Areas: Zone II, IWPA, Zone A
Hydrography: Open Water, PWS Reservoir, Tidal Flat
Wetlands: Freshwater, Saltwater, Cranberry Bog
FEMA 100yr Floodplain; Protected Open Space; ACEC
Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential
Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

Documentation of the Results of the ESA Eligibility Determination:

Using information in Appendix II of the NPDES RGP, the project located on Everett Street in Chelsea, MA is eligible for coverage under this general permit under FWS Criterion C. This project is located in Suffolk County. No designated critical habitats were listed in the project area. An Endangered Species Consultation was conducted on the U.S. Fish & Wildlife Service New England Field Office ECOS IPaC webpage for the Site:

No Endangered species found at this location.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: April 19, 2019
Consultation Code: 05E1NE00-2019-SLI-1473
Event Code: 05E1NE00-2019-E-03541
Project Name: Gateway Center Phase V Infrastructure Improvements

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2019-SLI-1473

Event Code: 05E1NE00-2019-E-03541

Project Name: Gateway Center Phase V Infrastructure Improvements

Project Type: WASTEWATER PIPELINE

Project Description: Subsurface utility improvements along Everett Avenue in Chelsea, MA. Project will require dewatering through a know contaminated Site. Water will be adequately treated and then discharged to the City's storm water system.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.40009171223757N71.0409892277828W

Counties: Suffolk, MA

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Documentation of the National Historic Preservation Act Eligibility Determination:

As part of this permit, a determination was made as to whether there were any historic properties or places listed on the national register in the path of the discharge or in the vicinity of the construction of treatment systems or BMPs related to the discharge. A search on the Massachusetts Cultural Resource Information System Database and the National Register of Historic Places did not list any potential historic properties on or near the project site in the databases. Therefore, the proposed discharge will not have the potential to cause effects on historical properties.

National Register of Historic Places

Public, non-restricted data depicting National Register spatial data processed by the Cultural Resources GIS facility. Data last updated in April, 2014.

National Park Service
U.S. Department of the Interior

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Chelsea; Street No: 340; Street Name: Everett Ave; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year