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TRC Project No. 258858

February 10, 2020

Ms. Shauna Little
Environmental Protection Agency
Office of Environmental Stewardship (OES)
Water Technical Unit
5 Post Office Square, Suite 100 (OES4-SMR)
Boston, MA 02109-3912

Re: Woburn to Wakefield Transmission Line Project
National Pollutant Discharge Elimination System
Notice of Intent (NOI) for Coverage under the
Remediation General Permit (RGP) for Massachusetts
Discharge of Treated Groundwater to Aberjona River, Woburn, Massachusetts

Dear Mrs. Little:

On behalf of NSTAR Electric Company d/b/a Eversource Energy (Eversource), TRC Environmental Corporation has prepared the attached National Pollutant Discharge Elimination System (NPDES) Notice of Intent (NOI) (Attachment A) for coverage under the Remediation General Permit (RGP) during construction dewatering activities associated with the Underground Electric Transmission Line Project (Project) from the Eversource Woburn Substation in Woburn, Massachusetts to National Grid's Wakefield Junction Station in Wakefield, Massachusetts. This submittal is a request to discharge treated groundwater generated during Project construction activities along Cross Street, Washington Street, and Montvale Avenue in Woburn and Winchester, Massachusetts (the Site) to the Aberjona River in Woburn and Winchester, Massachusetts. A Site Plan and a MassDEP Priority Resources Map are provided as Figures 1 and 2 in Attachment B. Excavation dewatering and discharge of treated groundwater are expected to begin in March 2020 and end in December 2022.

Please note that additional NOIs will be submitted under separate cover for the two other sections of the Project where treated groundwater is proposed to be discharged to other surface water bodies. However, please also note that groundwater data from throughout this linear project were included in this submittal to allow for the contingency of transporting groundwater from other portions of the Project to a central location for treatment and discharge under the subject RGP.

Project Background

The Project includes the installation of approximately 4.9 miles of underground transmission line and 17 manholes through portions of Woburn, Winchester and Stoneham. The Project trench will measure approximately four feet wide and will be installed at an approximate depth of six feet below ground surface (bgs). The proposed manholes will be approximately 12 feet wide, 35 feet long, and 13 feet deep. Initial pre-characterization efforts have indicated that the average depth to groundwater at the Site is approximately six to seven feet bgs.

Property uses in the vicinity of the Site are predominantly residential with some commercial properties on Cross and Washington Streets and mostly commercial properties along Montvale Avenue.

Massachusetts Contingency Plan Applicability

The Project corridor does not pass directly through any existing Massachusetts Contingency Plan (MCP; 310 CMR 40.0000) Disposal Sites. However, based on information maintained in the Massachusetts Department of Environmental Protection (MassDEP) Bureau of Waste Site Cleanup (BWSC) online database, seven MCP sites, which include Tier Classified sites, Class A and C Response Action Outcome (RAO) sites, Utility Related Abatement Measure (URAM) sites, Downgradient Property Status sites, and Activity and Use Limitation (AUL) sites, were identified within 300 feet of the Project route (see Figure 1 in Attachment B).

During Project pre-characterization investigation activities, arsenic concentrations were identified in soil sample 26+50 (0-3') and thallium concentrations were identified in soil sample 210+50 (0-5') above the applicable MCP category RCS-1 Reportable Concentrations (RCs). Therefore, underground Project construction work in the vicinity of stations 26+50 and 210+50 will be conducted under a URAM pursuant to 310 CMR 40.0460. The boundaries of the URAM area for sample 26+50 are delineated by sample locations 22+50 and 31+60, and the boundaries of the URAM area for sample 210+50 are delineated by locations 205+50 and 215+36, where concentrations were below MCP RCS-1 criteria. Concentrations detected in the other samples collected during Project pre-characterization investigation work were below the applicable RCs, or the concentrations were exempt from reporting per 310 CMR 40.0317.

Groundwater Characterization

To characterize groundwater at the Site, groundwater samples were collected from monitoring wells BH-1/MW and BH-2/MW in February 2018 and November 2019. The monitoring wells are located at stations 146+75 and 148+50 (see Figure 1 in Attachment B, sheet 5 of 8).

The groundwater samples were submitted to Con-Test Analytical Laboratory in East Longmeadow, Massachusetts (Con-Test) for laboratory analysis of Environmental Protection Agency (EPA) RGP parameters (pH and temperature were measured in the field). Groundwater sampling results from 2019 are summarized in Table 1 in Attachment C and results from 2018 are summarized in Table 3; the 2019 laboratory analytical report is included in Attachment D. Laboratory analytical results were compared to the RGP Technology Based Effluent Limitations (TBELs) and Water Quality Based Effluent Limitations (WQBELs). The WQBELs were calculated in accordance with Appendix V of the RGP, for sites in Massachusetts discharging to freshwater surface water bodies. Please note that groundwater data from throughout this linear project were included in this submittal to allow for the contingency of transporting groundwater from other portions of the Project to a central location for treatment and discharge.

Constituents of concern identified above RGP criteria in the groundwater samples include polycyclic aromatic hydrocarbons (PAHs) [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd pyrene)], metals (arsenic, cadmium, copper, iron, lead, and zinc), total residual chlorine, and/or total suspended solids. Also, the reporting limits achieved for methylene chloride were not sufficiently sensitive; however, this compound is not a constituents of concern at nearby MCP Disposal Sites.

Receiving Water Classification

The Aberjona River is listed on the Massachusetts 303(d) list as an impaired water body for the following constituents:

- Physical substrate habitat alterations;
- Ammonia (Un-ionized);
- Arsenic;
- Escherichia coli;
- Aquatic Macroinvertebrate Bioassessments;
- Oxygen, Dissolved;
- Phosphorus (Total);
- Sediment Bioassays -- Freshwater Chronic Toxicity; and,
- Turbidity.

In June 2017 and November 2019, TRC personnel collected surface water samples from adjacent to (upstream of) the Aberjona River outfall and submitted them to Con-Test for laboratory analysis of RGP metals, ammonia, and hardness (pH and temperature were measured in the field). Surface water sampling results from 2019 are summarized in Table 2 in Attachment C and results from 2017 are summarized in Table 4; the 2019 laboratory analytical report is included in Attachment D. There are no applicable regulatory criteria to compare the surface water results to; the data is required to calculate effluent limitations for the RGP NOI.

Discharge of treated effluent from the construction dewatering treatment system will be in compliance with the effluent limitations contained in the RGP. A dilution factor of 2.4 was utilized based on a 7Q10 low flow rate of 0.4 cubic feet per second (cfs) [i.e., 0.259 million gallons per day (MGD)] for the Aberjona River (as determined by a US Geological Survey StreamStats Database – see Attachment E).

Treatment Systems

Based on the data from the groundwater pre-characterization events and receiving water classification, dewatered groundwater at the Site will be treated by a mobile or stationary groundwater treatment system and discharged to the Aberjona River via the municipal storm water systems managed by the City of Woburn or Town of Winchester. A Design Flow treatment system discharge rate of 130 GPM (i.e., 0.187 MGD) was used to evaluate the applicable RGP discharge standards.

Depending on the level of treatment required and discharge flow rate, the mobile treatment system could consist solely of a discharge hose connected to a bag filter or a system mounted on either a 24- or 48-foot mobile trailer. The mounted treatment system may consist of a weir tank, particulate filter units, bag filters, pH treatment (if deemed necessary), ion exchange resin, and/or granular activated carbon (GAC)/clay filter, as needed. A typical groundwater treatment system schematic is provided as Figure 3 in Attachment B. Based on effluent monitoring results, the treatment system or flow rate will be modified to comply with the effluent limits.

It is anticipated that the groundwater treatment system may utilize chemicals/additives to optimize treatment of total suspended solids (TSS), adjust pH, and/or increase precipitation of inorganics, as needed. The following chemicals/additives may be utilized:

Product Name	Purpose
Sodium Hydroxide	Increase pH of influent prior to treatment
Citric Acid	Decrease pH of effluent prior to discharge
Sulfuric Acid	Decrease pH of effluent prior to discharge
Sodium Hypochlorite (Borchlor 5)	Increase precipitation of inorganics prior to discharge
Absorbic Acid	Dechlorination to remove chloride from the influent to increase effectiveness of resin in treating metals

The table above is provided in accordance with Appendix IV, Part 1, Section F (2) (a) and (b) of the RGP NOI. The remaining information required per Appendix IV, Part 1, Section F (2) (a) and per Appendix IV, Part 1, Section F (c), (e) and (f) is provided on the Safety Data Sheet (SDS) for each product which are included in Attachment F.

In accordance with Appendix IV, Part 1, Section F (2) (d), the frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additives are summarized below.

The treatment system will be operated for a maximum of eight hours per day for up to five days per week from March 2020 through December 2022.

Sodium Hydroxide

The pH control system will continuously monitor the influent as it passes through the system. If the pH is below 9 (optimal pH for copper treatment), the control system would add sodium hydroxide to the influent to increase the pH prior to entry into the ion exchange vessels. The maximum estimated concentration of sodium hydroxide applied would be 0.95 grams per Liter (g/L). The method of application for the sodium hydroxide would be in-line application to the stream of water as it passes through the pH control system.

Citric Acid

A pH buffer of citric acid would be added in-line to the water stream, following treatment and before discharge, to continually dose water as it moves through the treatment system to adjust the pH within the effluent limitation range. The maximum estimated concentration of citric acid applied would be 0.18 g/L.

Sulfuric Acid

A pH buffer of sulfuric acid would be added in-line to the water stream, following treatment and before discharge, to continually dose water as it moves through the treatment system to adjust the pH within the effluent limitation range. The maximum concentration of sulfuric acid applied would be 0.54 g/L.

Sodium Hypochlorite

It is anticipated that the first application of sodium hypochlorite would be added manually to the fractionation tanks and then the groundwater would be recirculated to mix. Subsequent applications would be added using a metering pump plumbed into the recirculation line. Following oxidation, the water would pass through the filtration portion of the system to remove any precipitated particulates. The maximum estimated concentration of sodium hypochlorite applied would be 5 milligrams per liter (mg/L).

Absorbic Acid

The influent would be continuously dosed with ascorbic acid in the form of tablets. The maximum estimated concentration of ascorbic acid applied would be 100 mg/L.

Eversource anticipates the dewatering system will be required to operate periodically from March 2020 through December 2022. Permits to use the municipal storm water system will be obtained from the municipalities prior to initiating discharge activities.

A Best Management Practices Plan (BMPP) for the groundwater extraction and treatment systems satisfying the requirements of Section 2.5 of the RGP will be available at the Site prior to initiating dewatering activities.

Owner/Contact Person

NSTAR Electric Company d/b/a Eversource Energy
Mr. Dean Bebis
Environmental Specialist – Soil & Groundwater Management
247 Station Drive, SE270
Westwood, Massachusetts 02090
Phone: (508) 654-0492
Email: dean.bebis@eversource.com

Notice of Intent

Preparation of this NOI has included a review of the literature pertaining to Areas of Critical Environmental Concern (ACECs), the Endangered Species Act (ESA), and the National Historic Preservation Act (NHPA), as documented below:

- Review of a Massachusetts Geographic Information Systems MassDEP Priority Resources Map, Figure 2 in Attachment B, shows the Site is not within an ACEC.

- The Northern Long-eared Bat (Myotis septentrionalis) is listed as a Threatened Species in the vicinity of the Project by the US Fish and Wildlife Service (USFWS); however, treatment and discharge of construction generated groundwater is not anticipated to cause a disruption to this species. Letters from USFWS are included as Attachment G. Sensitive receptors in the vicinity of the Project are shown on Figure 2 in Attachment B.

- According to the USFWS Information, Planning and Conservation (IPaC) tool, there are no critical habitats at the Site. USFWS confirmed there are no critical habitats in the area and confirmed permit eligibility meets “Criterion A” (Attachment G).

- Additionally, according to the MassDEP Priority Resources Map, no Natural Heritage & Endangered Species Program (NHESP) Priority Habitats for Rare Species or Estimated Habitats for Rare Wildlife are present within half a mile downstream of the discharge location. Therefore, permit eligibility meets “Criterion A.”

- This work will not affect historical properties that are listed by the US Park Service or Massachusetts Cultural Resources. Cultural resources in the vicinity of the Site are listed in Attachment H.

- Groundwater samples were collected from monitoring wells BH-1/MW and BH-2/MW in November 2019. The groundwater samples were submitted for laboratory analysis of RGP

parameters (pH and temperature were measured in the field). The laboratory analytical results are summarized in Table 1 in Attachment C and compared to the applicable RGP discharge standards.

- A surface water sample was collected from adjacent to (upstream of) the Aberjona River outfall in November 2019 and submitted for laboratory analysis of RGP metals, ammonia and hardness (pH and temperature were measured in the field). The laboratory analytical results are summarized in Table 2 in Attachment C.

- Historical groundwater (2016-2018) and surface water (2017) sampling results are summarized in Tables 3 and 4 in Attachment C.

Based on the critical low flow (7Q10) value of the receiving water (0.259 MGD) and the proposed maximum discharge rate of up to 0.072 MGD, a dilution factor of 2.4 was established and verified by MassDEP. A copy of the MassDEP confirmation is included in Attachment E. The 7Q10 value was calculated using the United States Geologic Survey's StreamStats online application, and the dilution factor was calculated as instructed by the *Dilution Factor and Effluent Limitation Calculations for Massachusetts*, Appendix V of the RGP.

The proposed groundwater treatment systems have been designed to reduce contaminants of concern to below the applicable effluent limits. Effluent compliance monitoring will be conducted in compliance with the RGP. Additionally, flow rate and pH and temperature levels will be monitored in the field and recorded.

Your assistance in processing this application is greatly appreciated. If you have any questions or would like additional information please feel free to contact me at (603) 263-9381 or via email at moliveira@trccompanies.com.

Sincerely,

TRC Environmental Corporation

Matthew Oliveira, LSP, CHMM
Senior Project Manager

cc: Michael Zylich, Eversource
Dean Bebis, Eversource
Cathy Vakalopoulos, MassDEP

Attachments:

Attachment A – RGP NOI Form and Calculation Spreadsheet
Attachment B – Figures
Figure 1 - Site Plan
Figure 2 - MassDEP Priority Resources Map
Figure 3 - Generalized Treatment System Schematic
Attachment C – Tables
Table 1 - Summary of Analytical Results for Groundwater Samples – November 2019

Table 2 - Summary of Analytical Results for Surface Water Samples – November 2019
Table 3 - Summary of Analytical Results for Groundwater Samples – 2016 through 2018
Table 4 - Summary of Analytical Results for Surface Water Samples – June 2017
Attachment D – Laboratory Analytical Reports
Attachment E – StreamStats Database Export for the Aberjona River / MassDEP Dilution Factor Confirmation Documentation
Attachment F – Safety Data Sheets
Attachment G – Letters from US Fish and Wildlife Service
Attachment H – Massachusetts Cultural Resources Database Search Results

ATTACHMENT A

NOI FORM AND CALCULATION SPREADSHEET

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

A. General site information:

<table>
<tr><td rowspan="3">1. Name of site:
Woburn to Wakefield Transmission Line Project</td><td colspan="3">Site address: Cross, Washington, and Montvale Streets
Street:</td></tr>
<tr><td>City: Winchester and Woburn</td><td>State: MA</td><td>Zip: 01890</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="4">2. Site owner
NSTAR Electric Company d/b/a Eversource Energy

Owner is (check one): ☐ Federal ☐ State/Tribal ☐ Private
■ Other; if so, specify: Public Utility</td><td colspan="3">Contact Person: Dean Bebis</td></tr>
<tr><td colspan="2">Telephone: (508) 654-0492</td><td>Email: dean.bebis@eversource.com</td></tr>
<tr><td colspan="3">Mailing address: 247 Station Drive, SE270
Street:</td></tr>
<tr><td>City: Westwood</td><td>State: MA</td><td>Zip: 02090</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
McCourt Construction Company</td><td colspan="3">Contact Person: Steve Brown</td></tr>
<tr><td colspan="2">Telephone: 617-438-1031</td><td>Email: sbrown@mccourtconstruction.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 60 K Street</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02127</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
N/A

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):

☐ 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):
Aberjona River	MA71-01	B

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. Habitat alternation, ammonia, arsenic, e. coli, DO, phosphorus, freshwater chronic toxicity, turbidity.

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.	0.4
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.	2.4

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: April 24, 2018

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: SVOCs, iron, and zinc	
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):	Outfall location(s): (Latitude, Longitude)
Cross Street Outfall to Aberjona River (OF-119) Washington Street Outfall to Aberjona River (OF-63) Montvale Avenue Outfall to Aberjona River (Woburn) (AR-84/AR-85)	42.465616, -71.151466 42.467068, -71.130559 42.479503, -71.118000
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ☐ Indirect discharge, if so, specify: ☐ 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: Permission is obtained through the construction permitting process to be conducted by the construction contractor. 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): March 2020 - December 2022 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="5">☐ 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		✓	6	4500 NH3	24	430.0	267.0	Report mg/L	---
Chloride		✓	6	300.1	25,000	1,600,000	561,666	Report µg/l	---
Total Residual Chlorine		✓	6	4500 CL G	20	220	148	0.2 mg/L	26 ug/L
Total Suspended Solids		✓	6	2540D	100	8,200,000	2,500,167	30 mg/L	---
Antimony	✓		6	200.8	1	0	0	206 µg/L	1526 ug/L
Arsenic		✓	6	200.8	0.80	58	13.4	104 µg/L	10 ug/L
Cadmium		✓	6	200.8	0.2	250	89	10.2 µg/L	1.1198 ug/L
Chromium III		✓	6	Calc	250	250	89	323 µg/L	979.1 ug/L
Chromium VI	✓		6	3500 Cr B	4	0	0	323 µg/L	27.3 ug/L
Copper		✓	6	200.8	1.0	250	73.38	242 µg/L	105.3ug/L
Iron		✓	6	200.7	0.05	160,000	57,765	5,000 µg/L	1000 ug/l
Lead		✓	6	200.8	0.5	340	67.50	160 µg/L	82.91 ug/L
Mercury		✓	6	245.1	0.0001	0.14	0.023	0.739 µg/L	2.16 ug/L
Nickel		✓	6	200.8	5	180	57.56	1,450 µg/L	629.7 ug/L
Selenium		✓	6	200.8	1.6	5.3	0.04	235.8 µg/L	11.9 ug/L
Silver		✓	6	200.8	0.20	5.5	0.95	35.1 µg/L	244 ug/L
Zinc		✓	6	200.8	10	1,700	362	420 µg/L	1449.9 ug/L
Cyanide		✓	6	4500CN C	0.001	0.002	0.0003	178 mg/L	12.4 ug/L
B. Non-Halogenated VOCs									
Total BTEX		✓	6	624.1	2	3.41	0.49	100 µg/L	---
Benzene	✓		6	624.1	0.180	0	0	5.0 µg/L	---
1,4 Dioxane	✓		6	624.1	3.50	0	0	200 µg/L	---
Acetone		✓	6	624.1	0.540	6.18	1.71	7.97 mg/L	---
Phenol	✓		6	625.1	10	0	0	1,080 µg/L	716 ug/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	✓		6	624.1	0.110	0	0	4.4 µg/L	3.8 ug/L
1,2 Dichlorobenzene	✓		6	624.1	0.160	0	0	600 µg/L	---
1,3 Dichlorobenzene	✓		6	624.1	0.120	0	0	320 µg/L	---
1,4 Dichlorobenzene	✓		6	624.1	0.130	0	0	5.0 µg/L	---
Total dichlorobenzene	✓		6	624.1	0.160	0	0	763 µg/L in NH	---
1,1 Dichloroethane	✓		6	624.1	0.160	0	0	70 µg/L	---
1,2 Dichloroethane	✓		6	624.1	0.410	0	0	5.0 µg/L	---
1,1 Dichloroethylene	✓		6	624.1	0.320	0	0	3.2 µg/L	---
Ethylene Dibromide	✓		6	504.1	0.02	0	0	0.05 µg/L	---
Methylene Chloride	✓		6	624.1	0.340	0	0	4.6 µg/L	---
1,1,1 Trichloroethane	✓		6	624.1	0.200	0	0	200 µg/L	---
1,1,2 Trichloroethane	✓		6	624.1	0.160	0	0	5.0 µg/L	---
Trichloroethylene		✓	6	624.1	0.240	2.38	0.51	5.0 µg/L	---
Tetrachloroethylene	✓		6	624.1	0.180	0	0	5.0 µg/L	7.9 ug/L
cis-1,2 Dichloroethylene		✓	6	624.1	0.05	0.320	0.053	70 µg/L	---
Vinyl Chloride	✓		6	624.1	0.450	0	0	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✓		6	625.1	10	0	0	190 µg/L	---
Diethylhexyl phthalate	✓		6	625.1	10	0	0	101 µg/L	5.2 ug/l
Total Group I PAHs		✓	6	625.1	1	1.38	0.23	1.0 µg/L	---
Benzo(a)anthracene		✓	6	625.1	0.050	0.27	0.045	As Total PAHs	0.0091 ug/L
Benzo(a)pyrene		✓	6	625.1	0.10	0.28	0.065		0.0091 ug/L
Benzo(b)fluoranthene		✓	6	625.1	0.050	0.36	0.06		0.0091 ug/L
Benzo(k)fluoranthene	✓		6	625.1	0.20	0	0		0.0091 ug/L
Chrysene		✓	6	625.1	0.2	0.23	0.205		0.0091 ug/L
Dibenzo(a,h)anthracene	✓		6	625.1	0.1	0	0		0.0091 ug/L
Indeno(1,2,3-cd)pyrene		✓	6	625.1	0.1	0.24	0.058		0.0091 ug/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
Total Group II PAHs		✓	6	625.1	0.050	1.38	0.23	100 µg/L	---
Naphthalene	✓		6	625.1	1.0	0	0	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✓		6	608.3	0.2	0	0	0.000064 µg/L	---
Pentachlorophenol	✓		6	625.1	1	<1.1	0	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✓		6	1664B	5.6	<5.6	0	5.0 mg/L	---
Ethanol	✓		6	624.1	27.9	0	0	Report mg/L	---
Methyl-tert-Butyl Ether	✓		6	624.1	0.250	0	0	70 µg/L	48 ug/L
tert-Butyl Alcohol	✓		6	624.1	3.50	0	0	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✓		6	624.1	2.5	0	0	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:									
pH		✓	6	Field	0.1	8.20	7.31		
Temperature		✓	6	Field	0.01	15.1 deg C	9.4 deg C		
Hardness		✓	6	200.7	3.0	1,400	398.66		

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.

Settlement in fractionation tank, particle filtration via bag filter and/or flocculation, pH adjustment (as needed), TRC and SVOC treatment via liquid phase carbon, and metals treatment via ionic resin..

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: Media filter for metals treatment Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	130
Provide the proposed maximum effluent flow in gpm.	130
Provide the average effluent flow in gpm.	130
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	

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:

2. Provide the following information for each chemical/additive, using attachments, if necessary:
Sodium Hydroxide, Citric Acid, Sulfuric Acid (pH adjustment); Sodium Hypochlorite (flocculation); and Ascorbic Acid (chloride removal)
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

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 meeting the requirements of this general permit will be developed and implemented upon 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.	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: [signature]	Date: 4/20/20
Print Name and Title: Stephen Brown Superintendent	

Enter number values in green boxes below

Enter values in the units specified

↓

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

Notes:

Freshwater: Q_R equal to the 7Q10; enter alternate Q_R if approved by the State; enter 0 if no dilution factor approved

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

Enter a dilution factor, if other than zero

↓

2.4

Saltwater (estuarine and marine): only if approved by the State

Leave 0 if no entry

Enter values in the units specified

↓

1400	C_d = Enter influent hardness in **mg/L** $CaCO_3$
160	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

Freshwater only

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

↓

7.86	pH in **Standard Units**
5.72	Temperature in **°C**
1.39	Ammonia in **mg/L**
160	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
14	Arsenic in **µg/L**
0	Cadmium in **µg/L**
6.3	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
6.6	Copper in **µg/L**
3200	Iron in **µg/L**
3	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
0	Zinc in **µg/L**

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

Enter **influent** concentrations in the units specified

↓

0.22	TRC in **µg/L**
0.43	Ammonia in **mg/L**
0	Antimony in **µg/L**
58	Arsenic in **µg/L**
7.2	Cadmium in **µg/L**
250	Chromium III in **µg/L**
250	Chromium VI in **µg/L**
250	Copper in **µg/L**
160000	Iron in **µg/L**
340	Lead in **µg/L**
0.14	Mercury in **µg/L**
180	Nickel in **µg/L**
5.3	Selenium in **µg/L**
5.5	Silver in **µg/L**
1700	Zinc in **µg/L**
0.002	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**
0.27	Benzo(a)anthracene in **µg/L**
0.28	Benzo(a)pyrene in **µg/L**
0.36	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0.23	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0.24	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

if >1 sample, enter maximum

if >10 samples, may enter 95th percentile

Enter 0 if non-detect or testing not required

Dilution Factor	2.4					
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	**26**	µg/L	50	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	1526	µg/L		
Arsenic	104	µg/L	**10**	µg/L		
Cadmium	10.2	µg/L	**1.1198**	µg/L		
Chromium III	**323**	µg/L	979.1	µg/L		
Chromium VI	323	µg/L	**27.3**	µg/L		
Copper	242	µg/L	**105.3**	µg/L		
Iron	5000	µg/L	**1000**	µg/L		
Lead	160	µg/L	**82.91**	µg/L		
Mercury	**0.739**	µg/L	2.16	µg/L		
Nickel	**1450**	µg/L	629.7	µg/L		
Selenium	**235.8**	µg/L	11.9	µg/L		
Silver	**35.1**	µg/L	244.0	µg/L		
Zinc	**420**	µg/L	1449.9	µg/L		
Cyanide	**178**	mg/L	12.4	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	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	716	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	3.8	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	7.9	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	5.2	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	1.0	µg/L	**0.0091**	µg/L	0.1	µg/L
Benzo(a)pyrene	1.0	µg/L	**0.0091**	µg/L	0.1	µg/L
Benzo(b)fluoranthene	1.0	µg/L	**0.0091**	µg/L	0.1	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0091	µg/L	---	µg/L
Chrysene	1.0	µg/L	**0.0091**	µg/L	0.1	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0091	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	1.0	µg/L	**0.0091**	µg/L	0.1	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			

E. Halogenated SVOCs

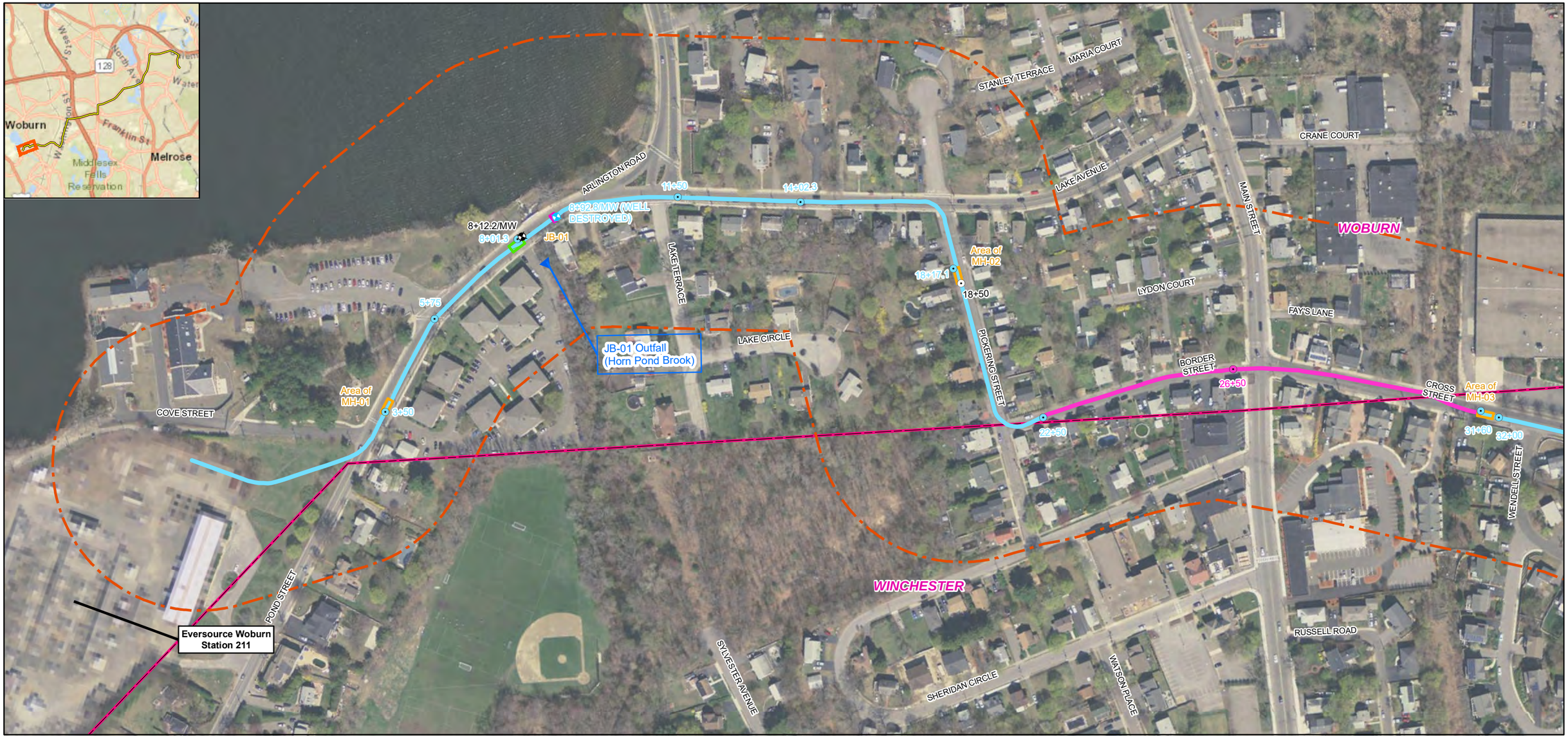
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			

F. Fuels Parameters

Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	48	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

ATTACHMENT B

FIGURES



- Proposed Route – Color Coded by Soil Type
- Proposed Jack and Bore Entrance Pit
- Proposed Jack and Bore Exit PIt
- Manhole
- 300-foot Route Buffer
- Town Boundary
- Approximate Catch Basin Outfall Location

C21E Regulated Status
- TIER I
- TIER II
- TIER1D
- MA DEP AUL Site
- Proposed Phase III Boring (Station # and Location Approximate)

Boring/Test Pit/Monitoring Well Location (As-Built)

Soil Type
- B-1
- B-2
- C-1
- D-3
- No Sample Analyzed for Environmental Parameters (Boring Advanced for Geotechnical Purposes)
- Boring/Manhole locations where different soil types have been identified for shallow and deep soil
- Boring/Monitoring Well (color coded as noted above)

Note - Boring locations where monitoring wells were installed are denoted "/MW" in the boring ID

Type B-1 Soil - Beneficial Reuse at less than RCS-1 Facility: Soil containing OHM concentrations below MCP RCS-1 criteria can be used as fill material at off-site industrial/commercial locations provided that pre-existing OHM concentrations at the fill location are equal to or higher than those that exist in the construction generated soil. The facility must have a MassDEP approved ACO in place in accordance with MassDEP Interim Policy # COMM-15-01 (Re-Use of Soil for Large Reclamation Projects Policy) or other MassDEP regulations.

Type B-2 Soil - Beneficial Reuse at less than RCS-2 Facility: Soil containing OHM concentrations below MCP RCS-2 criteria can be used as fill material at off-site industrial/commercial less than RCS-2 Facilities provided that pre-existing OHM concentrations at the fill location are equal to or higher than those that exist in the construction generated soil. The facility must have a MassDEP approved ACO in place in accordance with MassDEP Interim Policy # COMM-15-01 (Re-Use of Soil for Large Reclamation Projects Policy) or other MassDEP regulations.

Type C-1 Soil - Massachusetts Unlined Landfills: Soil that contains OHM concentrations above MCP RCS-1 levels but below the criteria for Massachusetts Unlined landfills per MassDEP Policy # COMM-97-001.

Type D-3 Soil – Non-Hazardous Waste Out of State Subtitle D Landfill Facility: Soil that contains OHM concentrations above MCP RCS-1 levels and above the criteria for Massachusetts unlined and lined landfills per MassDEP Policy # COMM-97-001 but meets acceptance criteria for a permitted non-hazardous waste out of state Subtitle D landfill facility for use as daily cover.

N

0 100 200 300 400 Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,

EVERSOURCE

WOBURN TO WAKEFIELD UNDERGROUND TRANSMISSION LINE PROJECT

WOBURN, WINCHESTER AND STONEHAM, MA

FIGURE 2
SAMPLE PLAN AND SOIL MANAGEMENT MAP

SHEET 1 of 8

Prepared by TRC

FEBRUARY 2020

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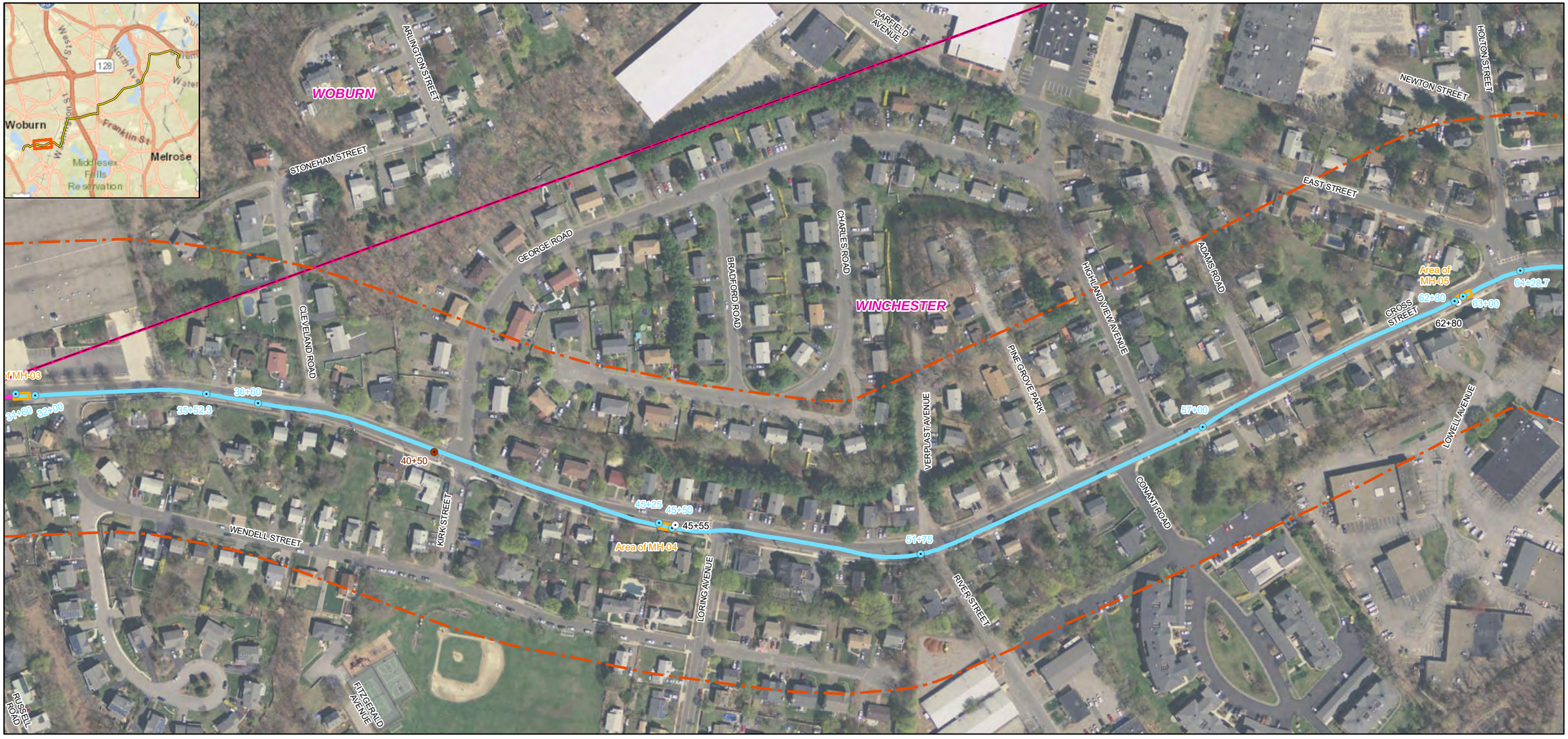

- Proposed Route – Color Coded by Soil Type
- Proposed Jack and Bore Entrance Pit
- Proposed Jack and Bore Exit PIt
- Manhole
- 300-foot Route Buffer
- Town Boundary
- Approximate Catch Basin Outfall Location

C21E Regulated Status

- TIER I
- TIER II
- TIER1D
- MA DEP AUL Site
- Proposed Phase III Boring (Station # and Location Approximate)

Boring/Test Pit/Monitoring Well Location (As-Built)

Soil Type

- B-1
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- C-1
- D-3
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Type B-2 Soil - Beneficial Reuse at less than RCS-2 Facility: Soil containing OHM concentrations below MCP RCS-2 criteria can be used as fill material at off-site industrial/commercial less than RCS-2 Facilities provided that pre-existing OHM concentrations at the fill location are equal to or higher than those that exist in the construction generated soil. The facility must have a MassDEP approved ACO in place in accordance with MassDEP Interim Policy # COMM-15-01 (Re-Use of Soil for Large Reclamation Projects Policy) or other MassDEP regulations.

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N

0 100 200 300 400 Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,

EVERSOURCE

WOBURN TO WAKEFIELD UNDERGROUND TRANSMISSION LINE PROJECT

WOBURN, WINCHESTER AND STONEHAM, MA

FIGURE 2

SAMPLE PLAN AND SOIL MANAGEMENT MAP

SHEET 2 of 8

Prepared by TRC

FEBRUARY 2020

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- Proposed Route – Color Coded by Soil Type
- Proposed Jack and Bore Entrance Pit
- Proposed Jack and Bore Exit PIt
- Manhole
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C21E Regulated Status
- TIER I
- TIER II
- TIER1D
- MA DEP AUL Site
- Proposed Phase III Boring (Station # and Location Approximate)

Boring/Test Pit/Monitoring Well Location (As-Built)

Soil Type
- B-1
- B-2
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- Boring/Manhole locations where different soil types have been identified for shallow and deep soil
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Type B-2 Soil - Beneficial Reuse at less than RCS-2 Facility: Soil containing OHM concentrations below MCP RCS-2 criteria can be used as fill material at off-site industrial/commercial less than RCS-2 Facilities provided that pre-existing OHM concentrations at the fill location are equal to or higher than those that exist in the construction generated soil. The facility must have a MassDEP approved ACO in place in accordance with MassDEP Interim Policy # COMM-15-01 (Re-Use of Soil for Large Reclamation Projects Policy) or other MassDEP regulations.

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N

0 100 200 300 400 Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,

EVERSOURCE

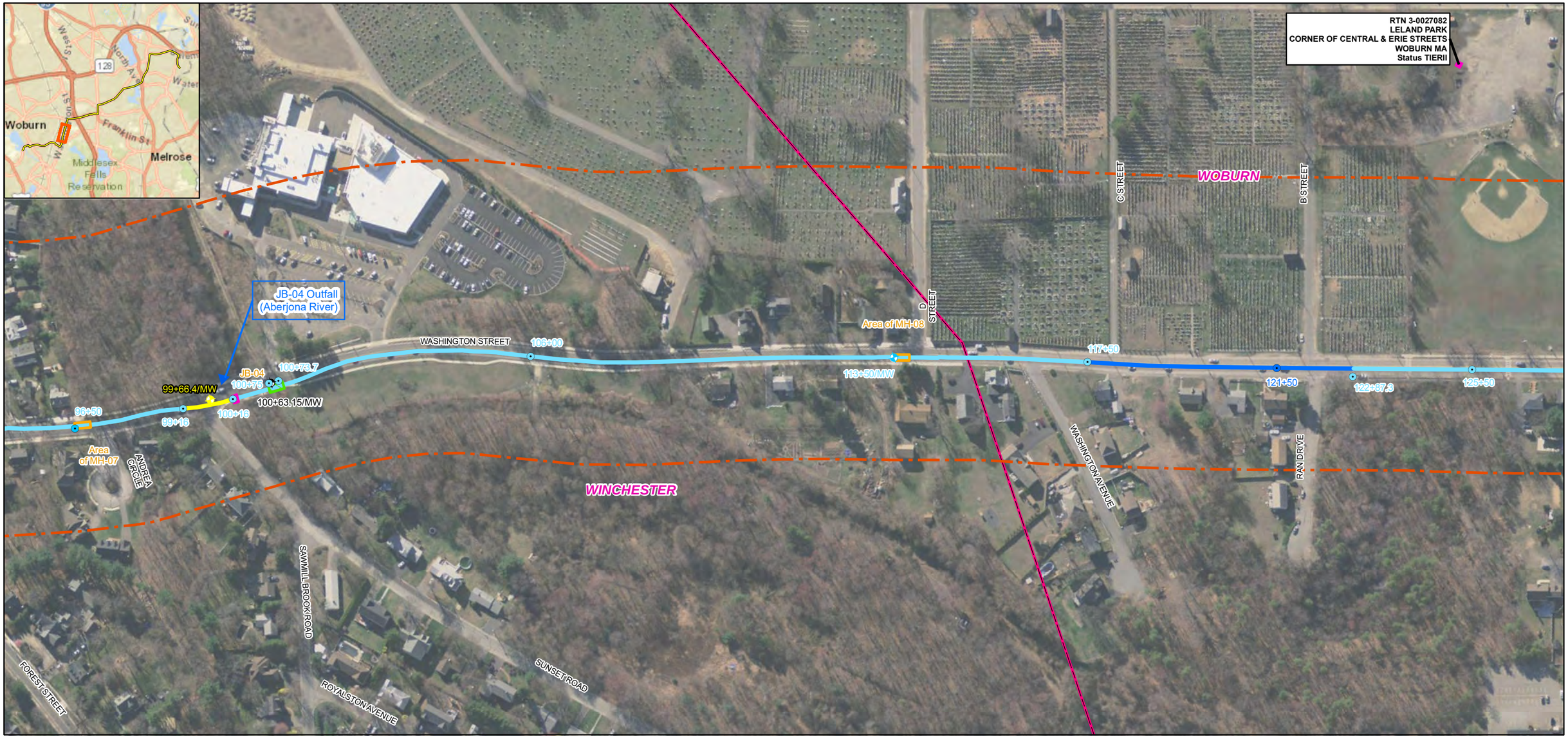
WOBURN TO WAKEFIELD UNDERGROUND TRANSMISSION LINE PROJECT

WOBURN, WINCHESTER AND STONEHAM, MA

FIGURE 2
SAMPLE PLAN AND SOIL MANAGEMENT MAP
SHEET 3 of 8

Prepared by TRC | FEBRUARY 2020

R:\Projects\GIS_2016\258858_EversourceGeo_W-W_MA\mxd\FIG2_Eversource_W-WGeo_SamplePlan_SoilMgmt_20200207.mxd



- Proposed Route – Color Coded by Soil Type
- Proposed Jack and Bore Entrance Pit
- Proposed Jack and Bore Exit PIt
- Manhole
- 300-foot Route Buffer
- Town Boundary
- Approximate Catch Basin Outfall Location

C21E Regulated Status

- TIER I
- TIER II
- TIER1D
- MA DEP AUL Site
- Proposed Phase III Boring (Station # and Location Approximate)

Boring/Test Pit/Monitoring Well Location (As-Built)

Soil Type

- B-1
- B-2
- C-1
- D-3
- No Sample Analyzed for Environmental Parameters (Boring Advanced for Geotechnical Purposes)
- Boring/Manhole locations where different soil types have been identified for shallow and deep soil
- Boring/Monitoring Well (color coded as noted above)

Note - Boring locations where monitoring wells were installed are denoted "/MW" in the boring ID

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Type B-2 Soil - Beneficial Reuse at less than RCS-2 Facility: Soil containing OHM concentrations below MCP RCS-2 criteria can be used as fill material at off-site industrial/commercial less than RCS-2 Facilities provided that pre-existing OHM concentrations at the fill location are equal to or higher than those that exist in the construction generated soil. The facility must have a MassDEP approved ACO in place in accordance with MassDEP Interim Policy # COMM-15-01 (Re-Use of Soil for Large Reclamation Projects Policy) or other MassDEP regulations.

Type C-1 Soil - Massachusetts Unlined Landfills: Soil that contains OHM concentrations above MCP RCS-1 levels but below the criteria for Massachusetts Unlined landfills per MassDEP Policy # COMM-97-001.

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N

0 100 200 300 400 Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,

EVERSOURCE

WOBURN TO WAKEFIELD UNDERGROUND TRANSMISSION LINE PROJECT

WOBURN, WINCHESTER AND STONEHAM, MA

FIGURE 2

SAMPLE PLAN AND SOIL MANAGEMENT MAP

SHEET 4 of 8

Prepared by TRC

FEBRUARY 2020

R:\Projects\GIS_2016\258858_EversourceGeo_W-W_MA\mxd\FIG2_Eversource_W-WGeo_SamplePlan_SoilMgmt_20200207.mxd

- Proposed Route – Color Coded by Soil Type
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- TIER1D
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N

0 100 200 300 400 Feet

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EVERSOURCE

WOBURN TO WAKEFIELD UNDERGROUND TRANSMISSION LINE PROJECT

WOBURN, WINCHESTER AND STONEHAM, MA

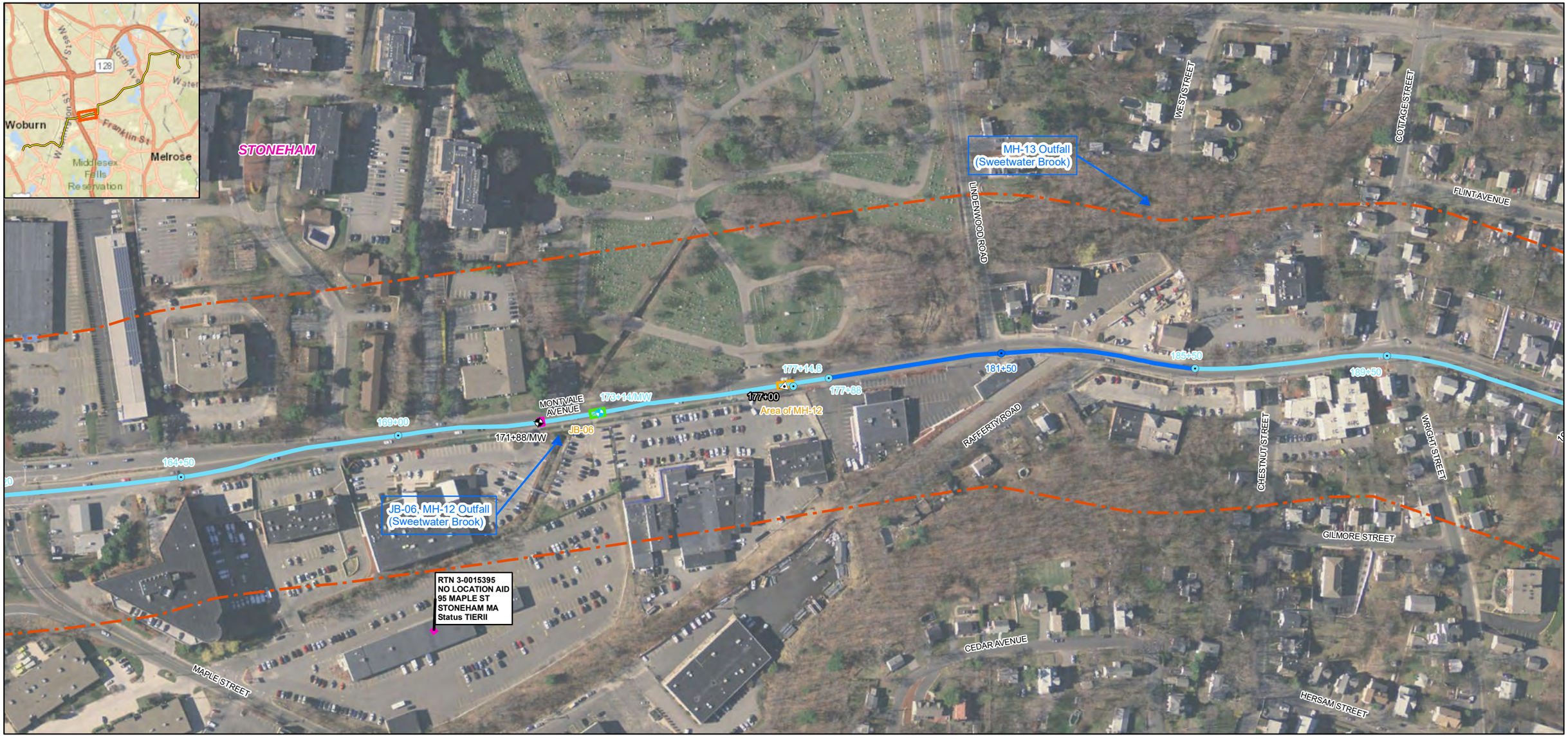
FIGURE 2

SAMPLE PLAN AND SOIL MANAGEMENT MAP

SHEET 5 of 8

Prepared by TRC | FEBRUARY 2020

R:\Projects\GIS_2016\258858_EversourceGeo_W-W_MA\mxd\FIG2_Eversource_W-WGeo_SamplePlan_SoilMgmt_20200207.mxd



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Type B-2 Soil - Beneficial Reuse at less than RCS-2 Facility: Soil containing OHM concentrations below MCP RCS-2 criteria can be used as fill material at off-site industrial/commercial less than RCS-2 Facilities provided that pre-existing OHM concentrations at the fill location are equal to or higher than those that exist in the construction generated soil. The facility must have a MassDEP approved ACO in place in accordance with MassDEP Interim Policy # COMM-15-01 (Re-Use of Soil for Large Reclamation Projects Policy) or other MassDEP regulations.

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N

0 100 200 300 400 Feet

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EVERSOURCE

WOBURN TO WAKEFIELD UNDERGROUND TRANSMISSION LINE PROJECT

WOBURN, WINCHESTER AND STONEHAM, MA

FIGURE 2

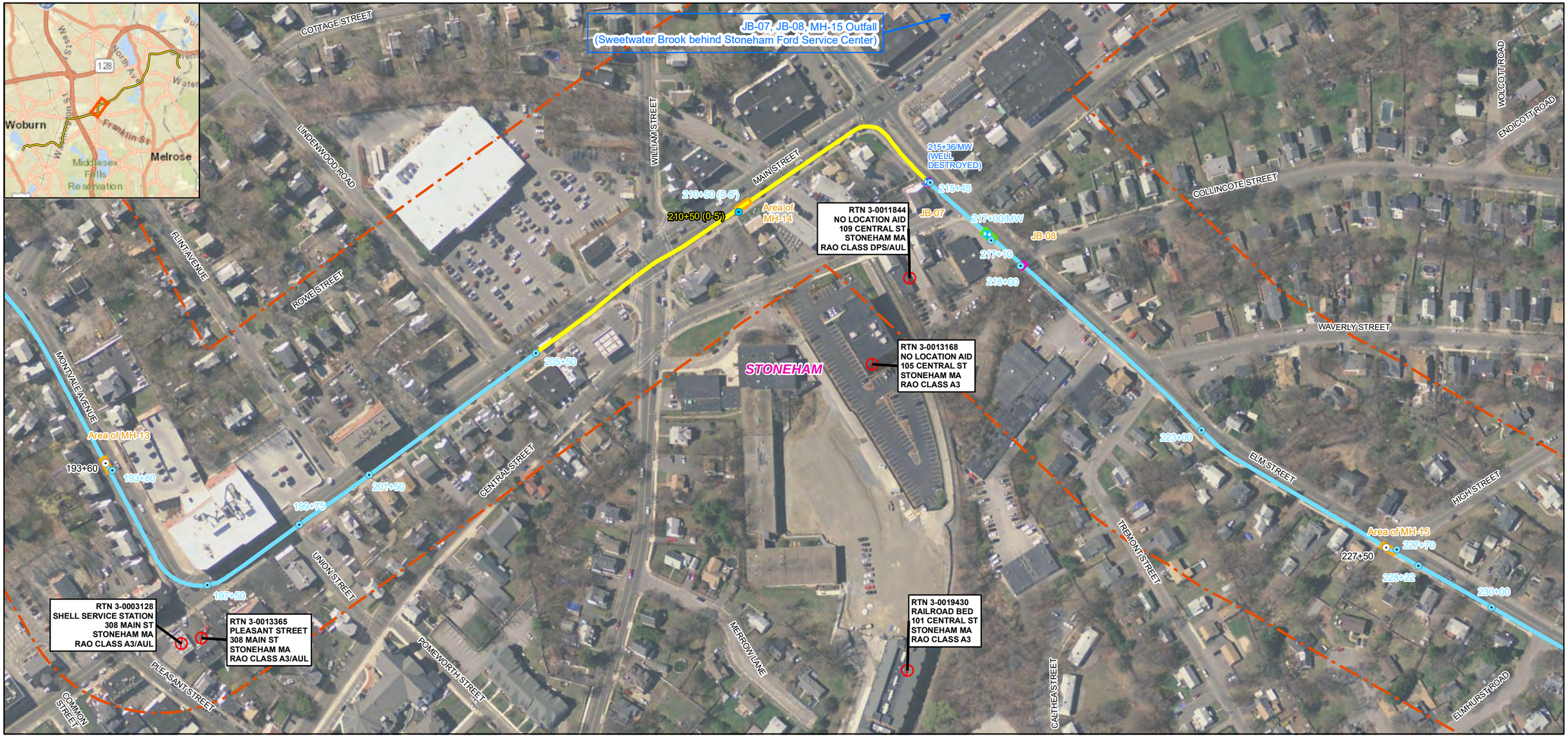
SAMPLE PLAN AND SOIL MANAGEMENT MAP

SHEET 6 of 8

Prepared by TRC

FEBRUARY 2020

R:\Projects\GIS_2016\258858_EversourceGeo_W-W_MA\mxd\FIG2_Eversource_W-WGeo_SamplePlan_SoilMgmt_20200207.mxd



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0 100 200 300 400 Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,

EVERSOURCE

WOBURN TO WAKEFIELD UNDERGROUND TRANSMISSION LINE PROJECT

WOBURN, WINCHESTER AND STONEHAM, MA

FIGURE 2

SAMPLE PLAN AND SOIL MANAGEMENT MAP

SHEET 7 of 8

Prepared by TRC | FEBRUARY 2020

R:\Projects\GIS_2016\258858_EversourceGeo_W-W_MA\mxd\FIG2_Eversource_W-WGeo_SamplePlan_SoilMgmt_20200207.mxd

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EVERSOURCE

WOBURN TO WAKEFIELD UNDERGROUND TRANSMISSION LINE PROJECT

WOBURN, WINCHESTER AND STONEHAM, MA

FIGURE 2

SAMPLE PLAN AND SOIL MANAGEMENT MAP

SHEET 8 of 8

Prepared by TRC | FEBRUARY 2020

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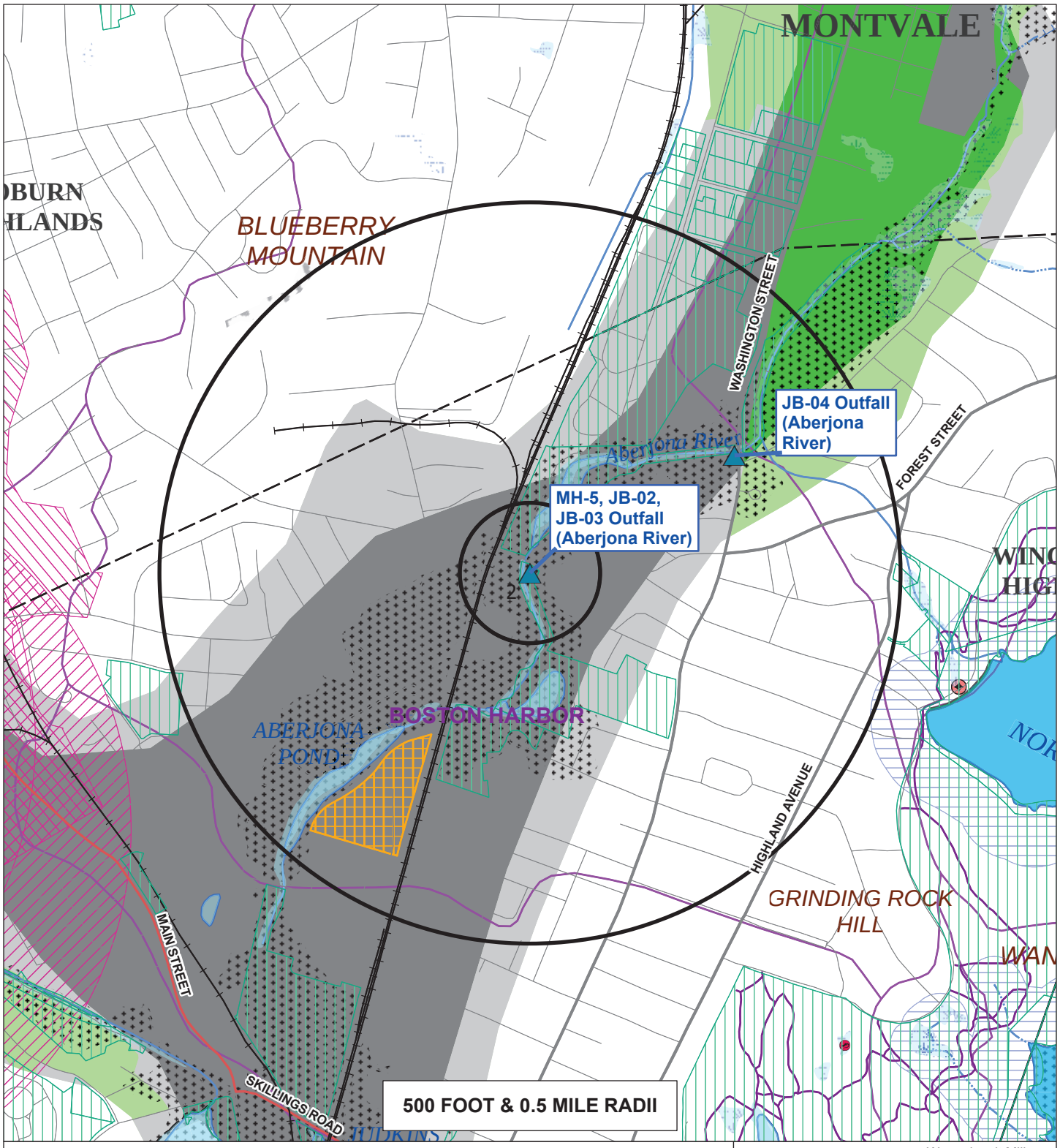

Roads: Limited Access, Multi-Lane, Major/Minor, Track, Trail
Railroad, Pipline, Powerline

Major Basin, Sub Basin, Perennial Stream, Intermittent Stream, Shoreline, Man made Shore, Dam, Aqueduct

Wetland, Salt Wetland, Submerged Wetland, Open Water, Reservoir, Tidal Flat/Shoal

Potentially Productive Aquifers: Medium, High Yield

Non-Potential Drinking Water Source Area: Medium, High Yield

EPA Sole Source Aquifer, FEMA 100 Yr. Floodplain, DEP Solid Waste Facility

Approved Zone II, IWPA, Surface Water Supply Zone A

Protected Open Space, ACEC

Priority Habitat, Certified Vernal Pool

Boundaries: County and Town

Public Water Supplies: Ground, Surface, Non-Community (NTNC, TNC)

Source: MassGIS/EOEA

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854
978-970-5600

FIGURE 2
Sheet 1 of 3

MASSDEP PRIORITY RESOURCE MAP
WOBURN TO WAKEFIELD
UNDERGROUND TRANSMISSION
CABLE PROJECT
STONEHAM, MA

N

0 1,250
Feet

JAN, 2020

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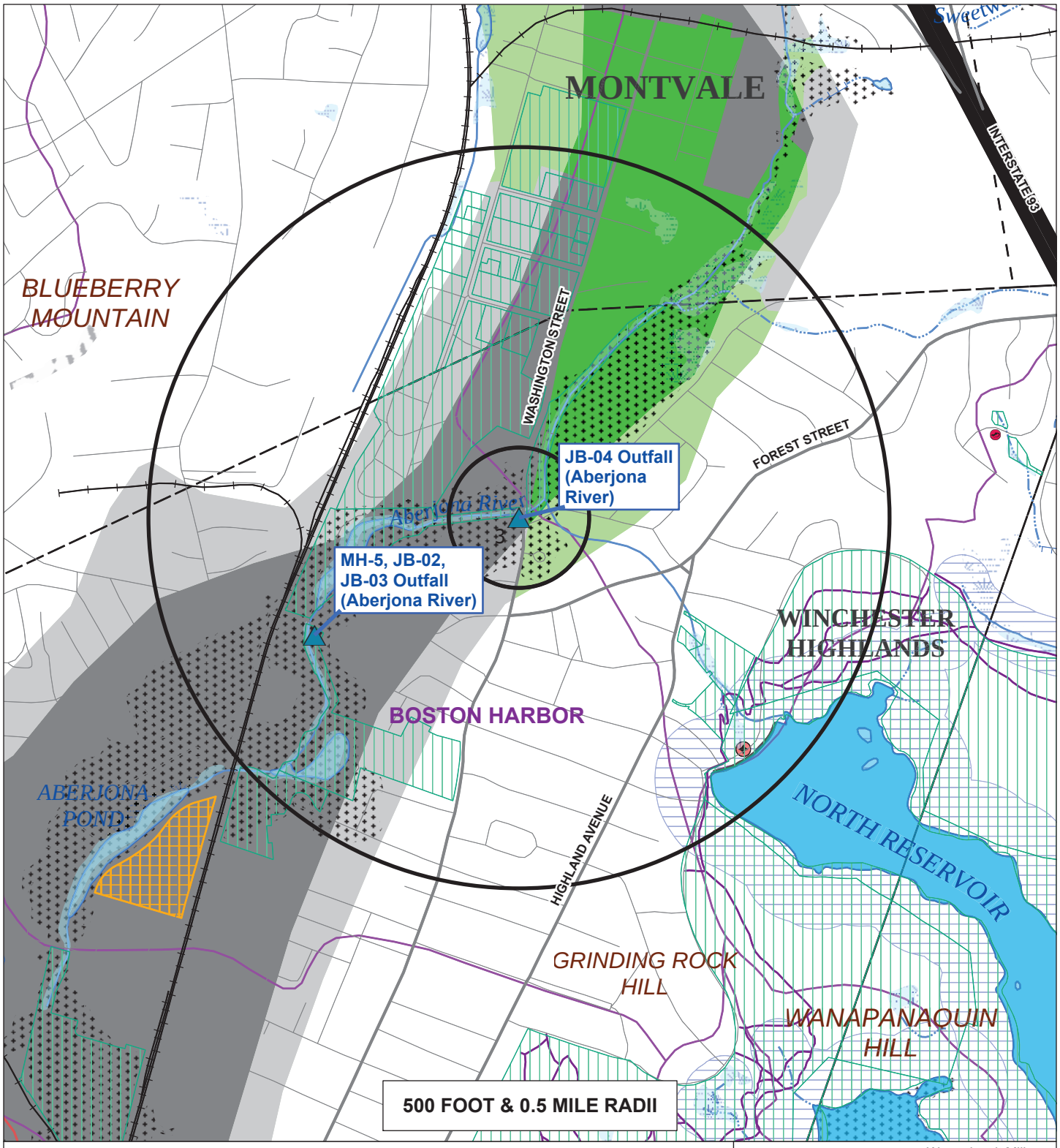

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Major Basin, Sub Basin, Perennial Stream, Intermittent Stream, Shoreline, Man made Shore, Dam, Aqueduct

Wetland, Salt Wetland, Submerged Wetland, Open Water, Reservoir, Tidal Flat/Shoal

Potentially Productive Aquifers: Medium, High Yield

Non-Potential Drinking Water Source Area: Medium, High Yield

EPA Sole Source Aquifer, FEMA 100 Yr. Floodplain, DEP Solid Waste Facility

Approved Zone II, IWPA, Surface Water Supply Zone A

Protected Open Space, ACEC

Priority Habitat, Certified Vernal Pool

Boundaries: County and Town

Public Water Supplies: Ground, Surface, Non-Community (NTNC, TNC)

Source: MassGIS/EOEA

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854
978-970-5600

FIGURE 2
Sheet 2 of 3

MASSDEP PRIORITY RESOURCE MAP
WOBURN TO WAKEFIELD
UNDERGROUND TRANSMISSION
CABLE PROJECT
WINCHESTER, MA

N

0 1,25
Feet

JAN, 2020

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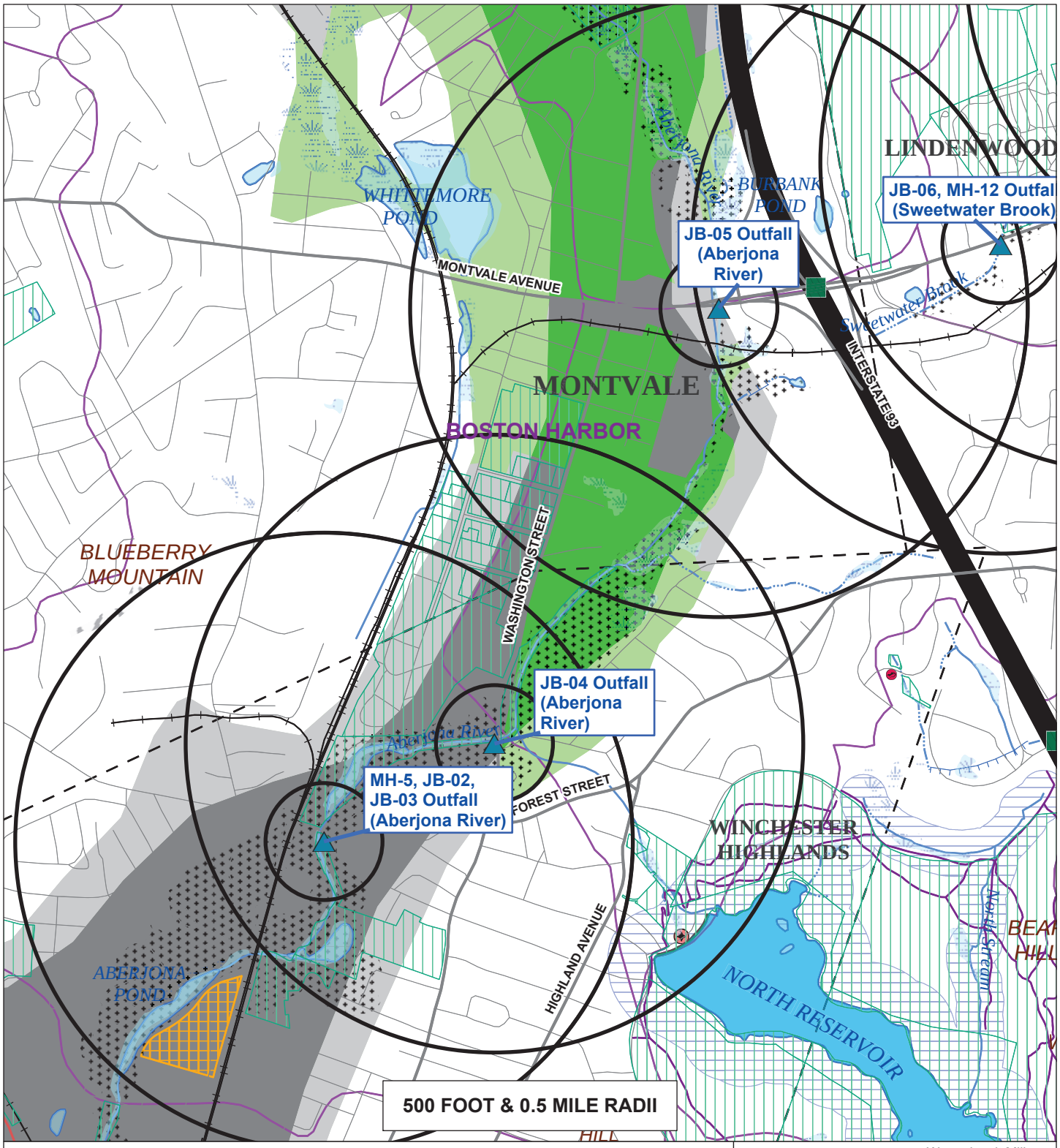

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Major Basin, Sub Basin, Perennial Stream, Intermittent Stream, Shoreline, Man made Shore, Dam, Aqueduct

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Potentially Productive Aquifers: Medium, High Yield

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EPA Sole Source Aquifer, FEMA 100 Yr. Floodplain, DEP Solid Waste Facility

Approved Zone II, IWPA, Surface Water Supply Zone A

Protected Open Space, ACEC

Priority Habitat, Certified Vernal Pool

Boundaries: County and Town

Public Water Supplies: Ground, Surface, Non-Community (NTNC, TNC)

Source: MassGIS/EOEA

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854
978-970-5600

FIGURE 2
Sheet 3 of 3

MASSDEP PRIORITY RESOURCE MAP
WOBURN TO WAKEFIELD
UNDERGROUND TRANSMISSION
CABLE PROJECT
WINCHESTER, MA

N

0 1,200
Feet

JAN, 2020

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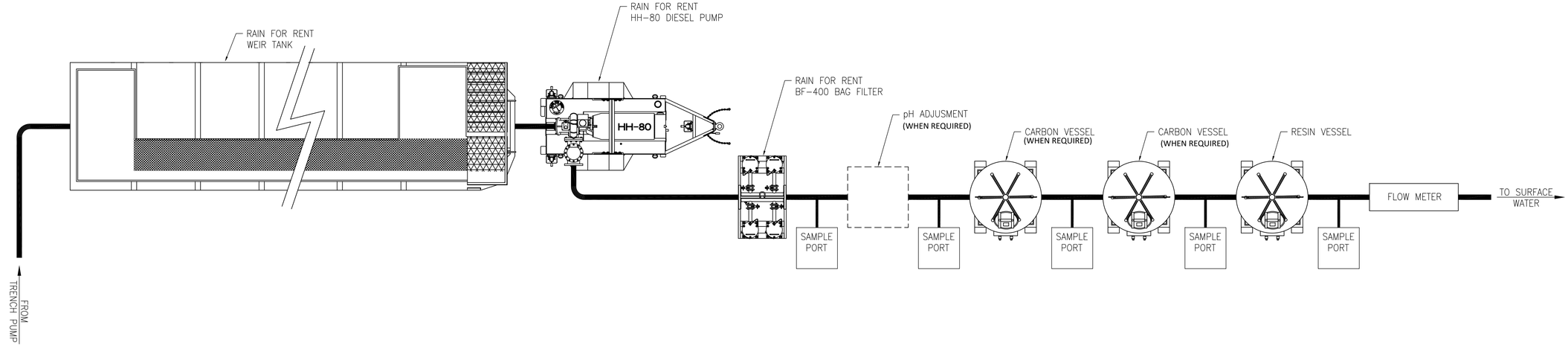
REV.NO.	DESCRIPTION	PREVIOUS DWG	BY	DATE
1				

ITEM	QTY.	REF.	DESCRIPTION

NOTES:

- 4in CAMLOCK HOSE USED THROUGHOUT SYSTEM
- SYSTEM FLOW RATE IS 100gpm



PLAN VIEW

DATE: 12/4/2017
SCALE: NOT TO SCALE
DESIGNED:
CHECKED: B. DOWNING
DRAWN: T. TOWERY
SHEET SIZE: D

FILTRATON LAYOUT

TRC ENVIRONMENTAL

Rain for Rent
Engineering
3404 STATE ROAD, P.O. BOX 2248 BAKERSFIELD, CA 93303

RAIN FOR RENT ENGINEERING DOCUMENT & DRAWING NUMBER
01-15535-02-01

SHEET 1 OF 1

TEXTING & DRIVING... it can wait

SHOCK HAZARD LOOK UP AND LIVE! KEEP 10 FOOT CLEAR !

"CALL BEFORE YOU DIG" USA 811

CONFIDENTIAL

RAIN FOR RENT INFORMATION NUMBER
246803-17

C:\120-ENGINEERING\VAULT\01 ENGINEERING JOBS\01-15535\02 AUTOCAD PROJECTS\01-15535-02-01.DWG

ATTACHMENT C

TABLES

Table 1
Summary of Analytical Results for Groundwater Samples -- November 2019
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester, and Stoneham Massachusetts

							Sample Location:		**8+12**		**BH-01**		**BH-02**		**171+88**		**173+14**		**217+00**	
							Sample Name:		8+12 MW		BH-01 MW		BH-02 MW		171+88 MW		173+14 MW		217+00 MW	
							Sample Date:		11/13/2019		11/14/2019		11/14/2019		11/13/2019		11/13/2019		11/15/2019	
							Nearby Waterbody:		Horn Pond Brook - Woburn		Aberjona River - Woburn and Winchester				Sweetwater Brook - Stoneham					
			RGP for Freshwater[1]			**Required Minimum Level[4]**														
Analysis	Analyte	Unit	**TBEL**	**WQBEL[2]**	**Compliance Level[3]**															
VOCs																				
	Acetone	ug/L	**7,970**	N/A	N/A	7,970		50.0	U	50.0	U	**6.18**		50.0	U	50.0	U	**4.08**	
	tert-Amylmethyl Ether (TAME)	ug/L	**90**	N/A	N/A	90		0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Benzene	ug/L	**5**	N/A	N/A	5		1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Bromodichloromethane	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Bromoform	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Bromomethane	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	tert-Butyl Alcohol	ug/L	**120**	N/A	N/A	120		20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U
	Carbon Tetrachloride	ug/L	**4.4**	3.8	N/A	1.6		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Chlorobenzene	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Chlorodibromomethane	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Chloroethane	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Chloroform	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Chloromethane	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,2-Dichlorobenzene	ug/L	**600**	N/A	N/A	600		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,3-Dichlorobenzene	ug/L	**320**	N/A	N/A	320		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,4-Dichlorobenzene	ug/L	**5**	N/A	N/A	5		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,2-Dichloroethane	ug/L	**5**	N/A	N/A	5		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	cis-1,2-Dichloroethylene	ug/L	**70**	N/A	N/A	70		1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	**0.32**	
	1,1-Dichloroethane	ug/L	**70**	N/A	N/A	70		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,1-Dichloroethylene	ug/L	**3.2**	N/A	N/A	3.2		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	trans-1,2-Dichloroethylene	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,2-Dichloropropane	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	cis-1,3-Dichloropropene	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,4-Dioxane	ug/L	**200**	N/A	N/A	50		50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
	trans-1,3-Dichloropropene	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Ethanol	ug/L	N/A	N/A	N/A	N/A		50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
	Ethyl Benzene	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Methyl tert-Butyl Ether (MTBE)	ug/L	**70**	48	N/A	20		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Methylene Chloride	ug/L	**4.6**	N/A	N/A	4.6		5.00	U^	5.00	U^	5.00	U^	5.00	U^	5.00	U^	5.00	U^
	1,1,2,2-Tetrachloroethane	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Tetrachloroethylene	ug/L	**5**	7.9	N/A	3.3		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Toluene	ug/L	N/A	N/A	N/A	N/A		1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	1,1,1-Trichloroethane	ug/L	**200**	N/A	N/A	200		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,1,2-Trichloroethane	ug/L	**5**	N/A	N/A	5		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Trichloroethylene	ug/L	**5**	N/A	N/A	5		2.00	U	2.00	U	2.00	U	**2.38**		2.00	U	**0.680**	
	Trichlorofluoromethane (Freon 11)	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Vinyl Chloride	ug/L	**2**	N/A	N/A	2		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	m/p Xylene	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	o-Xylene	ug/L	N/A	N/A	N/A	N/A		2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,2-Dibromoethane	ug/L	**0.05**	N/A	N/A	0.05		0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.019	U
SVOCs																				
	Benzo(a)anthracene	ug/L	1	**0.0091**	0.10	0.10		0.053	U^	**0.27**		0.050	U^	0.049	U^	0.051	U^	0.050	U^
	Benzo(a)pyrene	ug/L	1	**0.0091**	0.10	0.10		0.11	U^	**0.28**		0.10	U^	0.097	U^	0.10	U^	0.10	U^
	Benzo(b)fluoranthene	ug/L	1	**0.0091**	0.10	0.10		0.053	U^	**0.36**		0.050	U^	0.049	U^	0.051	U^	0.050	U^
	Benzo(k)fluoranthene	ug/L	**1**	0.0091	0.10	0.10		0.21	U	0.20	U	0.20	U	0.19	U	0.20	U	0.20	U
	Chrysene	ug/L	1	**0.0091**	0.10	0.10		0.21	U^	**0.23**		0.20	U^	0.19	U^	0.20	U^	0.20	U^
	Dibenz(a,h)anthracene	ug/L	**1**	0.0091	0.10	0.10		0.11	U	0.10	U	0.10	U	0.097	U	0.10	U	0.10	U
	Indeno(1,2,3-cd)pyrene	ug/L	1	**0.0091**	0.10	0.10		0.11	U^	**0.24**		0.10	U^	0.097	U^	0.10	U^	0.10	U^

Table 1
Summary of Analytical Results for Groundwater Samples -- November 2019
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester, and Stoneham Massachusetts

							Sample Location:		**BH-01**		**BH-02**		**171+88**		**173+14**		**217+00**	
							Sample Name:		BH-01 MW		BH-02 MW		171+88 MW		173+14 MW		217+00 MW	
							Sample Date:		11/14/2019		11/14/2019		11/13/2019		11/13/2019		11/15/2019	
							Nearby Waterbody:		Aberjona River - Woburn and Winchester				Sweetwater Brook - Stoneham					
			RGP for Freshwater[1]			**Required**												
Analysis	Analyte	Unit	**TBEL**	**WQBEL[2]**	**Compliance Level[3]**	**Minimum Level[4]**												
	Total Group I PAHs	ug/L	**1**	N/A	N/A	N/A	*ND*		***1.38***		*ND*		*ND*		*ND*		*ND*	
	Acenaphthene	ug/L	N/A	N/A	N/A	N/A	0.32	U	0.30	U	0.30	U	0.29	U	0.31	U	0.30	U
	Acenaphthylene	ug/L	N/A	N/A	N/A	N/A	0.32	U	0.30	U	0.30	U	0.29	U	0.31	U	0.30	U
	Anthracene	ug/L	N/A	N/A	N/A	N/A	0.21	U	0.20	U	0.20	U	0.19	U	0.20	U	0.20	U
	Benzo(g,h,i)perylene	ug/L	N/A	N/A	N/A	N/A	0.53	U	0.50	U	0.50	U	0.49	U	0.51	U	0.50	U
	Fluoranthene	ug/L	N/A	N/A	N/A	N/A	0.53	U	**0.57**		0.50	U	0.49	U	0.51	U	0.50	U
	Fluorene	ug/L	N/A	N/A	N/A	N/A	1.1	U	1.0	U	1.0	U	0.97	U	1.0	U	1.0	U
	Naphthalene	ug/L	**20**	N/A	N/A	20	1.1	U	1.0	U	1.0	U	0.97	U	1.0	U	1.0	U
	Phenanthrene	ug/L	N/A	N/A	N/A	N/A	0.053	U	**0.12**		0.050	U	0.049	U	0.051	U	0.050	U
	Pyrene	ug/L	N/A	N/A	N/A	N/A	1.1	U	1.0	U	1.0	U	0.97	U	1.0	U	1.0	U
	Total Group II PAHs	ug/L	**100**	N/A	N/A	N/A	*ND*		***0.69***		*ND*		*ND*		*ND*		*ND*	
	Bis(2-chloroethyl)ether	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Bis(2-chloroisopropyl)ether	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Bis(2-ethylhexyl)phthalate	ug/L	**101**	5.2	N/A	2.2	1.1	U	1.0	U	1.0	U	0.97	U	1.0	U	1.0	U
	4-Bromophenyl phenyl ether	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Butylbenzylphthalate	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2-Chloronaphthalene	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2-Chlorophenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Di-n-butylphthalate	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	1,2-Dichlorobenzene	ug/L	**600**	N/A	N/A	600	5.26	U	5.00	U	5.00	U	4.85	U	5.10	U	5.00	U
	1,3-Dichlorobenzene	ug/L	**320**	N/A	N/A	320	5.26	U	5.00	U	5.00	U	4.85	U	5.10	U	5.00	U
	1,4-Dichlorobenzene	ug/L	**5**	N/A	N/A	5	5.26	U^	5.00	U	5.00	U	4.85	U	5.10	U	5.00	U
	3,3'-Dichlorobenzidine	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2,4-Dichlorophenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Diethylphthalate	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2,4-Dimethylphenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Dimethylphthalate	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2,4-Dinitrophenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2,4-Dinitrotoluene	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2,6-Dinitrotoluene	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Di-n-octylphthalate	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	1,2-Diphenylhydrazine/Azobenzene	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Hexachlorobenzene	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Hexachlorobutadiene	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Hexachloroethane	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Isophorone	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2-Methylnaphthalene	ug/L	N/A	N/A	N/A	N/A	1.1	U	1.0	U	1.0	U	0.97	U	1.0	U	1.0	U
	o-cresol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	3/4-Methylphenol	ug/L	N/A	N/A	N/A	N/A	21.1	U	20.0	U	20.0	U	19.4	U	20.4	U	20.0	U
	Nitrobenzene	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	2-Nitrophenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	4-Nitrophenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Pentachlorophenol	ug/L	**1**	N/A	N/A	1	1.1	U^	1.0	U	1.0	U	0.97	U	1.0	U	1.0	U
	Phenol	ug/L	**1,080**	716	N/A	300	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	1,2,4-Trichlorobenzene	ug/L	N/A	N/A	N/A	N/A	5.26	U	5.00	U	5.00	U	4.85	U	5.10	U	5.00	U
	2,4,6-Trichlorophenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Total Phthalates	ug/L	**190**	N/A	N/A	N/A	*ND*		*ND*		*ND*		*ND*		*ND*		*ND*	
	4,6-Dinitro-2-methylphenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	4-Chloro-3-methylphenol	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U

Table 1
Summary of Analytical Results for Groundwater Samples -- November 2019
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester, and Stoneham Massachusetts

							Sample Location:		**BH-01**		**BH-02**		**171+88**		**173+14**		**217+00**	
							Sample Name:		BH-01 MW		BH-02 MW		171+88 MW		173+14 MW		217+00 MW	
							Sample Date:		11/14/2019		11/14/2019		11/13/2019		11/13/2019		11/15/2019	
							Nearby Waterbody:		Aberjona River - Woburn and Winchester				Sweetwater Brook - Stoneham					
			RGP for Freshwater[1]			**Required**												
Analysis	Analyte	Unit	**TBEL**	**WQBEL[2]**	**Compliance Level[3]**	**Minimum Level[4]**												
	N-Nitroso-di-n-propylamine	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	N-Nitrosodimethylamine	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	4-Chlorophenylphenyl ether	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Hexachlorocyclopentadiene	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	N-Nitrosodiphenylamine	ug/L	N/A	N/A	N/A	N/A	10.5	U	10.0	U	10.0	U	9.71	U	10.2	U	10.0	U
	Benzidine	ug/L	N/A	N/A	N/A	N/A	21.1	U	20.0	U	20.0	U	19.4	U	20.4	U	20.0	U
PCBs																		
	Aroclor-1016	ug/L	N/A	N/A	N/A	N/A	0.100	U	0.100	U	0.0985	U	0.100	U	0.100	U	0.0971	U
	Aroclor-1221	ug/L	N/A	N/A	N/A	N/A	0.100	U	0.100	U	0.0985	U	0.100	U	0.100	U	0.0971	U
	Aroclor-1232	ug/L	N/A	N/A	N/A	N/A	0.100	U	0.100	U	0.0985	U	0.100	U	0.100	U	0.0971	U
	Aroclor-1242	ug/L	N/A	N/A	N/A	N/A	0.100	U	0.100	U	0.0985	U	0.100	U	0.100	U	0.0971	U
	Aroclor-1248	ug/L	N/A	N/A	N/A	N/A	0.100	U	0.100	U	0.0985	U	0.100	U	0.100	U	0.0971	U
	Aroclor-1254	ug/L	N/A	N/A	N/A	N/A	0.100	U	0.100	U	0.0985	U	0.100	U	0.100	U	0.0971	U
	Aroclor-1260	ug/L	N/A	N/A	N/A	N/A	0.100	U	0.100	U	0.0985	U	0.100	U	0.100	U	0.0971	U
	Total PCBs	ug/L	**0.000064**	N/A	0.50	0.50	0.100	U^	0.100	U^	0.0985	U^	0.100	U^	0.100	U^	0.0971	U^
Metals, Total																		
	Antimony	ug/L	**206**	1,526	N/A	206	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Arsenic	ug/L	104	**10**	N/A	10	**5.4**		**58**		**14**		0.80	U	**3.1**		0.80	U
	Cadmium	ug/L	10.2	**1.1198**	N/A	0.25	**0.35**		**7.2**		**0.73**		0.20	U	**0.21**		**0.24**	
	Chromium	ug/L	N/A	N/A	N/A	N/A	**33**		**240**		**250**		**8.5**		**1.7**		**1.0**	
	Chromium (III)	ug/L	**323**	979.1	N/A	74	**33**		**240**		**250**		**8.5**		**1.7**		**1.0**	
	Chromium (VI)	ug/L	323	**27.3**	N/A	11	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
	Copper	ug/L	242	**105.3**	N/A	9	**29**		**250**		**140**		**11**		**6.6**		**3.7**	
	Iron	ug/L	5,000	**1,000**	N/A	1,000	**28,000**		**150,000**		**160,000**		**3,800**		**4,700**		**91**	
	Lead	ug/L	160	**82.91**	N/A	2.5	**21**		**340**		**41**		**2.5**		**0.52**		0.50	U
	Mercury	ug/L	**0.739**	2.16	N/A	0.77	0.10	U	**0.14**		0.10	U	0.10	U	0.10	U	0.10	U
	Nickel	ug/L	**1,450**	629.7	N/A	52	**20**		**180**		**140**		**5.4**		5.0	U	5.0	U
	Selenium	ug/L	**235.8**	11.9	N/A	5	5.0	U	**5.3**		5.0	U	5.0	U	5.0	U	5.0	U
	Silver	ug/L	**35.1**	244.0	N/A	3.2	0.20	U	**0.24**		**5.5**		0.20	U	0.20	U	0.20	U
	Zinc	ug/L	**420**	1,449.90	N/A	120	**99**		**1,700**		**300**		**36**		**37**		10	U
Metals, Dissolved																		
	Antimony	ug/L	**206**	1,526	N/A	206	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Arsenic	ug/L	104	**10**	N/A	10	**0.86**		**6.7**		**1.1**		0.80	U	0.80	U	0.80	U
	Cadmium	ug/L	10.2	**1.1198**	N/A	0.25	0.20	U	**0.43**		0.20	U	0.20	U	0.20	U	**0.21**	
	Copper	ug/L	242	**105.3**	N/A	9	**2.6**		**38**		**15**		**12**		**2.9**		**4.7**	
	Iron	ug/L	5,000	**1,000**	N/A	1000	**1,500**		**12,000**		**3,000**		**660**		**4,700**		50	U
	Lead	ug/L	160	**82.91**	N/A	2.5	**0.55**		**31**		**1.3**		0.50	U	0.50	U	0.50	U
	Mercury	ug/L	**0.739**	2.16	N/A	0.77	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
	Nickel	ug/L	**1,450**	629.7	N/A	52	5.0	U	**16**		**16**		5.0	U	5.0	U	5.3	
	Selenium	ug/L	**235.8**	11.9	N/A	5	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Silver	ug/L	**35.1**	244.0	N/A	3.2	0.20	U	0.20	U	**0.52**		0.20	U	0.20	U	0.20	U
	Zinc	ug/L	**420**	1,449.90	N/A	120	10	U	**110**		**14**		10	U	**10**		10	U
General Chemistry																		
	Total Hardness as CaCO3	mg/L	N/A	N/A	N/A	N/A	**130**		**1,400**		**410**		**200**		**82**		**170**	
	Chloride	mg/L	N/A	N/A	N/A	0.23	**200**		**260**		**1,600**		**700**		**280**		**330**	
	Chlorine, Total Residual	mg/L	0.2	**0.026**	0.05	0.05	**0.22**		0.10	U^	0.40	U^	**0.042**		0.10	U^	**0.030**	
	Total Suspended Solids (TSS)	mg/L	**30**	N/A	N/A	30	**3,000**		**3,400**		**8,200**		**350**		**44**		**7.0**	
	Silica Gel Treated HEM (SGT-HEM)	mg/L	**5**	N/A	N/A	5	2.8	U	5.6	U^	2.8	U	2.8	U	2.8	U	2.8	U

Table 1
Summary of Analytical Results for Groundwater Samples -- November 2019
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester, and Stoneham Massachusetts

						Sample Location:	**8+12**		**BH-01**		**BH-02**		**171+88**		**173+14**		**217+00**	
						Sample Name:	8+12 MW		BH-01 MW		BH-02 MW		171+88 MW		173+14 MW		217+00 MW	
						Sample Date:	11/13/2019		11/14/2019		11/14/2019		11/13/2019		11/13/2019		11/15/2019	
						Nearby Waterbody:	Horn Pond Brook - Woburn		Aberjona River - Woburn and Winchester				Sweetwater Brook - Stoneham					
			RGP for Freshwater[1]			**Required Minimum Level[4]**													
Analysis	Analyte	Unit	**TBEL**	**WQBEL[2]**	**Compliance Level[3]**														
	Ammoniaas N	mg/L	N/A	N/A	N/A	0.1	**0.416**		**0.369**		**0.204**		**0.047**		**0.430**		**0.136**	
	Cyanide	mg/L	**178**	0.0124	N/A	0.0052	0.005	U	0.005	U	**0.002**		0.005	U	0.005	U	0.005	U
	pH	su	**6.5-8.3**	6.5-8.3	N/A	N/A	**8.20**		**7.07**		**7.12**		**6.91**		**7.31**		**7.30**	
	Temperature	°C	N/A	N/A	N/A	N/A	**6.2**		**8.1**		**7.9**		**9.4**		**9.7**		**15.1**	
						Groundwater Classification	**B/C**		**B/C**		**A**		**A**		**A**		**A**	

Notes:

mg/L - milligrams per liter.

ug/L - micrograms per liter.

su - Standard unit.

NA - Sample not analyzed for the listed analyte.

N/A - Not available/available.

ND - Not detected.

Values in **bold** indicate the analyte was detected.

Values shown in bold and shaded black exceed the applicable bolded and underlined RGP Effluent Limits

^ - Quantitation limit value exceeds the applicable RGP Effluent Limits (bolded and underlined).

RC - Reportable Concentration.

RGP - EPA Remediation General Permit, Effluent Limits.

TBEL - Technology-Based Effluent Limitation.

WQBEL - Water Quality-Based Effluent Limitation.

VOCs - Volatile Organic Compounds.

SVOCs - Semivolatile Organic Compounds.

PCBs - Polychlorinated Biphenyls.

The above standards apply to discharge to freshwater receiving waters. The RGP contains separate discharge standards for discharges to saltwater receiving waters.

[1] RGP for Freshwater standards are an average monthly discharge limitation in Massachusetts only.

[2] The WQBEL standards are shown with dilution factors (DFs) applied. The DFs are determined during the permit application process and are dependent upon the flow rate and water hardness of the receiving body. Once DFs are applied to the WQBEL, the more stringent of the two standards (TBEL or adjusted WQBEL) will apply.

[3] The compliance level is a discharge standard for analytes with detection limits above the RGP discharge standard.

[4] Additional Resource for Selecting Sufficiently Sensitive Test Methods for RGP Notice of Intent (NOI) Sampling Requirements, Table 1.

Groundwater Classification Categories

Type A Groundwater - Non-Hazardous Beneficial Reuse: Groundwater/wastewater that is characterized as non-hazardous waste and non-TSCA regulated (PCBs < 0.5 parts per billion [ppb]) and is acceptable for beneficial reuse/recycling at a properly licensed facility, per 40 CFR 761.79 (b)(l)(ii).

Type B Groundwater - Non-Hazardous Wastewater Treatment Facility: Groundwater/wastewater that is characterized as non-hazardous waste and non-TSCA regulated (PCBs < 0.5 ppb) and is acceptable at a properly licensed wastewater treatment facility, per 40 CFR 761.79 (b)(l)(ii).

Type C Groundwater - Non-Hazardous Groundwater Treatment and Discharge: Groundwater that is characterized as non-hazardous waste and non-TSCA regulated (PCBs < 0.5 ppb) and is acceptable for on-site or off-site discharge under EPA RGP or Construction Dewatering Permit, per 40 CFR 761.79 (b)(l)(ii).

Table 2
Summary of Analytical Results for Surface Water Sample - November 2019
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester and Stoneham, Massachusetts

		Sample Location:	JB-05 Outfall	
		Sample Name:	JB-05 Outfall	
		Sample Date:	11/14/2019	
Analysis	Analyte	Unit		
Metals, total				
	Antimony	ug/L	1.0	U
	Arsenic	ug/L	**14**	
	Cadmium	ug/L	0.20	U
	Chromium	ug/L	**6.3**	
	Copper	ug/L	**6.6**	
	Iron	ug/L	**3,200**	
	Lead	ug/L	**3.0**	
	Mercury	ug/L	0.10	U
	Nickel	ug/L	5.0	U
	Selenium	ug/L	5.0	U
	Silver	ug/L	0.20	U
	Zinc	ug/L	**66**	
General Chemistry				
	Ammonia	ug/L	**1,390**	
	Total Hardness as CaCO3	ug/L	**160,000**	
	pH*	su	**7.86**	
	Temperature*	°F	**42.3**	

Notes:

ug/L - micrograms per liter.

su - Standard unit.

U - Analyte was not detected at specified quantitation limit.

Values in **bold** indicate the analyte was detected.

* - data collected in-situ using hand held meter.

Table 3
Summary of Analytical Results for Groundwater Samples -- 2016 through 2018
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester, and Stoneham Massachusetts

Analysis	Analyte	RGP for Freshwater[1] TBEL	RGP for Freshwater[1] WQBEL[2]	RGP for Freshwater[1] Compliance Level[3]	RGP Required Minimum Level[4]	Sample Location:	8+12.2		8+92.8		70+15.5	70+70.3		79+75	99+66.4		100+63.15	BH-01	BH-02	171+88	173+14	215+36	217+00
						Sample Name:	8+24 MW	8+12.2 MW	08 + 90	8+92.8 MW	70+6 MW	70 + 45	70+70.3 MW	MW-79+75	99 + 79	99 + 66.4 MW	100 + 50 MW	BH-01-MW	BH-02-MW	171+88 MW	173+14 MW	215+36 MW	217+00 MW
						Sample Date:	11/15/2016	7/7/2017	1/7/2016	11/15/2016	11/16/2016	1/7/2016	11/16/2016	6/25/2018	1/7/2016	11/17/2016	11/17/2016	2/1/2018	2/1/2018	6/28/2017	6/28/2017	6/29/2017	6/29/2017
						Nearby Waterbody:	Horn Pond Brook - Woburn				Aberjona River - Woburn and Winchester									Sweetwater Brook - Stoneham			
VOCs (ug/L)	Acetone	**7,970**	N/A	N/A	7,970	10 U	50 U	10 U	10 U	10 U	50 U	10 U	5 U	10 U	10 U	10 U	50 U	50 U	50 U	50 U	50 U	50 U
	tert-Amyl Methyl Ether (TAME)	**90**	N/A	N/A	90	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	2.5 U	0.50 U	2 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
	Benzene	**5**	N/A	N/A	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	**0.13 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Bromobenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	Bromochloromethane	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	Bromodichloromethane	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	Bromoform	N/A	N/A	N/A	N/A	2.0 U	NA	1.0 U	2.0 U	2.0 U	5.0 U	2.0 U	2 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	Bromomethane	N/A	N/A	N/A	N/A	5.0 U	NA	5.0 U	5.0 U	5.0 U	25 U	5.0 U	1 U	5.0 U	5.0 U	5.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	2-Butanone (MEK)	N/A	N/A	N/A	N/A	10 U	NA	10 U	10 U	10 U	50 U	10 U	5 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA
	n-Butylbenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	sec-Butylbenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	tert-Butylbenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	tert-Butyl Ethyl Ether (TBEE)	N/A	N/A	N/A	N/A	0.50 U	NA	0.50 U	0.50 U	0.50 U	2.5 U	0.50 U	NA	0.50 U	0.50 U	0.50 U	NA	NA	NA	NA	NA	NA
	Carbon Disulfide	N/A	N/A	N/A	N/A	5.0 U	NA	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5 U	5.0 U	5.0 U	5.0 U	NA	NA	NA	NA	NA	NA
	Carbon Tetrachloride	**4.4**	3.8	N/A	1.6	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U^	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	Chlorobenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	Chlorodibromomethane	N/A	N/A	N/A	N/A	2.0 U	NA	0.50 U	2.0 U	2.0 U	2.5 U	2.0 U	0.5 U	0.50 U	2.0 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	Chloroethane	N/A	N/A	N/A	N/A	2.0 U	NA	2.0 U	2.0 U	2.0 U	10 U	2.0 U	1 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	Chloroform	N/A	N/A	N/A	N/A	2.0 U	NA	2.0 U	2.0 U	2.0 U	10 U	2.0 U	0.75 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	Chloromethane	N/A	N/A	N/A	N/A	2.0 U	NA	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	2-Chlorotoluene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	4-Chlorotoluene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	1,2-Dibromo-3-chloropropane (DBCP)	N/A	N/A	N/A	N/A	5.0 U	NA	2.0 U	5.0 U	5.0 U	10 U	5.0 U	2.5 U	2.0 U	5.0 U	5.0 U	NA	NA	NA	NA	NA	NA
	1,2-Dibromoethane (EDB)	**0.05**	N/A	N/A	0.05	0.021 U	NA	0.020 U	0.021 U	0.021 U	0.020 U	0.021 U	0.011 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	0.021 U	0.021 U
	Dibromomethane	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	1,2-Dichlorobenzene	**600**	N/A	N/A	600	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	1,3-Dichlorobenzene	**320**	N/A	N/A	320	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	1,4-Dichlorobenzene	**5**	N/A	N/A	5	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	Dichlorodifluoromethane (Freon 12)	N/A	N/A	N/A	N/A	2.0 U	NA	2.0 U	2.0 U	2.0 U	10 U	2.0 U	5 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA	NA	NA
	1,1-Dichloroethane	**70**	N/A	N/A	70	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.75 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**3.5**	**0.40 J**
	1,2-Dichloroethane	**5**	N/A	N/A	5	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	1,1-Dichloroethylene	**3.2**	N/A	N/A	3.2	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U^	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	cis-1,2-Dichloroethylene	**70**	N/A	N/A	70	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.3**	**0.50 J**
	trans-1,2-Dichloroethylene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	1,2-Dichloropropane	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.8 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	1,3-Dichloropropane	N/A	N/A	N/A	N/A	0.50 U	NA	0.50 U	0.50 U	0.50 U	2.5 U	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	NA	NA	NA	NA	NA	NA
	2,2-Dichloropropane	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	1,1-Dichloropropene	N/A	N/A	N/A	N/A	0.50 U	NA	0.50 U	0.50 U	0.50 U	2.5 U	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	NA	NA	NA	NA	NA	NA
	cis-1,3-Dichloropropene	N/A	N/A	N/A	N/A	0.40 U	NA	0.40 U	0.40 U	0.40 U	2.0 U	0.40 U	0.5 U	0.40 U	0.40 U	0.40 U	2.0 U	2.0 U	NA	NA	NA	NA
	trans-1,3-Dichloropropene	N/A	N/A	N/A	N/A	0.40 U	NA	0.40 U	0.40 U	0.40 U	2.0 U	0.40 U	0.5 U	0.40 U	0.40 U	0.40 U	2.0 U	2.0 U	NA	NA	NA	NA
	Diethyl Ether	N/A	N/A	N/A	N/A	2.0 U	NA	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.5 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA	NA	NA
	Diisopropyl Ether (DIPE)	N/A	N/A	N/A	N/A	0.50 U	NA	0.50 U	0.50 U	0.50 U	2.5 U	0.50 U	NA	0.50 U	0.50 U	0.50 U	NA	NA	NA	NA	NA	NA
	1,4-Dioxane	**200**	N/A	N/A	50	2.0 U	50 U	2.0 U	2.0 U	50 U	2.0 U	50 U	3 U	2.0 U	2.0 U	2.0 U	50 U	50 U	50 U	50 U	50 U	50 U
	Ethylbenzene	N/A	N/A	N/A	N/A	1.0 U	**0.13 J**	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	**2.1**	**0.24 J**	2.0 U	2.0 U	2.0 U	2.0 U
	Hexachlorobutadiene	N/A	N/A	N/A	N/A	0.60 U	NA	0.50 U	0.60 U	0.60 U	2.5 U	0.60 U	0.5 U	0.50 U	0.60 U	0.60 U	NA	NA	NA	NA	NA	NA
	2-Hexanone (MBK)	N/A	N/A	N/A	N/A	10 U	NA	10 U	10 U	10 U	50 U	10 U	5 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA
	Isopropylbenzene (Cumene)	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	p-Isopropyltoluene (p-Cymene)	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	Methyl tert-Butyl Ether (MTBE)	**70**	48	N/A	20	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.38 J**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	Methylene Chloride	**4.6**	N/A	N/A	4.6	5.0 U^	5.0 U^	5.0 U^	5.0 U^	5.0 U^	25 U^	5.0 U^	3 U	5.0 U^	5.0 U^	5.0 U^	5.0 U^	5.0 U^	5.0 U^	5.0 U^	5.0 U^	5.0 U^
	4-Methyl-2-pentanone (MIBK)	N/A	N/A	N/A	N/A	10 U	NA	10 U	10 U	10 U	50 U	10 U	5 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA
	Naphthalene	**20**	N/A	N/A	20	5.0 U	NA	2.0 U	5.0 U	5.0 U	10 U	5.0 U	2.5 U	2.0 U	5.0 U	5.0 U	NA	NA	NA	NA	NA	NA
	n-Propylbenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	Styrene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	1,1,1,2-Tetrachloroethane	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	1,1,2,2-Tetrachloroethane	N/A	N/A	N/A	N/A	0.50 U	NA	0.50 U	0.50 U	0.50 U	2.5 U	0.50 U	0.5 U	0.50 U	0.50 U	0.50 U	2.0 U	2.0 U	NA	NA	NA	NA
	Tetrachloroethylene	**5**	7.9	N/A	3.3	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**0.63 J**	2.0 U
	Tetrahydrofuran	N/A	N/A	N/A	N/A	2.0 U	NA	2.0 U	2.0 U	2.0 U	10 U	2.0 U	5 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA	NA	NA
	Toluene	N/A	N/A	N/A	N/A	1.0 U	**0.21 J**	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.75 U	1.0 U	1.0 U	1.0 U	**0.19 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,2,3-Trichlorobenzene	N/A	N/A	N/A	N/A	5.0 U	NA	2.0 U	5.0 U	5.0 U	10 U	5.0 U	2.5 U	2.0 U	5.0 U	5.0 U	NA	NA	NA	NA	NA	NA
	1,2,4-Trichlorobenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	1,1,1-Trichloroethane	**200**	N/A	N/A	200	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**0.41 J**	2.0 U
	1,1,2-Trichloroethane	**5**	N/A	N/A	5	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.75 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	Trichloroethylene	**5**	N/A	N/A	5	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	0.5 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	**1.0 J**	2.0 U	**0.32 J**	**0.54 J**
	Trichlorofluoromethane (Freon 11)	N/A	N/A	N/A	N/A	2.0 U	NA	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.5 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA
	1,2,3-Trichloropropane	N/A	N/A	N/A	N/A	2.0 U	NA	2.0 U	2.0 U	2.0 U	10 U	2.0 U	5 U	2.0 U	2.0 U	2.0 U	NA	NA	NA	NA	NA	NA
	1,2,4-Trimethylbenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	1,3,5-Trimethylbenzene	N/A	N/A	N/A	N/A	1.0 U	NA	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	2.5 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA
	Vinyl Chloride	**2**	N/A	N/A	2	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U^	2.0 U	1 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	m+p Xylene	N/A	N/A	N/A	N/A	2.0 U	**0.49 J**	2.0 U	2.0 U	2.0 U	10 U	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	**0.85 J**	**0.26 J**	2.0 U	2.0 U	2.0 U	2.0 U

Table 3
Summary of Analytical Results for Groundwater Samples -- 2016 through 2018
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester, and Stoneham Massachusetts

Analysis	Analyte	RGP for Freshwater[1] TBEL	RGP for Freshwater[1] WQBEL[2]	RGP for Freshwater[1] Compliance Level[3]	RGP Required Minimum Level[4]	Sample Location:	8+12.2		8+92.8		70+15.5	70+70.3		79+75	99+66.4		100+63.15	BH-01	BH-02	171+88	173+14	215+36	217+00
						Sample Name:	8+24 MW	8+12.2 MW	08 + 90	8+92.8 MW	70+6 MW	70 + 45	70+70.3 MW	MW-79+75	99 + 79	99 + 66.4 MW	100 + 50 MW	BH-01-MW	BH-02-MW	171+88 MW	173+14 MW	215+36 MW	217+00 MW
						Sample Date:	11/15/2016	7/7/2017	1/7/2016	11/15/2016	11/16/2016	1/7/2016	11/16/2016	6/25/2018	1/7/2016	11/17/2016	11/17/2016	2/1/2018	2/1/2018	6/28/2017	6/28/2017	6/29/2017	6/29/2017
						Nearby Waterbody:	Horn Pond Brook - Woburn				Aberjona River - Woburn and Winchester									Sweetwater Brook - Stoneham			
	o-Xylene	N/A	N/A	N/A	N/A		1.0 U	**0.16 J**	1.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1 U	1.0 U	1.0 U	1.0 U	**0.14 J**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	tert-Butyl Alcohol (TBA)	**120**	N/A	N/A	120		NA	20 U	NA	NA	NA	NA	NA	10 U	NA	NA	NA	**19 J**	20 U	20 U	20 U	20 U	20 U
	Acrylonitrile	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Vinyl acetate	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1,4-Dichlorobutane	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	trans-1,4-Dichloro-2-butene	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	2.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Xylenes, Total	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1,2-Dichloroethene, Total	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1,3-Dichloropropene, Total	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Ethyl methacrylate	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Total BTEX	**100**	N/A	N/A	N/A		*ND*	***0.99 J***	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	***3.41 J***	***0.50 J***	*ND*	*ND*	*ND*	*ND*
SVOCs																							
(ug/L)	Benzo(a)anthracene	1	**0.0091**	0.10	1		**0.078**	NA	0.050 U^	**0.091**	0.050 U^	0.050 U^	0.050 U^	0.1 U^	**0.51**	0.050 U^	0.050 U^	**0.14**	0.051 U^	0.049 U^	0.050 U^	0.050 U^	0.045 U^
	Benzo(a)pyrene	1	**0.0091**	0.10	1		0.10 U^	NA	0.10 U^	0.10 U^	0.10 U^	0.10 U^	0.10 U^	0.1 U^	**0.50**	0.10 U^	0.10 U^	**0.13**	0.10 U^	0.098 U^	0.10 U^	0.10 U^	0.091 U^
	Benzo(b)fluoranthene	1	**0.0091**	0.10	1		**0.14**	NA	**0.070**	**0.25**	**0.058**	0.050 U^	0.050 U^	0.1 U^	**1.3**	0.050 U^	**0.064**	**0.17**	0.051 U^	0.049 U^	0.050 U^	0.050 U^	0.045 U^
	Benzo(k)fluoranthene	1	**0.0091**	0.10	1		0.20 U^	NA	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.1 U^	**0.43**	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.18 U^
	Chrysene	1	**0.0091**	0.10	1		0.20 U^	NA	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.1 U^	**1.1**	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.18 U^
	Dibenz(a,h)anthracene	**1**	0.0091	0.10	1		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.1 U	0.40 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.18 U
	Indeno(1,2,3-cd)pyrene	1	**0.0091**	0.10	1		0.20 U^	NA	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.1 U^	**0.75**	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.18 U^
	Total Group I PAHs	**1**	N/A	N/A	1		***0.218***	*NA*	***0.070***	***0.341***	***0.058***	*ND*	*ND*	*ND*	***4.59***	*ND*	***0.064***	***0.44***	*ND*	*ND*	*ND*	*ND*	*ND*
	Acenaphthene	N/A	N/A	N/A	N/A		**0.53**	NA	0.30 U	0.30 U	**0.36**	7.5 U	0.30 U	0.1 U	0.60 U	0.30 U	0.30 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Acenaphthylene	N/A	N/A	N/A	N/A		0.30 U	NA	0.30 U	0.30 U	0.30 U	7.5 U	0 U	0.1 U	0.60 U	0.30 U	0.30 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Anthracene	N/A	N/A	N/A	N/A		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.1 U	0.40 U	0.20 U	0.20 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Benzo(g,h,i)perylene	N/A	N/A	N/A	N/A		0.50 U	NA	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.1 U	1.0 U	0.50 U	0.50 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Fluoranthene	N/A	N/A	N/A	N/A		0.50 U	NA	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.1 U	**2.0**	0.50 U	0.50 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Fluorene	N/A	N/A	N/A	N/A		1.0 U	NA	1.0 U	1.0 U	1.0 U	25 U	1.0 U	0.1 U	2.0 U	1.0 U	1.0 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Naphthalene	**20**	N/A	N/A	20		**1.3**	NA	1.0 U	1.0 U	1.0 U	25 U^	1.0 U	0.1 U	2.0 U	1.0 U	1.0 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Phenanthrene	N/A	N/A	N/A	N/A		**0.21**	NA	**0.077**	**0.28**	**0.18**	**0.19**	0.050 U	**0.12**	**1.2**	**0.073**	0.050 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Pyrene	N/A	N/A	N/A	N/A		1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.1 U	2.0 U	1.0 U	1.0 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	Total Group II PAHs	**100**	N/A	N/A	100		***2.04***	*NA*	***0.077***	***0.280***	***0.540***	***0.190***	*ND*	***0.12***	***3.20***	***0.073***	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
	Acetophenone	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	NA	20 U	10 U	10 U	NA	NA	NA	NA	NA	NA
	Aniline	N/A	N/A	N/A	N/A		5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.9 U	10 U	5.0 U	5.0 U	NA	NA	NA	NA	NA	NA
	Bis(2-chloroethoxy)methane	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	NA	NA	NA	NA	NA	NA
	Bis(2-chloroethyl)ether	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	1.9 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Bis(2-chloroisopropyl)ether	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	1.9 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Bis(2-Ethylhexyl)phthalate	**101**	5.2	N/A	2.2		10 U	NA	2.0 U	6.0 U	6.0 U	**6.4**	6.0 U	2.9 U	4.0 U	6.0 U	**11**	**0.25 J**	**0.84 J**	**0.23 J**	**0.18 J**	**0.28 J**	**0.25 J**
	4-Bromophenylphenylether	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	1.9 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Butylbenzylphthalate	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	4-Chloroaniline	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	NA	NA	NA	NA	NA	NA
	2-Chloronaphthalene	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	0.19 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	2-Chlorophenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	1.9 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Dibenzofuran	N/A	N/A	N/A	N/A		5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.9 U	10 U	5.0 U	5.0 U	NA	NA	NA	NA	NA	NA
	Di-n-butylphthalate	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	1,2-Dichlorobenzene	**600**	N/A	N/A	600		5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.9 U	10 U	5.0 U	5.0 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	1,3-Dichlorobenzene	**320**	N/A	N/A	320		5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.9 U	10 U	5.0 U	5.0 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	1,4-Dichlorobenzene	**5**	N/A	N/A	5		5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.9 U	10 U^	5.0 U	5.0 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	3,3-Dichlorobenzidine	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	2,4-Dichlorophenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Diethylphthalate	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	2,4-Dimethylphenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Dimethylphthalate	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	2,4-Dinitrophenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	19 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	2,4-Dinitrotoluene	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	2,6-Dinitrotoluene	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Di-n-octylphthalate	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	1,2-Diphenylhydrazine (as Azobenzene)	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	NA	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Hexachlorobenzene	N/A	N/A	N/A	N/A		10 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.77 U	4.0 U	2.0 U	2.0 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Hexachlorobutadiene	N/A	N/A	N/A	N/A		10 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.48 U	4.0 U	2.0 U	2.0 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Hexachloroethane	N/A	N/A	N/A	N/A		10 U	NA	2.0 U	8.0 U	8.0 U	2.0 U	8.0 U	0.77 U	4.0 U	8.0 U	8.0 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Isophorone	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	2-Methylnaphthalene	N/A	N/A	N/A	N/A		1.0 U	NA	1.0 U	1.0 U	1.0 U	25 U	1.0 U	0.1 U	2.0 U	1.0 U	1.0 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	2-Methylphenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	3/4-Methylphenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Nitrobenzene	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	1.9 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	2-Nitrophenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	9.6 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	4-Nitrophenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	9.6 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Pentachlorophenol	**1**	N/A	N/A	1		10 U^	NA	5.0 U^	5.0 U^	5.0 U^	5.0 U^	5.0 U^	4.8 U^	10 U^	5.0 U^	5.0 U^	1.0 U	1.0 U	0.98 U	1.0 U	1.0 U	0.91 U
	Phenol	**1,080**	716	N/A	300		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	1,2,4-Trichlorobenzene	N/A	N/A	N/A	N/A		5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	4.8 U	10 U	5.0 U	5.0 U	4.7 U	4.6 U	4.9 U	5.0 U	5.0 U	4.5 U
	2,4,5-Trichlorophenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	NA	NA	NA	NA	NA	NA
	2,4,6-Trichlorophenol	N/A	N/A	N/A	N/A		10 U	NA	10 U	10 U	10 U	10 U	10 U	4.8 U	20 U	10 U	10 U	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U

Table 3
Summary of Analytical Results for Groundwater Samples -- 2016 through 2018
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester, and Stoneham Massachusetts

Analysis	Analyte	RGP for Freshwater[1] TBEL	RGP for Freshwater[1] WQBEL[2]	RGP for Freshwater[1] Compliance Level[3]	RGP Required Minimum Level[4]	Sample Location:	8+12.2		8+92.8		70+15.5	70+70.3		79+75	99+66.4		100+63.15	BH-01	BH-02	171+88	173+14	215+36	217+00
						Sample Name:	8+24 MW	8+12.2 MW	08 + 90	8+92.8 MW	70+6 MW	70 + 45	70+70.3 MW	MW-79+75	99 + 79	99 + 66.4 MW	100 + 50 MW	BH-01-MW	BH-02-MW	171+88 MW	173+14 MW	215+36 MW	217+00 MW
						Sample Date:	11/15/2016	7/7/2017	1/7/2016	11/15/2016	11/16/2016	1/7/2016	11/16/2016	6/25/2018	1/7/2016	11/17/2016	11/17/2016	2/1/2018	2/1/2018	6/28/2017	6/28/2017	6/29/2017	6/29/2017
						Nearby Waterbody:	Horn Pond Brook - Woburn				Aberjona River - Woburn and Winchester									Sweetwater Brook - Stoneham			
	Total Phthalates	**190**	N/A	N/A	N/A		*ND*	*NA*	*ND*	*ND*	*ND*	***6.4***	*ND*	*ND*	*ND*	*ND*	***11***	***0.25 J***	***0.84 J***	***0.23 J***	***0.18 J***	***0.28 J***	***0.25 J***
	4,6-Dinitro-2-methylphenol	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	9.6 U	NA	NA	NA	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	4-Chloro-3-methylphenol	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1.9 U	NA	NA	NA	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	N-Nitrosodi-n-propylamine	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	4.8 U	NA	NA	NA	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	N-Nitrosodimethylamine	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1.9 U	NA	NA	NA	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	4-Chlorophenylphenylether	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1.9 U	NA	NA	NA	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Hexachlorocyclopentadiene	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	19 U	NA	NA	NA	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	N-Nitrosodiphenylamine	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1.9 U	NA	NA	NA	9.4 U	9.2 U	9.8 U	10 U	10 U	9.1 U
	Benzidine	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	19 U	NA	NA	NA	19 U	18 U	20 U	20 U	20 U	18 U
	4-Nitroaniline	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Benzyl Alcohol	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Azobenzene	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Pyridine	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	3.4 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Benzoic Acid	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	48 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Carbazole	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2-Nitroaniline	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1-Methylnaphthalene	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Biphenyl	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3-Nitroaniline	N/A	N/A	N/A	N/A		NA	NA	NA	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																							
(ug/L)	Aroclor-1016	N/A	N/A	N/A	N/A		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.25 U	0.18 U	0.20 U	0.20 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Aroclor-1221	N/A	N/A	N/A	N/A		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.25 U	0.18 U	0.20 U	0.20 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Aroclor-1232	N/A	N/A	N/A	N/A		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.25 U	0.18 U	0.20 U	0.20 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Aroclor-1242	N/A	N/A	N/A	N/A		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.25 U	0.18 U	0.20 U	0.20 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Aroclor-1248	N/A	N/A	N/A	N/A		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.25 U	0.18 U	0.20 U	0.20 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Aroclor-1254	N/A	N/A	N/A	N/A		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.25 U	0.18 U	0.20 U	0.20 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Aroclor-1260	N/A	N/A	N/A	N/A		0.20 U	NA	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.18 U	0.20 U	0.20 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
	Aroclor-1262	N/A	N/A	N/A	N/A		NA	NA	NA	NA	0.20 U	NA	0.20 U	NA	NA	0.20 U	0.20 U	NA	NA	NA	NA	NA	NA
	Aroclor-1268	N/A	N/A	N/A	N/A		NA	NA	NA	NA	0.20 U	NA	0.20 U	NA	NA	0.20 U	0.20 U	NA	NA	NA	NA	NA	NA
	Total PCBs	**0.000064**	N/A	0.50	0.50		0.20 U^	NA	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.20 U^	0.25 U^	0.18 U^	0.20 U^	0.20 U^	0.10 U^	0.10 U^	0.10 U^	0.10 U^	0.10 U^	0.10 U^
Metals, total																							
(ug/L)	Antimony	**206**	1,526	N/A	206		5.0 U	1.0 U	**1.7**	5.0 U	1.0 U	1.0 U	1.0 U	**5.4**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Arsenic	104	**10**	N/A	10		**36**	1.0 U	**1.9**	2.0 U	**3.6**	**7.6**	**1.7**	**47.25**	**11**	**17**	**5.0**	**2.9**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Cadmium	10.2	**1.1198**	N/A	0.25		2.5 U^	0.20 U	0.50 U	2.5 U^	0.50 U	0.50 U	0.50 U	**3.38**	0.50 U	0.50 U	**0.84**	0.20 U	0.20 U	**0.31**	0.20 U	0.20 U	**0.39**
	Chromium (total)	N/A	N/A	N/A	N/A		**230**	10 U	**54**	5.0 U	**20**	**77**	**2.5**	**164.2**	**29**	**1.1**	**24**	10 U	10 U	10 U	10 U	10 U	10 U
	Chromium (III)	**323**	979.1	N/A	74		**230**	10 U	**54**	10 U	**20**	**77**	10 U	**164**	**29**	10 U	**24**	ND	ND	10 U	10 U	10 U	10 U
	Chromium (VI)	323	**27.3**	N/A	11		4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	10 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	Copper	242	**105.3**	N/A	9		**300**	**2.8**	**55**	25 U	**14**	**43**	5.0 U	**210.9**	**44**	5.0 U	**26**	**3.4**	**8.9**	**1.1**	1.0 U	1.0 U	1.0 U
	Iron	5,000	**1,000**	N/A	1,000		**240,000**	**4,800**	**7,500**	**5,600**	**5,600**	**12,000**	**3,100**	**26,000**	**5,800**	**9,000**	**27,000**	**11,000**	**120**	**150**	**3,100**	50 U	**370**
	Lead	160	**82.91**	N/A	2.5		**98**	0.50 U	**17**	5.0 U	**6.2**	**18**	1.0 U	**63.24**	**21**	1.0 U	**11**	**1.1**	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
	Mercury	**0.739**	2.16	N/A	0.77		**0.15**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U
	Nickel	**1,450**	629.7	N/A	52		**150**	5.0 U	**25**	25 U	**7.6**	**26**	5.0 U	**146**	**20**	5.0 U	**19**	5.0 U	**5.4**	5.0 U	5.0 U	5.0 U	**5.2**
	Selenium	**235.8**	11.9	N/A	5		25 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	5.0 U	**58.59**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**1.7 J**	5.0 U
	Silver	**35.1**	244.0	N/A	3.2		2.5 U	0.20 U	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.4 U	0.50 U	0.50 U	0.50 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Zinc	**420**	1,449.90	N/A	120		**450**	20 U	**81**	50 U	**22**	**58**	10 U	**522.6**	**120**	**10**	**130**	20 U	20 U	**120**	20 U	20 U	20 U
Metals, dissolved																							
(ug/L)	Antimony	**206**	1,526	N/A	206		5.0 U	1.0 U	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	4 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Arsenic	104	**10**	N/A	10		**4.5**	**1.2**	0.40 U	**2.0**	0.40 U	**5.1**	**1.4**	1 U	**3.1**	**17**	**0.80**	**2.3**	1.0 U	1.0 U	**1.0**	1.0 U	1.0 U
	Cadmium	10.2	**1.1198**	N/A	0.25		2.5 U	0.20 U	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.2 U	0.50 U	0.50 U	**0.62**	0.20 U	0.20 U	**0.33**	0.20 U	0.20 U	**0.42**
	Chromium (total)	N/A	N/A	N/A	N/A		**9.6**	NA	**1.5**	5.0 U	**1.7**	**15**	**1.6**	1 U	**4.8**	1.0 U	**2.0**	10 U	10 U	10 U	10 U	10 U	10 U
	Chromium (III)	**323**	979.1	N/A	74		NA	NA	NA	NA	NA	NA	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Chromium (VI)	323	**27.3**	N/A	11		NA	NA	NA	NA	4.0 U	NA	4.0 U	10 U	NA	4.0 U	4.0 U	NA	NA	NA	NA	NA	NA
	Copper	242	**105.3**	N/A	9		25 U	1.0 U	**36**	25 U	5.0 U	**180**	5.0 U	1 U	**26**	5.0 U	**6.3**	**3.2**	**8.5**	**1.2**	1.0 U	**1.1**	**1.1**
	Iron	5,000	**1,000**	N/A	1,000		**6,600**	**4,400**	50 U	**51**	**560**	4,200 U^	**2,300**	50 U	**1,800**	**9,000**	**720**	**11,000**	50 U	**120**	**2,700**	50 U	**290**
	Lead	160	**82.91**	N/A	2.5		5.0 U	0.50 U	**17**	5.0 U	1.0 U	**100**	1.0 U	1.0 U	**11**	1.0 U	1.0 U	**0.61**	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U
	Mercury	**0.739**	2.16	N/A	0.77		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U
	Nickel	**1,450**	629.7	N/A	52		25 U	5.0 U	**9.0**	25 U	5.0 U	**40**	5.0 U	2 U	**13**	5.0 U	**6.1**	5.0 U	**9.5**	5.0 U	5.0 U	5.0 U	**5.4**
	Selenium	**235.8**	11.9	N/A	5		25 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.1 J**	5.0 U
	Silver	**35.1**	244.0	N/A	3.2		2.5 U	0.20 U	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.4 U	0.50 U	0.50 U	0.50 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Zinc	**420**	1,449.90	N/A	120		50 U	20 U	**100**	50 U	10 U	**680**	10 U	10 U	**110**	**11**	**91**	20 U	20 U	20 U	20 U	20 U	20 U

Table 3
Summary of Analytical Results for Groundwater Samples -- 2016 through 2018
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester, and Stoneham Massachusetts

Analysis	Analyte		RGP for Freshwater[1] TBEL	RGP for Freshwater[1] WQBEL[2]	RGP for Freshwater[1] Compliance Level[3]	RGP Required Minimum Level[4]	8+12.2		8+92.8		70+15.5	70+70.3		79+75	99+66.4		100+63.15	BH-01	BH-02	171+88	173+14	215+36	217+00
		Sample Name:					8+24 MW	8+12.2 MW	08 + 90	8+92.8 MW	70+6 MW	70 + 45	70+70.3 MW	MW-79+75	99 + 79	99 + 66.4 MW	100 + 50 MW	BH-01-MW	BH-02-MW	171+88 MW	173+14 MW	215+36 MW	217+00 MW
		Sample Date:					11/15/2016	7/7/2017	1/7/2016	11/15/2016	11/16/2016	1/7/2016	11/16/2016	6/25/2018	1/7/2016	11/17/2016	11/17/2016	2/1/2018	2/1/2018	6/28/2017	6/28/2017	6/29/2017	6/29/2017
		Nearby Waterbody:					Horn Pond Brook - Woburn				Aberjona River - Woburn and Winchester									Sweetwater Brook - Stoneham			
General Chemistry																							
(mg/L)	Chloride		N/A	N/A	N/A	0.23	**360**	NA	**300**	**240**	**280**	**110**	**270**	**166**	**220**	**190**	**220**	**596**	**1,170**	**880**	**330**	**240**	**560**
(mg/L)	Chlorine, Residual		0.2	**0.026**	0.05	0.05	**3.1**	NA	0.020 U	0.020 U	**0.29**	0.020 U	**0.039**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.044**	0.020 U	0.020 U
(mg/L)	Hardness		N/A	N/A	N/A	N/A	NA	**100**	NA	NA	NA	NA	NA	**510**	NA	NA	NA	**190**	**340**	**380**	**70**	**150**	**22**
(mg/L)	Total Suspended Solids		**30**	N/A	N/A	30	**5,600**	NA	**860**	**150**	**190**	**3,900**	8.3 U	**170,000**	**4,600**	**8.0**	**1,200**	**13**	**5.5**	**15**	**19**	5 U	5 U
(mg/L)	Silica Gel Treated HEM (SGT-HEM)		**5**	N/A	N/A	5	1.5 U	NA	2.8 U	1.5 U	1.5 U	5.6 U^	2.1 U	4.0 U	2.8 U	1.4 U	1.4 U	1.4 U	1.9 U	**3.4**	1.4 U	1.4 U	1.4 U
(mg/L)	Ammonia as N		N/A	N/A	N/A	0.1	NA	2.0 U	NA	NA	NA	NA	NA	0.15 U	NA	NA	NA	**0.587**	**0.047 J**	0.075 U	**0.594**	0.075 U	**0.237**
(mg/L)	Cyanide		**178**	0.0124	N/A	0.0052	0.010 U	NA	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.005 U	0.010 U	0.010 U	**0.016**	0.005 U	**0.003 J**	0.005 U	0.005 U	0.010 U	0.005 U
(mg/L)	Ethanol		N/A	N/A	N/A	N/A	NA	**0.29**	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	2 U	2 U	2 U	0.005 U	2 U
(su)	pH		**6.5-8.3**	N/A	N/A	6.5-8.3	**6.6**	**6.42**	NA	**6.8**	**6.5**	NA	**6.6**	NA	NA	**6.8**	**6.6**	**6.8**	**6.7**	**6.29**	**6.08**	**6.46**	**6.58**
(deg. C)	Temperature		N/A	N/A	N/A	N/A	NA	**18.7**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.6**	**13.1**	**15.8**	**15.6**	**15.5**	**16.8**
(mg/L)	Phenol		**1.08**	0.716	N/A	0.3	0.050 U	NA	0.050 U	0.050 U	0.050 U	0.050 U	**0.076**	**0.036**	NA	**0.30**	0.050 U	NA	NA	NA	NA	NA	NA
(umhos/cm)	Specific conductance		N/A	N/A	N/A	N/A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1,548**	**3,548**	NA	NA	NA	NA
(mg/L)	Oil & Grease (HEM)		**5**	N/A	N/A	5	1.5 U	NA	NA	**3.2**	**8.9**	NA	2.8 U	4.0 U	NA	2.8 U	**5.4**	1.4 U	1.9 U	NA	NA	NA	NA
		Groundwater Classification					**B/C**		**A**		**A**	**B/C**		**B/C**	**B/C**		**B/C**	**B/C**	**A**	**A**	**A**	**A**	**A**

Notes:

mg/L - milligrams per liter.

su - Standard unit.

ug/L - micrograms per liter.

J - Estimated value.

NA - Sample not analyzed for the listed analyte.

N/A - Not available/available.

ND - Not detected.

NS - No criteria exist for this analyte.

U - Analyte was not detected at specified quantitation/detection limit.

Values in **bold** indicate the analyte was detected.

Values shown in bold and shaded black exceed the applicable bolded and underlined RGP Effluent L

^ - Quantitation limit value exceeds the applicable RGP Effluent Limits (bolded and underlined).

DGP - EPA Dewatering General Permit, Discharge Limitations.

RC - Reportable Concentration.

RGP - EPA Remediation General Permit, Effluent Limits.

TBEL - Technology-Based Effluent Limitation.

WQBEL - Water Quality-Based Effluent Limitation.

VOCs - Volatile Organic Compounds.

SVOCs - Semivolatile Organic Compounds.

PCBs - Polychlorinated Biphenyls.

The above standards apply to discharge to freshwater receiving waters. The RGP contains separate discharge standards for discharges to saltwater receiving waters.

[1] RGP for Freshwater standards are an average monthly discharge limitation in Massachusetts only.

[2] The WQBEL standards are shown with dilution factors (DFs) applied. The DFs are determined during the permit application process and are dependent upon the flow rate and water hardness of the receiving body. Once DFs are applied to the WQBEL, the more stringent of the two standards (TBEL or adjusted WQBEL) will apply.

[3] The compliance level is a discharge standard for analytes with detection limits above the RGP discharge standard.

[4] Additional Resource for Selecting Sufficiently Sensitive Test Methods for RGP Notice of Intent (NOI) Sampling Requirements, Table 1.

Groundwater Classification Categories

Type A Groundwater - Non-Hazardous Beneficial Reuse: Groundwater/wastewater that is characterized as non-hazardous waste and non-TSCA regulated (PCBs < 0.5 parts per billion [ppb]) and is acceptable for beneficial reuse/recycling at a properly licensed facility, per 40 CFR 761.79 (b)(l)(ii).

Type B Groundwater - Non-Hazardous Wastewater Treatment Facility: Groundwater/wastewater that is characterized as non-hazardous waste and non-TSCA regulated (PCBs < 0.5 ppb) and is acceptable at a properly licensed wastewater treatment facility, per 40 CFR 761.79 (b)(l)(ii).

Type C Groundwater - Non-Hazardous Groundwater Treatment and Discharge: Groundwater that is characterized as non-hazardous waste and non-TSCA regulated (PCBs < 0.5 ppb) and is acceptable for on-site or off-site discharge under EPA RGP or Construction Dewatering Permit, per 40 CFR 761.79 (b)(l)(ii).

Table 4
Summary of Analytical Results for Surface Water Samples - June 2017
Eversource Energy
Woburn to Wakefield Transmission Project
Woburn, Winchester and Stoneham, Massachusetts

Analysis	Sample ID: / Sample Date: / Analyte	JB-02,03 Outfall 6/15/2017		JB-04 Outfall 6/15/2017		JB-05 Outfall 6/15/2017	
Metals, total							
(ug/L)	Iron	**1,400**		**1,300**		**1,700**	
	Antimony	1.0	U	1.0	U	1.0	U
	Arsenic	**8.5**		**8.2**		**11**	
	Cadmium	0.20	U	0.20	U	0.20	U
	Chromium	10	U	10	U	10	U
	Chromium (VI)	4.0	U	4.0	U	4.0	U
	Chromium (III)	10	U	10	U	10	U
	Copper	**5.6**		**5.4**		**5.5**	
	Lead	**1.1**		**0.83**		**1.7**	
	Mercury	0.10	U	0.10	U	0.10	U
	Nickel	5.0	U	5.0	U	5.0	U
	Selenium	5.0	U	5.0	U	5.0	U
	Silver	0.20	U	0.20	U	0.20	U
	Zinc	**30**		**29**		**37**	
General Chemistry							
(ug/L)	Hardness	**170,000**		**160,000**		**170,000**	
(ug/L)	Ammonia as N	**219**		**262**		**606**	
(s.u.)	pH*	**7.06**		**7.16**		**7.03**	
(deg F)	Temperature*	**64.2**		**62.6**		**63.3**	

Notes:

ug/L - micrograms per liter.

U - Analyte was not detected at specified quantitation limit.

Values in **bold** indicate the analyte was detected.

s.u. - standard units.

deg F - degrees Fahrenheit.

* - data collected in-situ using hand held meter.

ATTACHMENT D

LABORATORY ANALYTICAL REPORTS

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

January 9, 2020

Michael Zylich
Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230

Project Location: Woburn, Winchester, Stoneham, MA
Client Job Number:
Project Number: 1906240
Laboratory Work Order Number: 19K0965

Enclosed are results of analyses for samples received by the laboratory on November 15, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

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Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230
ATTN: Michael Zylich

REPORT DATE: 1/9/2020

PURCHASE ORDER NUMBER: 10948702

PROJECT NUMBER: 1906240

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19K0965

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

PROJECT LOCATION: Woburn, Winchester, Stoneham, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
217+00 MW	19K0965-01	Ground Water		624.1	

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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.

REVISON: 1/9/2020 cis-1.2-DCE added to 624.1

REVISON: 1/2/2020 Ethanol added to 624.1 list.

Note: Dissolved samples contained some sediment, water decanted.

624.1

Qualifications:

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:

Ethanol

19K0965-01[217+00 MW], B246312-BLK1, B246312-BS1, S042780-CCV1

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.

Tod E. Kopyscinski
Laboratory Director

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0965

Date Received: 11/15/2019

Field Sample #: 217+00 MW Sampled: 11/15/2019 09:45

Sample ID: 19K0965-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	4.08	50.0	0.540	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
tert-Amyl Methyl Ether (TAME)	<0.110	0.500	0.110	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Benzene	<0.180	1.00	0.180	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Bromodichloromethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Bromoform	<0.460	2.00	0.460	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Bromomethane	<0.780	2.00	0.780	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
tert-Butyl Alcohol (TBA)	<3.50	20.0	3.50	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Carbon Tetrachloride	<0.110	2.00	0.110	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Chlorobenzene	<0.150	2.00	0.150	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Chlorodibromomethane	<0.210	2.00	0.210	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Chloroethane	<0.350	2.00	0.350	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Chloroform	<0.170	2.00	0.170	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Chloromethane	<0.450	2.00	0.450	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,2-Dichlorobenzene	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,3-Dichlorobenzene	<0.120	2.00	0.120	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,4-Dichlorobenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,2-Dichloroethane	<0.410	2.00	0.410	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
cis-1,2-Dichloroethylene	0.320	1.00	0.0500	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,1-Dichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,1-Dichloroethylene	<0.320	2.00	0.320	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
trans-1,2-Dichloroethylene	<0.310	2.00	0.310	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,2-Dichloropropane	<0.200	2.00	0.200	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
cis-1,3-Dichloropropene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,4-Dioxane	<3.50	50.0	3.50	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
trans-1,3-Dichloropropene	<0.230	2.00	0.230	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Ethanol	<27.9	50.0	27.9	µg/L	1	V-05	624.1	11/18/19	11/19/19 6:18	MFF
Ethylbenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Methyl tert-Butyl Ether (MTBE)	<0.250	2.00	0.250	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Methylene Chloride	<0.340	5.00	0.340	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,1,2,2-Tetrachloroethane	<0.220	2.00	0.220	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Tetrachloroethylene	<0.180	2.00	0.180	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Toluene	<0.140	1.00	0.140	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,1,1-Trichloroethane	<0.200	2.00	0.200	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
1,1,2-Trichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Trichloroethylene	0.680	2.00	0.240	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Trichlorofluoromethane (Freon 11)	<0.330	2.00	0.330	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
Vinyl Chloride	<0.450	2.00	0.450	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
m+p Xylene	<0.300	2.00	0.300	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF
o-Xylene	<0.170	2.00	0.170	µg/L	1		624.1	11/18/19	11/19/19 6:18	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	102	70-130		11/19/19 6:18
Toluene-d8	98.4	70-130		11/19/19 6:18
4-Bromofluorobenzene	92.6	70-130		11/19/19 6:18

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Sample Extraction Data

Prep Method: SW-846 5030B-624.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0965-01 [217+00 MW]	B246312	5	5.00	11/18/19

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B246312 - SW-846 5030B										
Blank (B246312-BLK1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Acetone	ND	50.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.500	µg/L							
Benzene	ND	1.00	µg/L							
Bromodichloromethane	ND	2.00	µg/L							
Bromoform	ND	2.00	µg/L							
Bromomethane	ND	2.00	µg/L							
tert-Butyl Alcohol (TBA)	ND	20.0	µg/L							
Carbon Tetrachloride	ND	2.00	µg/L							
Chlorobenzene	ND	2.00	µg/L							
Chlorodibromomethane	ND	2.00	µg/L							
Chloroethane	ND	2.00	µg/L							
Chloroform	ND	2.00	µg/L							
Chloromethane	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							
trans-1,2-Dichloroethylene	ND	2.00	µg/L							
1,2-Dichloropropane	ND	2.00	µg/L							
cis-1,3-Dichloropropene	ND	2.00	µg/L							
1,4-Dioxane	ND	50.0	µg/L							
trans-1,3-Dichloropropene	ND	2.00	µg/L							
Ethanol	ND	50.0	µg/L							V-05
Ethylbenzene	ND	2.00	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	2.00	µg/L							
Methylene Chloride	ND	5.00	µg/L							
1,1,2,2-Tetrachloroethane	ND	2.00	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							
Trichlorofluoromethane (Freon 11)	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	*25.8*		µg/L	25.0		103	70-130			
Surrogate: Toluene-d8	*24.3*		µg/L	25.0		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	*22.2*		µg/L	25.0		88.8	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B246312 - SW-846 5030B											
LCS (B246312-BS1)				Prepared & Analyzed: 11/18/19							
Acetone	210	50.0	µg/L	200		104	70-160				†
tert-Amyl Methyl Ether (TAME)	17	0.500	µg/L	20.0		86.6	70-130				
Benzene	22	1.00	µg/L	20.0		110	65-135				
Bromodichloromethane	24	2.00	µg/L	20.0		120	65-135				
Bromoform	23	2.00	µg/L	20.0		115	70-130				
Bromomethane	20	2.00	µg/L	20.0		97.8	15-185				
tert-Butyl Alcohol (TBA)	180	20.0	µg/L	200		88.2	40-160				†
Carbon Tetrachloride	24	2.00	µg/L	20.0		119	70-130				
Chlorobenzene	25	2.00	µg/L	20.0		123	65-135				
Chlorodibromomethane	23	2.00	µg/L	20.0		117	70-135				
Chloroethane	22	2.00	µg/L	20.0		111	40-160				
Chloroform	23	2.00	µg/L	20.0		114	70-135				
Chloromethane	12	2.00	µg/L	20.0		61.6	20-205				
1,2-Dichlorobenzene	23	2.00	µg/L	20.0		115	65-135				
1,3-Dichlorobenzene	25	2.00	µg/L	20.0		123	70-130				
1,4-Dichlorobenzene	23	2.00	µg/L	20.0		115	65-135				
1,2-Dichloroethane	24	2.00	µg/L	20.0		120	70-130				
cis-1,2-Dichloroethylene	22	1.00	µg/L	20.0		110	70-130				
1,1-Dichloroethane	21	2.00	µg/L	20.0		107	70-130				
1,1-Dichloroethylene	24	2.00	µg/L	20.0		121	50-150				
trans-1,2-Dichloroethylene	21	2.00	µg/L	20.0		107	70-130				
1,2-Dichloropropane	21	2.00	µg/L	20.0		106	35-165				
cis-1,3-Dichloropropene	21	2.00	µg/L	20.0		106	25-175				
1,4-Dioxane	190	50.0	µg/L	200		96.4	40-130				†
trans-1,3-Dichloropropene	21	2.00	µg/L	20.0		106	50-150				
Ethanol	240	50.0	µg/L	200		119	40-160			V-05	
Ethylbenzene	23	2.00	µg/L	20.0		117	60-140				
Methyl tert-Butyl Ether (MTBE)	21	2.00	µg/L	20.0		106	70-130				
Methylene Chloride	21	5.00	µg/L	20.0		105	60-140				
1,1,2,2-Tetrachloroethane	24	2.00	µg/L	20.0		118	60-140				
Tetrachloroethylene	26	2.00	µg/L	20.0		128	70-130				
Toluene	24	1.00	µg/L	20.0		118	70-130				
1,1,1-Trichloroethane	24	2.00	µg/L	20.0		118	70-130				
1,1,2-Trichloroethane	24	2.00	µg/L	20.0		122	70-130				
Trichloroethylene	24	2.00	µg/L	20.0		120	65-135				
Trichlorofluoromethane (Freon 11)	23	2.00	µg/L	20.0		113	50-150				
Vinyl Chloride	16	2.00	µg/L	20.0		80.6	5-195				
m+p Xylene	47	2.00	µg/L	40.0		118	70-130				
o-Xylene	24	2.00	µg/L	20.0		119	70-130				
Surrogate: 1,2-Dichloroethane-d4	*24.8*		µg/L	25.0		99.1	70-130				
Surrogate: Toluene-d8	*25.5*		µg/L	25.0		102	70-130				
Surrogate: 4-Bromofluorobenzene	*24.3*		µg/L	25.0		97.2	70-130				

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FLAG/QUALIFIER SUMMARY

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

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
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
Bromomethane	CT,NY,MA,NH,RI,NC,ME,VA
tert-Butyl Alcohol (TBA)	NY,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
1,2-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
1,3-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
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,NH
Ethylbenzene	CT,NY,MA,NH,RI,NC,ME,VA
Methyl tert-Butyl Ether (MTBE)	NY,MA,NH,NC
Methylene Chloride	CT,NY,MA,NH,RI,NC,ME,VA
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
1,1,1-Trichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
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

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

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
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	12/30/2020
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY

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

http://www.contestlabs.com

Doc # 381 Rev 0 5 8 2015

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1

SLH

Company Name:	NSTAR/Eversource - Monthly Billing
Address:	247 Station Drive, Westwood, MA 02090
Phone:	781-441-3804
Project Name:	Woburn to Wakefield Line Project
Project Location:	Woburn, Winchester, Stoneham, MA
Project Number:	1906240
Project Manager:	Mike Zylich
Purchase Order Numbe	10948702
Invoice Recipient:	Eversource Energy Direct Bill Attn Dean Bebis
Sampled By:	J Hensley

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Other: 5 days

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

Data Delivery
Format: PDF ☑ EXCEL ☑
Other: GISKey
Enhanced Data Package Required: ☐
Email To: moliveira@trcsolutions.com, pzhou@trcsolutions.com

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	[1]Matrix Code	Conc Code	VOCs via 624	SVOCs via 625/PAHs via 625-SIM	TPH (SGT) via 1664	PCBs via 608	RGP List Metals (total and aq)	Hexavalent Chromium via SM3500	Total Cyanide via SM4500	EDB via 504.1	Ethanol	Ammonia via SM4500	Chloride via 300.0	Total Residual Chlorine via SM4500	TSS via SM2540D	Hardness via SM 2340B
1	217+00 MW	11/15/19	0945		X	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	X

# of Containers	3 2 2 2 1 1 1 3 3 1 1 1 1 1
[2] Preservation Code	H O S O N O X X H S O O G N
[3] Container Code	V A A A P P P V V P P P P P

ANALYSIS REQUESTED

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/Solid
SL = Sludge
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: RLs must meet EPA RGP Appendix VII limits. VOC list to include Tert-butyl alcohol. RGP SVOCs to include pentachlorophenol, DEH phthalate, total phthalates, and total phenol.

RGP Metals include antimony, arsenic, cadmium, chromium (III), chromium (VI), copper, iron, lead, mercury, nichel, selenium, silver, and zinc.

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

Relinquished by: (signature)	Date/Time: 11/15/19 1345
Received by: (signature)	Date/Time: 11/15/19 1345
Relinquished by: (signature)	Date/Time: 11/15/19 1949
Received by: (signature)	Date/Time: 11/15/19 2345
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Detection Limit Requirements

MA	<RCGW-1, <EPA Region 1 RGP criteria
CT	
Other:	

Program Information

● MCP Analytical Certification Form Required
○ RCP Analysis Certification Form Required
○ MA State DW Form Required
PWSID # _____

NELAC and AIHA-LAP, LLC Accredited

TURNAROUND TIME (BUSINESS DAYS) STARTS AT 9:00 AM THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON THIS CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME CANNOT START UNTIL ALL QUESTIONS HAVE BEEN ANSWERED.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

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CHAIN OF CUSTODY RECORD

Doc # 381 Rev 1_03242017

39 Spruce Street
East Longmeadow, MA 01028

Company Name: NStar/ Eversource - Monthly Billing
Address: 247 Station Drive, Westwood, MA02090
Phone: (781)441-3804
Project Name: Woburn to Wakefield Line Project
Project Location: Woburn, Winchester, Stoneham
Project Number: 1906240
Project Manager: Mike Zylich
Con-Test Quote Name/Number: 10948702
Invoice Recipient: Eversource Energy Direct Bill Attn: Dean Bebry
Sampled By:

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date: 5 days

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

Data Delivery
Format: PDF ☒ EXCEL ☒
Other: GIS Key
CLP Like Data Pkg Required: ☐
Email To: molinert@trcsolutions.com pzhou@trcsolutions.com
Fax To #:

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	[1]Matrix Code	Conc Code	Cyanide	Ammonia											# of Containers
								1	1											[2] Preservation Code
								X	S											[3] Container Code
								P	P											
1	217+00 MW	11/15/19	0945		X	GW	L													

ANALYSIS REQUESTED

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

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

[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)

	Date/Time:
Relinquished by: (signature)	11/15/19 1345
Received by: (signature)	11/15/19 1345
Relinquished by: (signature)	11/15/19 1945
Received by: (signature)	11/15/19 19:45
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Detection Limit Requirements
MA
CT
Other

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

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

Other
☐ Chromatogram
☐ *AIHA-LAP, LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

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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 Eversource

Received By MP Date 11/15/19 Time 19:45

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 # 2 Actual Temp - 3.7 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? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Project T Analysis T ID's T Sampler Name 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? T Who was notified? Miranda

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? F On COC? F

Do all samples have the proper pH? Acid T<2 Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	8	1 Liter Plastic	2	16 oz Amb.	
HCL-	3	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	5	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-	3	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:

con-test® ANALYTICAL LABORATORY
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January 9, 2020

Michael Zylich
Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230

Project Location: Woburn, Winchester, Stoneham, MA
Client Job Number:
Project Number: 1906240
Laboratory Work Order Number: 19K0854

Enclosed are results of analyses for samples received by the laboratory on November 14, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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Table of Contents (continued)

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

Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230
ATTN: Michael Zylich

REPORT DATE: 1/9/2020

PURCHASE ORDER NUMBER: 10948702

PROJECT NUMBER: 1906240

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19K0854

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

PROJECT LOCATION: Woburn, Winchester, Stoneham, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
BH-01 MW	19K0854-01	Ground Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 504.1	
				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.	
BH-02 MW	19K0854-02	Ground Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 504.1	
				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.	

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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.

REVSION: 1/9/2020 cis-1.2-DCE added to 624.1

REVISON: 1/2/2020 Ethanol added to 624.1

Note: Dissolved samples contained some sediment, water decanted.

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624.1

Qualifications:

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:

Ethanol
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW], B246312-BLK1, B246312-BS1, S042780-CCV1

625.1

Qualifications:

L-02

Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.

Analyte & Samples(s) Qualified:

Benzidine
B246326-BS1, B246326-BSD1

MS-09

Matrix spike recovery and/or matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a low bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:

Benzidine
19K0854-01[BH-01 MW], B246326-MS1, B246326-MSD1

Hexachlorocyclopentadiene
19K0854-01[BH-01 MW], B246326-MS1, B246326-MSD1

S-07

One associated surrogate standard recovery is outside of control limits but the other(s) is/are within limits. All recoveries are > 10%.

Analyte & Samples(s) Qualified:

2,4,6-Tribromophenol
B246326-MS1, B246326-MSD1

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:

Benzidine
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW], B246326-MS1, B246326-MSD1, S042844-CCV1

Hexachlorocyclopentadiene
B246326-BLK1, B246326-BS1, B246326-BSD1, S042832-CCV1

Pentachlorophenol
S042844-CCV1

V-06

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

Analyte & Samples(s) Qualified:

4-Nitrophenol
B246326-MS1, B246326-MSD1

Bis(2-ethylhexyl)phthalate (SIM)
B246452-MS1, B246452-MSD1, S042864-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:

3,3-Dichlorobenzidine
B246326-BLK1, B246326-BS1, B246326-BSD1, S042832-CCV1

4-Nitrophenol
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW], B246326-BLK1, B246326-BS1, B246326-BSD1, S042832-CCV1, S042844-CCV1

Bis(2-ethylhexyl)phthalate (SIM)
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

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

V-35

Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:

Benzidine
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW], B246326-BLK1, B246326-BS1, B246326-BSD1, B246326-MS1, B246326-MSD1, S042832-CCV1, S042844-CCV1

EPA 200.7

Qualifications:

Z-01

Filtered in Field by Client

Analyte & Samples(s) Qualified:

Iron
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

EPA 200.8

Qualifications:

Z-01

Filtered in Field by Client

Analyte & Samples(s) Qualified:

Antimony
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

Arsenic
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

Cadmium
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

Copper
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

Lead
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

Nickel
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

Selenium
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

Silver
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

Zinc
19K0854-01RE1[BH-01 MW], 19K0854-02RE1[BH-02 MW]

EPA 245.1

Qualifications:

Z-01

Filtered in Field by Client

Analyte & Samples(s) Qualified:

Mercury
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW]

SM21-22 2540D

Qualifications:

R-02

Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.

Analyte & Samples(s) Qualified:

Total Suspended Solids
19K0854-01[BH-01 MW], B246113-DUP2

SM21-22 4500 CL G

Qualifications:

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

W-06

Elevated method reporting limit due to intense color of sample

Analyte & Samples(s) Qualified:

Chlorine, Residual
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW], B246097-DUP1

Z-01a

SM 4500 CL G test had a calibration point outside of acceptable back calculated recovery. Reanalysis yielded similar non-conformance.

Analyte & Samples(s) Qualified:

Chlorine, Residual
19K0854-01[BH-01 MW], 19K0854-02[BH-02 MW], B246097-BLK1, B246097-BS1, B246097-BSD1, B246097-DUP1, B246097-MS1

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.

Tod E. Kopyscinski
Laboratory Director

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	<0.540	50.0	0.540	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
tert-Amyl Methyl Ether (TAME)	<0.110	0.500	0.110	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Benzene	<0.180	1.00	0.180	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Bromodichloromethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Bromoform	<0.460	2.00	0.460	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Bromomethane	<0.780	2.00	0.780	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
tert-Butyl Alcohol (TBA)	<3.50	20.0	3.50	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Carbon Tetrachloride	<0.110	2.00	0.110	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Chlorobenzene	<0.150	2.00	0.150	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Chlorodibromomethane	<0.210	2.00	0.210	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Chloroethane	<0.350	2.00	0.350	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Chloroform	<0.170	2.00	0.170	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Chloromethane	<0.450	2.00	0.450	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,2-Dichlorobenzene	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,3-Dichlorobenzene	<0.120	2.00	0.120	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,4-Dichlorobenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,2-Dichloroethane	<0.410	2.00	0.410	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
cis-1,2-Dichloroethylene	<0.0500	1.00	0.0500	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,1-Dichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,1-Dichloroethylene	<0.320	2.00	0.320	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
trans-1,2-Dichloroethylene	<0.310	2.00	0.310	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,2-Dichloropropane	<0.200	2.00	0.200	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
cis-1,3-Dichloropropene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,4-Dioxane	<3.50	50.0	3.50	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
trans-1,3-Dichloropropene	<0.230	2.00	0.230	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Ethanol	<27.9	50.0	27.9	µg/L	1	V-05	624.1	11/18/19	11/19/19 1:54	MFF
Ethylbenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Methyl tert-Butyl Ether (MTBE)	<0.250	2.00	0.250	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Methylene Chloride	<0.340	5.00	0.340	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,1,2,2-Tetrachloroethane	<0.220	2.00	0.220	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Tetrachloroethylene	<0.180	2.00	0.180	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Toluene	<0.140	1.00	0.140	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,1,1-Trichloroethane	<0.200	2.00	0.200	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
1,1,2-Trichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Trichloroethylene	<0.240	2.00	0.240	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Trichlorofluoromethane (Freon 11)	<0.330	2.00	0.330	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
Vinyl Chloride	<0.450	2.00	0.450	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
m+p Xylene	<0.300	2.00	0.300	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF
o-Xylene	<0.170	2.00	0.170	µg/L	1		624.1	11/18/19	11/19/19 1:54	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	103	70-130		11/19/19 1:54
Toluene-d8	100	70-130		11/19/19 1:54
4-Bromofluorobenzene	100	70-130		11/19/19 1:54

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

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	11/18/19	11/20/19 17:54	CLA
Acenaphthylene (SIM)	<0.30	0.30	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Anthracene (SIM)	<0.20	0.20	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Benzo(a)anthracene (SIM)	0.27	0.050	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Benzo(a)pyrene (SIM)	0.28	0.10	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Benzo(b)fluoranthene (SIM)	0.36	0.050	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Benzo(g,h,i)perylene (SIM)	<0.50	0.50	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Benzo(k)fluoranthene (SIM)	<0.20	0.20	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Bis(2-ethylhexyl)phthalate (SIM)	<1.0	1.0	µg/L	1	V-20	625.1	11/18/19	11/20/19 17:54	CLA
Chrysene (SIM)	0.23	0.20	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Dibenz(a,h)anthracene (SIM)	<0.10	0.10	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Fluoranthene (SIM)	0.57	0.50	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Fluorene (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Indeno(1,2,3-cd)pyrene (SIM)	0.24	0.10	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
2-Methylnaphthalene (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Naphthalene (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Pentachlorophenol (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Phenanthrene (SIM)	0.12	0.050	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA
Pyrene (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 17:54	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	40.6	15-110		11/20/19 17:54
Phenol-d6 (SIM)	32.8	15-110		11/20/19 17:54
Nitrobenzene-d5	83.2	30-130		11/20/19 17:54
2-Fluorobiphenyl	51.2	30-130		11/20/19 17:54
2,4,6-Tribromophenol (SIM)	90.3	15-110		11/20/19 17:54
p-Terphenyl-d14	66.0	30-130		11/20/19 17:54

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Benzidine	<20.0	20.0	µg/L	1	V-05, MS-09, V-35	625.1	11/18/19	11/20/19 20:41	BGL
4-Bromophenylphenylether	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Butylbenzylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
4-Chloro-3-methylphenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Bis(2-chloroethyl)ether	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Bis(2-chloroisopropyl)ether	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2-Chloronaphthalene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2-Chlorophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
4-Chlorophenylphenylether	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Di-n-butylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
1,3-Dichlorobenzene	<5.00	5.00	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
1,4-Dichlorobenzene	<5.00	5.00	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
1,2-Dichlorobenzene	<5.00	5.00	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
3,3-Dichlorobenzidine	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2,4-Dichlorophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Diethylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2,4-Dimethylphenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Dimethylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
4,6-Dinitro-2-methylphenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2,4-Dinitrophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2,4-Dinitrotoluene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2,6-Dinitrotoluene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Di-n-octylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
1,2-Diphenylhydrazine/Azobenzene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Hexachlorobenzene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Hexachlorobutadiene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Hexachlorocyclopentadiene	<10.0	10.0	µg/L	1	MS-09	625.1	11/18/19	11/20/19 20:41	BGL
Hexachloroethane	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Isophorone	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Nitrobenzene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2-Nitrophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
4-Nitrophenol	<10.0	10.0	µg/L	1	V-20	625.1	11/18/19	11/20/19 20:41	BGL
N-Nitrosodimethylamine	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
N-Nitrosodiphenylamine/Diphenylamine	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
N-Nitrosodi-n-propylamine	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2-Methylphenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
Phenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
3/4-Methylphenol	<20.0	20.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
1,2,4-Trichlorobenzene	<5.00	5.00	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL
2,4,6-Trichlorophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 20:41	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	45.5	15-110		11/20/19 20:41
Phenol-d6	33.4	15-110		11/20/19 20:41
Nitrobenzene-d5	84.4	30-130		11/20/19 20:41

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		**% Recovery**	**Recovery Limits**		**Flag/Qual**				
2-Fluorobiphenyl		81.7	30-130					11/20/19 20:41	
2,4,6-Tribromophenol		95.2	15-110					11/20/19 20:41	
p-Terphenyl-d14		97.5	30-130					11/20/19 20:41	

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

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]	<0.0920	0.100	0.0920	µg/L	1		608.3	11/19/19	11/20/19 10:53	TG
Aroclor-1221 [1]	<0.0805	0.100	0.0805	µg/L	1		608.3	11/19/19	11/20/19 10:53	TG
Aroclor-1232 [1]	<0.0995	0.100	0.0995	µg/L	1		608.3	11/19/19	11/20/19 10:53	TG
Aroclor-1242 [1]	<0.0865	0.100	0.0865	µg/L	1		608.3	11/19/19	11/20/19 10:53	TG
Aroclor-1248 [1]	<0.0950	0.100	0.0950	µg/L	1		608.3	11/19/19	11/20/19 10:53	TG
Aroclor-1254 [1]	<0.0525	0.100	0.0525	µg/L	1		608.3	11/19/19	11/20/19 10:53	TG
Aroclor-1260 [1]	<0.0980	0.100	0.0980	µg/L	1		608.3	11/19/19	11/20/19 10:53	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	67.2	30-150		11/20/19 10:53
Decachlorobiphenyl [2]	63.2	30-150		11/20/19 10:53
Tetrachloro-m-xylene [1]	69.3	30-150		11/20/19 10:53
Tetrachloro-m-xylene [2]	64.4	30-150		11/20/19 10:53

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

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	11/18/19	11/19/19 13:18	MJH
Arsenic	58	0.80		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:18	MJH
Cadmium	7.2	0.20		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:18	MJH
Chromium	240	1.0		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:18	MJH
Chromium, Trivalent	0.24			mg/L	1		Tri Chrome Calc.	11/18/19	11/19/19 13:52	MJH
Copper	250	1.0		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:18	MJH
Iron	150	0.50		mg/L	10		EPA 200.7	11/18/19	11/20/19 21:53	TBC
Lead	340	0.50		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:18	MJH
Mercury	0.00014	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:45	AJL
Nickel	180	5.0		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:18	MJH
Selenium	5.3	5.0	1.6	µg/L	1		EPA 200.8	11/18/19	11/19/19 13:18	MJH
Silver	0.24	0.20		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:18	MJH
Zinc	1700	100		µg/L	10		EPA 200.8	11/18/19	11/19/19 13:03	MJH
Hardness	1400			mg/L	1		EPA 200.7	11/18/19	11/19/19 14:13	TBC

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

Sample Matrix: Ground Water

Metals Analyses (Dissolved)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:41	QNW
Arsenic	6.7	0.80		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:41	QNW
Cadmium	0.43	0.20		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:41	QNW
Copper	38	1.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:41	QNW
Iron	12	0.050		mg/L	1	Z-01	EPA 200.7	12/6/19	12/9/19 18:59	MJH
Lead	31	0.50		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:41	QNW
Mercury	ND	0.00010		mg/L	1	Z-01	EPA 245.1	12/7/19	12/7/19 12:56	AJL
Nickel	16	5.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:41	QNW
Selenium	ND	5.0	1.6	µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:41	QNW
Silver	ND	0.20		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:41	QNW
Zinc	110	10		µg/L	1	Z-01	EPA 200.8	12/10/19	12/11/19 10:32	QNW

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

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	260	10		mg/L	10		EPA 300.0	11/19/19	11/19/19 16:46	IS
Chlorine, Residual	ND	0.10		mg/L	5	W-06, Z-01a	SM21-22 4500 CL G	11/14/19	11/14/19 22:00	KMV
Hexavalent Chromium	ND	0.0040		mg/L	1		SM21-22 3500 Cr B	11/14/19	11/14/19 22:35	MJG
Total Suspended Solids	3400	20		mg/L	1	R-02	SM21-22 2540D	11/15/19	11/15/19 13:25	LL
Silica Gel Treated HEM (SGT-HEM)	ND	5.6		mg/L	1		EPA 1664B	11/20/19	11/20/19 12:00	LL

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

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) (1)	ND	0.020	µg/L	1		EPA 504.1	11/19/19	11/19/19 19:57	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,3-Dibromopropane (1)	108	70-130		11/19/19 19:57

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-01 MW Sampled: 11/14/2019 09:45

Sample ID: 19K0854-01

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	0.369	0.075	0.024	mg/L	1		121,4500NH3-BH		11/20/19 21:38	AAL
Cyanide	ND	0.005	0.001	mg/L	1		121,4500CN-CE		11/18/19 11:55	AAL

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	6.18	50.0	0.540	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
tert-Amyl Methyl Ether (TAME)	<0.110	0.500	0.110	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Benzene	<0.180	1.00	0.180	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Bromodichloromethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Bromoform	<0.460	2.00	0.460	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Bromomethane	<0.780	2.00	0.780	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
tert-Butyl Alcohol (TBA)	<3.50	20.0	3.50	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Carbon Tetrachloride	<0.110	2.00	0.110	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Chlorobenzene	<0.150	2.00	0.150	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Chlorodibromomethane	<0.210	2.00	0.210	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Chloroethane	<0.350	2.00	0.350	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Chloroform	<0.170	2.00	0.170	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Chloromethane	<0.450	2.00	0.450	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,2-Dichlorobenzene	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,3-Dichlorobenzene	<0.120	2.00	0.120	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,4-Dichlorobenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,2-Dichloroethane	<0.410	2.00	0.410	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
cis-1,2-Dichloroethylene	<0.0500	1.00	0.0500	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,1-Dichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,1-Dichloroethylene	<0.320	2.00	0.320	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
trans-1,2-Dichloroethylene	<0.310	2.00	0.310	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,2-Dichloropropane	<0.200	2.00	0.200	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
cis-1,3-Dichloropropene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,4-Dioxane	<3.50	50.0	3.50	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
trans-1,3-Dichloropropene	<0.230	2.00	0.230	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Ethanol	<27.9	50.0	27.9	µg/L	1	V-05	624.1	11/18/19	11/19/19 2:21	MFF
Ethylbenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Methyl tert-Butyl Ether (MTBE)	<0.250	2.00	0.250	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Methylene Chloride	<0.340	5.00	0.340	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,1,2,2-Tetrachloroethane	<0.220	2.00	0.220	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Tetrachloroethylene	<0.180	2.00	0.180	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Toluene	<0.140	1.00	0.140	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,1,1-Trichloroethane	<0.200	2.00	0.200	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
1,1,2-Trichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Trichloroethylene	<0.240	2.00	0.240	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Trichlorofluoromethane (Freon 11)	<0.330	2.00	0.330	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
Vinyl Chloride	<0.450	2.00	0.450	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
m+p Xylene	<0.300	2.00	0.300	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF
o-Xylene	<0.170	2.00	0.170	µg/L	1		624.1	11/18/19	11/19/19 2:21	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	106	70-130		11/19/19 2:21
Toluene-d8	100	70-130		11/19/19 2:21
4-Bromofluorobenzene	96.4	70-130		11/19/19 2:21

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

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	11/18/19	11/20/19 18:17	CLA
Acenaphthylene (SIM)	<0.30	0.30	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Anthracene (SIM)	<0.20	0.20	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Benzo(a)anthracene (SIM)	<0.050	0.050	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Benzo(a)pyrene (SIM)	<0.10	0.10	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Benzo(b)fluoranthene (SIM)	<0.050	0.050	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Benzo(g,h,i)perylene (SIM)	<0.50	0.50	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Benzo(k)fluoranthene (SIM)	<0.20	0.20	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Bis(2-ethylhexyl)phthalate (SIM)	<1.0	1.0	µg/L	1	V-20	625.1	11/18/19	11/20/19 18:17	CLA
Chrysene (SIM)	<0.20	0.20	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Dibenz(a,h)anthracene (SIM)	<0.10	0.10	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Fluoranthene (SIM)	<0.50	0.50	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Fluorene (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Indeno(1,2,3-cd)pyrene (SIM)	<0.10	0.10	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
2-Methylnaphthalene (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Naphthalene (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Pentachlorophenol (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Phenanthrene (SIM)	<0.050	0.050	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA
Pyrene (SIM)	<1.0	1.0	µg/L	1		625.1	11/18/19	11/20/19 18:17	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	34.8	15-110		11/20/19 18:17
Phenol-d6 (SIM)	24.7	15-110		11/20/19 18:17
Nitrobenzene-d5	87.6	30-130		11/20/19 18:17
2-Fluorobiphenyl	57.1	30-130		11/20/19 18:17
2,4,6-Tribromophenol (SIM)	93.8	15-110		11/20/19 18:17
p-Terphenyl-d14	67.5	30-130		11/20/19 18:17

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Benzidine	<20.0	20.0	µg/L	1	V-05, V-35	625.1	11/18/19	11/20/19 21:05	BGL
4-Bromophenylphenylether	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Butylbenzylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
4-Chloro-3-methylphenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Bis(2-chloroethyl)ether	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Bis(2-chloroisopropyl)ether	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2-Chloronaphthalene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2-Chlorophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
4-Chlorophenylphenylether	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Di-n-butylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
1,3-Dichlorobenzene	<5.00	5.00	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
1,4-Dichlorobenzene	<5.00	5.00	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
1,2-Dichlorobenzene	<5.00	5.00	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
3,3-Dichlorobenzidine	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2,4-Dichlorophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Diethylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2,4-Dimethylphenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Dimethylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
4,6-Dinitro-2-methylphenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2,4-Dinitrophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2,4-Dinitrotoluene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2,6-Dinitrotoluene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Di-n-octylphthalate	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
1,2-Diphenylhydrazine/Azobenzene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Hexachlorobenzene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Hexachlorobutadiene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Hexachlorocyclopentadiene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Hexachloroethane	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Isophorone	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Nitrobenzene	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2-Nitrophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
4-Nitrophenol	<10.0	10.0	µg/L	1	V-20	625.1	11/18/19	11/20/19 21:05	BGL
N-Nitrosodimethylamine	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
N-Nitrosodiphenylamine/Diphenylamine	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
N-Nitrosodi-n-propylamine	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2-Methylphenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
Phenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
3/4-Methylphenol	<20.0	20.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
1,2,4-Trichlorobenzene	<5.00	5.00	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL
2,4,6-Trichlorophenol	<10.0	10.0	µg/L	1		625.1	11/18/19	11/20/19 21:05	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	41.5	15-110		11/20/19 21:05
Phenol-d6	26.5	15-110		11/20/19 21:05
Nitrobenzene-d5	94.4	30-130		11/20/19 21:05

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		**% Recovery**	**Recovery Limits**		**Flag/Qual**				
2-Fluorobiphenyl		87.9	30-130					11/20/19 21:05	
2,4,6-Tribromophenol		102	15-110					11/20/19 21:05	
p-Terphenyl-d14		103	30-130					11/20/19 21:05	

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

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]	<0.0906	0.0985	0.0906	µg/L	1		608.3	11/19/19	11/20/19 11:11	TG
Aroclor-1221 [1]	<0.0793	0.0985	0.0793	µg/L	1		608.3	11/19/19	11/20/19 11:11	TG
Aroclor-1232 [1]	<0.0980	0.0985	0.0980	µg/L	1		608.3	11/19/19	11/20/19 11:11	TG
Aroclor-1242 [1]	<0.0852	0.0985	0.0852	µg/L	1		608.3	11/19/19	11/20/19 11:11	TG
Aroclor-1248 [1]	<0.0936	0.0985	0.0936	µg/L	1		608.3	11/19/19	11/20/19 11:11	TG
Aroclor-1254 [1]	<0.0517	0.0985	0.0517	µg/L	1		608.3	11/19/19	11/20/19 11:11	TG
Aroclor-1260 [1]	<0.0966	0.0985	0.0966	µg/L	1		608.3	11/19/19	11/20/19 11:11	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	76.0	30-150		11/20/19 11:11
Decachlorobiphenyl [2]	71.8	30-150		11/20/19 11:11
Tetrachloro-m-xylene [1]	72.9	30-150		11/20/19 11:11
Tetrachloro-m-xylene [2]	69.4	30-150		11/20/19 11:11

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

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	11/18/19	11/19/19 13:21	MJH
Arsenic	14	0.80		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Cadmium	0.73	0.20		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Chromium	250	1.0		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Chromium, Trivalent	0.25			mg/L	1		Tri Chrome Calc.	11/18/19	11/19/19 13:52	MJH
Copper	140	1.0		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Iron	160	0.50		mg/L	10		EPA 200.7	11/18/19	11/20/19 18:31	MJH
Lead	41	0.50		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:47	AJL
Nickel	140	5.0		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Silver	5.5	0.20		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Zinc	300	10		µg/L	1		EPA 200.8	11/18/19	11/19/19 13:21	MJH
Hardness	410			mg/L	1		EPA 200.7	11/18/19	11/19/19 14:20	TBC

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

Sample Matrix: Ground Water

Metals Analyses (Dissolved)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:44	QNW
Arsenic	1.1	0.80		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:44	QNW
Cadmium	ND	0.20		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:44	QNW
Copper	15	1.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:44	QNW
Iron	3.0	0.050		mg/L	1	Z-01	EPA 200.7	12/6/19	12/9/19 19:06	MJH
Lead	1.3	0.50		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:44	QNW
Mercury	ND	0.00010		mg/L	1	Z-01	EPA 245.1	12/7/19	12/7/19 12:58	AJL
Nickel	16	5.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:44	QNW
Selenium	ND	5.0	1.6	µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:44	QNW
Silver	0.52	0.20		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:44	QNW
Zinc	14	10		µg/L	1	Z-01	EPA 200.8	12/10/19	12/11/19 10:30	QNW

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

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	1600	50		mg/L	50		EPA 300.0	11/25/19	11/25/19 12:59	IS
Chlorine, Residual	ND	0.40		mg/L	20	W-06, Z-01a	SM21-22 4500 CL G	11/14/19	11/14/19 22:00	KMV
Hexavalent Chromium	ND	0.0040		mg/L	1		SM21-22 3500 Cr B	11/14/19	11/14/19 22:35	MJG
Total Suspended Solids	8200	20		mg/L	1		SM21-22 2540D	11/15/19	11/15/19 13:25	LL
Silica Gel Treated HEM (SGT-HEM)	ND	2.8		mg/L	1		EPA 1664B	11/20/19	11/20/19 12:00	LL

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

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) (1)	ND	0.020	µg/L	1		EPA 504.1	11/19/19	11/19/19 20:27	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,3-Dibromopropane (1)	102	70-130		11/19/19 20:27

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0854

Date Received: 11/14/2019

Field Sample #: BH-02 MW Sampled: 11/14/2019 10:45

Sample ID: 19K0854-02

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	0.204	0.075	0.024	mg/L	1		121,4500NH3-BH		11/20/19 21:42	AAL
Cyanide	0.002	0.005	0.001	mg/L	1		121,4500CN-CE		11/18/19 11:56	AAL

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Sample Extraction Data

Prep Method: SW-846 3510C-608.3

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246371	1000	5.00	11/19/19
19K0854-02 [BH-02 MW]	B246371	1020	5.00	11/19/19

Prep Method: SW-846 5030B-624.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246312	5	5.00	11/18/19
19K0854-02 [BH-02 MW]	B246312	5	5.00	11/18/19

Prep Method: SW-846 3510C-625.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246326	1000	1.00	11/18/19
19K0854-02 [BH-02 MW]	B246326	1000	1.00	11/18/19

Prep Method: SW-846 3510C-625.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246452	1000	1.00	11/18/19
19K0854-02 [BH-02 MW]	B246452	1000	1.00	11/18/19

EPA 1664B

Lab Number [Field ID]	Batch	Initial [mL]	Date
19K0854-01 [BH-01 MW]	B246506	250	11/20/19
19K0854-02 [BH-02 MW]	B246506	500	11/20/19

Prep Method: EPA 200.7-EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246351	50.0	50.0	11/18/19
19K0854-01 [BH-01 MW]	B246351	50.0		11/18/19
19K0854-02 [BH-02 MW]	B246351	50.0	50.0	11/18/19
19K0854-02 [BH-02 MW]	B246351	50.0		11/18/19

Prep Method: EPA 200.7 Dissolved-EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B247798	50.0	50.0	12/06/19
19K0854-02 [BH-02 MW]	B247798	50.0	50.0	12/06/19

Prep Method: EPA 200.8-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246348	50.0	50.0	11/18/19
19K0854-02 [BH-02 MW]	B246348	50.0	50.0	11/18/19

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Sample Extraction Data

Prep Method: EPA 200.8 Dissolved-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B247799	50.0	50.0	12/06/19
19K0854-02 [BH-02 MW]	B247799	50.0	50.0	12/06/19

Prep Method: EPA 200.8 Dissolved-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01RE1 [BH-01 MW]	B248044	50.0	50.0	12/10/19
19K0854-02RE1 [BH-02 MW]	B248044	50.0	50.0	12/10/19

Prep Method: EPA 245.1-EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246126	6.00	6.00	11/15/19
19K0854-02 [BH-02 MW]	B246126	6.00	6.00	11/15/19

Prep Method: EPA 245.1 Dissolved-EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B247846	6.00	6.00	12/07/19
19K0854-02 [BH-02 MW]	B247846	6.00	6.00	12/07/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246455	10.0	10.0	11/19/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-02 [BH-02 MW]	B246523	10.0	10.0	11/25/19

Prep Method: EPA 504 water-EPA 504.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246437	34.3	35.0	11/19/19
19K0854-02 [BH-02 MW]	B246437	34.9	35.0	11/19/19

SM21-22 2540D

Lab Number [Field ID]	Batch	Initial [mL]	Date
19K0854-01 [BH-01 MW]	B246113	25.0	11/15/19
19K0854-02 [BH-02 MW]	B246113	25.0	11/15/19

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Sample Extraction Data

SM21-22 3500 Cr B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246095	50.0	50.0	11/14/19
19K0854-02 [BH-02 MW]	B246095	50.0	50.0	11/14/19

SM21-22 4500 CL G

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0854-01 [BH-01 MW]	B246097	100	100	11/14/19
19K0854-02 [BH-02 MW]	B246097	100	100	11/14/19

Prep Method: EPA 200.8-Tri Chrome Calc.

Lab Number [Field ID]	Batch	Initial [mL]	Date
19K0854-01 [BH-01 MW]	B246348	50.0	11/18/19
19K0854-02 [BH-02 MW]	B246348	50.0	11/18/19

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B246312 - SW-846 5030B										
Blank (B246312-BLK1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Acetone	ND	50.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.500	µg/L							
Benzene	ND	1.00	µg/L							
Bromodichloromethane	ND	2.00	µg/L							
Bromoform	ND	2.00	µg/L							
Bromomethane	ND	2.00	µg/L							
tert-Butyl Alcohol (TBA)	ND	20.0	µg/L							
Carbon Tetrachloride	ND	2.00	µg/L							
Chlorobenzene	ND	2.00	µg/L							
Chlorodibromomethane	ND	2.00	µg/L							
Chloroethane	ND	2.00	µg/L							
Chloroform	ND	2.00	µg/L							
Chloromethane	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							
trans-1,2-Dichloroethylene	ND	2.00	µg/L							
1,2-Dichloropropane	ND	2.00	µg/L							
cis-1,3-Dichloropropene	ND	2.00	µg/L							
1,4-Dioxane	ND	50.0	µg/L							
trans-1,3-Dichloropropene	ND	2.00	µg/L							
Ethanol	ND	50.0	µg/L							V-05
Ethylbenzene	ND	2.00	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	2.00	µg/L							
Methylene Chloride	ND	5.00	µg/L							
1,1,2,2-Tetrachloroethane	ND	2.00	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							
Trichlorofluoromethane (Freon 11)	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	*25.8*		µg/L	25.0		103	70-130			
Surrogate: Toluene-d8	*24.3*		µg/L	25.0		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	*22.2*		µg/L	25.0		88.8	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B246312 - SW-846 5030B											
LCS (B246312-BS1)				Prepared & Analyzed: 11/18/19							
Acetone	210	50.0	µg/L	200		104	70-160				†
tert-Amyl Methyl Ether (TAME)	17	0.500	µg/L	20.0		86.6	70-130				
Benzene	22	1.00	µg/L	20.0		110	65-135				
Bromodichloromethane	24	2.00	µg/L	20.0		120	65-135				
Bromoform	23	2.00	µg/L	20.0		115	70-130				
Bromomethane	20	2.00	µg/L	20.0		97.8	15-185				
tert-Butyl Alcohol (TBA)	180	20.0	µg/L	200		88.2	40-160				†
Carbon Tetrachloride	24	2.00	µg/L	20.0		119	70-130				
Chlorobenzene	25	2.00	µg/L	20.0		123	65-135				
Chlorodibromomethane	23	2.00	µg/L	20.0		117	70-135				
Chloroethane	22	2.00	µg/L	20.0		111	40-160				
Chloroform	23	2.00	µg/L	20.0		114	70-135				
Chloromethane	12	2.00	µg/L	20.0		61.6	20-205				
1,2-Dichlorobenzene	23	2.00	µg/L	20.0		115	65-135				
1,3-Dichlorobenzene	25	2.00	µg/L	20.0		123	70-130				
1,4-Dichlorobenzene	23	2.00	µg/L	20.0		115	65-135				
1,2-Dichloroethane	24	2.00	µg/L	20.0		120	70-130				
cis-1,2-Dichloroethylene	22	1.00	µg/L	20.0		110	70-130				
1,1-Dichloroethane	21	2.00	µg/L	20.0		107	70-130				
1,1-Dichloroethylene	24	2.00	µg/L	20.0		121	50-150				
trans-1,2-Dichloroethylene	21	2.00	µg/L	20.0		107	70-130				
1,2-Dichloropropane	21	2.00	µg/L	20.0		106	35-165				
cis-1,3-Dichloropropene	21	2.00	µg/L	20.0		106	25-175				
1,4-Dioxane	190	50.0	µg/L	200		96.4	40-130				†
trans-1,3-Dichloropropene	21	2.00	µg/L	20.0		106	50-150				
Ethanol	240	50.0	µg/L	200		119	40-160			V-05	
Ethylbenzene	23	2.00	µg/L	20.0		117	60-140				
Methyl tert-Butyl Ether (MTBE)	21	2.00	µg/L	20.0		106	70-130				
Methylene Chloride	21	5.00	µg/L	20.0		105	60-140				
1,1,2,2-Tetrachloroethane	24	2.00	µg/L	20.0		118	60-140				
Tetrachloroethylene	26	2.00	µg/L	20.0		128	70-130				
Toluene	24	1.00	µg/L	20.0		118	70-130				
1,1,1-Trichloroethane	24	2.00	µg/L	20.0		118	70-130				
1,1,2-Trichloroethane	24	2.00	µg/L	20.0		122	70-130				
Trichloroethylene	24	2.00	µg/L	20.0		120	65-135				
Trichlorofluoromethane (Freon 11)	23	2.00	µg/L	20.0		113	50-150				
Vinyl Chloride	16	2.00	µg/L	20.0		80.6	5-195				
m+p Xylene	47	2.00	µg/L	40.0		118	70-130				
o-Xylene	24	2.00	µg/L	20.0		119	70-130				
Surrogate: 1,2-Dichloroethane-d4	*24.8*		µg/L	25.0		99.1	70-130				
Surrogate: Toluene-d8	*25.5*		µg/L	25.0		102	70-130				
Surrogate: 4-Bromofluorobenzene	*24.3*		µg/L	25.0		97.2	70-130				

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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 B246452 - SW-846 3510C										
Blank (B246452-BLK1)				Prepared: 11/18/19 Analyzed: 11/19/19						
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	0.10	µg/L							
Fluoranthene (SIM)	ND	0.50	µg/L							
Fluorene (SIM)	ND	1.0	µg/L							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	µg/L							
2-Methylnaphthalene (SIM)	ND	1.0	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)	*94.2*		µg/L	200		47.1	15-110			
Surrogate: Phenol-d6 (SIM)	*81.2*		µg/L	200		40.6	15-110			
Surrogate: Nitrobenzene-d5	*79.8*		µg/L	100		79.8	30-130			
Surrogate: 2-Fluorobiphenyl	*51.7*		µg/L	100		51.7	30-130			
Surrogate: 2,4,6-Tribromophenol	*184*		µg/L	200		91.9	15-110			
Surrogate: 2,4,6-Tribromophenol (SIM)	*178*		µg/L	200		89.1	15-110			
Surrogate: p-Terphenyl-d14	*70.1*		µg/L	100		70.1	30-130			
LCS (B246452-BS1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Acenaphthene (SIM)	35.7	6.0	µg/L	50.0		71.4	47-145			
Acenaphthylene (SIM)	36.7	6.0	µg/L	50.0		73.4	33-145			
Anthracene (SIM)	41.7	4.0	µg/L	50.0		83.4	27-133			
Benzo(a)anthracene (SIM)	42.3	1.0	µg/L	50.0		84.6	33-143			
Benzo(a)pyrene (SIM)	39.4	2.0	µg/L	50.0		78.8	17-163			
Benzo(b)fluoranthene (SIM)	44.3	1.0	µg/L	50.0		88.6	24-159			
Benzo(g,h,i)perylene (SIM)	42.0	10	µg/L	50.0		84.0	10-219			
Benzo(k)fluoranthene (SIM)	46.1	4.0	µg/L	50.0		92.2	11-162			
Bis(2-ethylhexyl)phthalate (SIM)	57.5	20	µg/L	50.0		115	8-158			
Chrysene (SIM)	34.7	4.0	µg/L	50.0		69.3	17-168			
Dibenz(a,h)anthracene (SIM)	45.4	2.0	µg/L	50.0		90.9	10-227			
Fluoranthene (SIM)	38.8	10	µg/L	50.0		77.6	26-137			
Fluorene (SIM)	36.9	20	µg/L	50.0		73.8	59-121			
Indeno(1,2,3-cd)pyrene (SIM)	49.6	2.0	µg/L	50.0		99.3	10-171			
2-Methylnaphthalene (SIM)	36.0	20	µg/L	50.0		72.1	40-140			
Naphthalene (SIM)	33.1	20	µg/L	50.0		66.2	21-133			
Pentachlorophenol (SIM)	38.4	20	µg/L	50.0		76.9	14-176			
Phenanthrene (SIM)	37.9	1.0	µg/L	50.0		75.8	54-120			
Pyrene (SIM)	36.9	20	µg/L	50.0		73.9	52-120			
Surrogate: 2-Fluorophenol (SIM)	*91.1*		µg/L	200		45.5	15-110			
Surrogate: Phenol-d6 (SIM)	*80.5*		µg/L	200		40.2	15-110			
Surrogate: Nitrobenzene-d5	*74.3*		µg/L	100		74.3	30-130			
Surrogate: 2-Fluorobiphenyl	*55.7*		µg/L	100		55.7	30-130			
Surrogate: 2,4,6-Tribromophenol	*146*		µg/L	200		73.1	15-110			

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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 B246452 - SW-846 3510C										
LCS (B246452-BS1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Surrogate: 2,4,6-Tribromophenol (SIM)	*183*		µg/L	200		91.6	15-110			
Surrogate: p-Terphenyl-d14	*55.5*		µg/L	100		55.5	30-130			
LCS Dup (B246452-BSD1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Acenaphthene (SIM)	34.6	6.0	µg/L	50.0		69.2	47-145	3.13	48	
Acenaphthylene (SIM)	35.3	6.0	µg/L	50.0		70.7	33-145	3.78	74	
Anthracene (SIM)	38.7	4.0	µg/L	50.0		77.4	27-133	7.36	66	
Benzo(a)anthracene (SIM)	40.3	1.0	µg/L	50.0		80.6	33-143	4.84	53	
Benzo(a)pyrene (SIM)	37.0	2.0	µg/L	50.0		74.0	17-163	6.33	72	
Benzo(b)fluoranthene (SIM)	41.1	1.0	µg/L	50.0		82.3	24-159	7.44	71	
Benzo(g,h,i)perylene (SIM)	39.7	10	µg/L	50.0		79.4	10-219	5.53	97	
Benzo(k)fluoranthene (SIM)	43.7	4.0	µg/L	50.0		87.4	11-162	5.26	63	
Bis(2-ethylhexyl)phthalate (SIM)	54.0	20	µg/L	50.0		108	8-158	6.20	82	
Chrysene (SIM)	33.0	4.0	µg/L	50.0		65.9	17-168	5.03	87	
Dibenz(a,h)anthracene (SIM)	42.9	2.0	µg/L	50.0		85.8	10-227	5.75	126	
Fluoranthene (SIM)	36.6	10	µg/L	50.0		73.2	26-137	5.78	66	
Fluorene (SIM)	35.7	20	µg/L	50.0		71.4	59-121	3.20	38	
Indeno(1,2,3-cd)pyrene (SIM)	47.1	2.0	µg/L	50.0		94.2	10-171	5.21	99	‡
2-Methylnaphthalene (SIM)	35.0	20	µg/L	50.0		70.0	40-140	2.87	20	
Naphthalene (SIM)	32.3	20	µg/L	50.0		64.6	21-133	2.45	65	
Pentachlorophenol (SIM)	35.5	20	µg/L	50.0		71.0	14-176	8.01	86	
Phenanthrene (SIM)	35.8	1.0	µg/L	50.0		71.6	54-120	5.70	39	
Pyrene (SIM)	34.8	20	µg/L	50.0		69.5	52-120	6.08	49	
Surrogate: 2-Fluorophenol (SIM)	*87.5*		µg/L	200		43.8	15-110			
Surrogate: Phenol-d6 (SIM)	*77.6*		µg/L	200		38.8	15-110			
Surrogate: Nitrobenzene-d5	*71.0*		µg/L	100		71.0	30-130			
Surrogate: 2-Fluorobiphenyl	*54.6*		µg/L	100		54.6	30-130			
Surrogate: 2,4,6-Tribromophenol	*150*		µg/L	200		75.2	15-110			
Surrogate: 2,4,6-Tribromophenol (SIM)	*173*		µg/L	200		86.3	15-110			
Surrogate: p-Terphenyl-d14	*53.0*		µg/L	100		53.0	30-130			
Matrix Spike (B246452-MS1)		**Source: 19K0854-01**		Prepared: 11/18/19 Analyzed: 11/20/19						
Acenaphthene (SIM)	40.4	6.3	µg/L	52.6	ND	76.7	47-145			
Acenaphthylene (SIM)	43.0	6.3	µg/L	52.6	ND	81.7	33-145			
Anthracene (SIM)	46.7	4.2	µg/L	52.6	ND	88.7	27-133			
Benzo(a)anthracene (SIM)	49.5	1.1	µg/L	52.6	ND	94.0	33-143			
Benzo(a)pyrene (SIM)	45.5	2.1	µg/L	52.6	0.277	85.8	17-163			
Benzo(b)fluoranthene (SIM)	48.9	1.1	µg/L	52.6	0.359	92.3	24-159			
Benzo(g,h,i)perylene (SIM)	45.2	11	µg/L	52.6	ND	85.9	10-219			
Benzo(k)fluoranthene (SIM)	51.9	4.2	µg/L	52.6	ND	98.5	11-162			
Bis(2-ethylhexyl)phthalate (SIM)	77.5	21	µg/L	52.6	ND	147	8-158			V-06
Chrysene (SIM)	40.3	4.2	µg/L	52.6	ND	76.5	17-168			
Dibenz(a,h)anthracene (SIM)	50.4	2.1	µg/L	52.6	ND	95.7	10-227			
Fluoranthene (SIM)	45.5	11	µg/L	52.6	0.568	85.4	26-137			
Fluorene (SIM)	44.1	21	µg/L	52.6	ND	83.7	59-121			
Indeno(1,2,3-cd)pyrene (SIM)	54.9	2.1	µg/L	52.6	ND	104	10-171			
2-Methylnaphthalene (SIM)	42.9	21	µg/L	52.6	ND	81.6	40-140			
Naphthalene (SIM)	39.1	21	µg/L	52.6	ND	74.2	21-133			
Pentachlorophenol (SIM)	46.4	21	µg/L	52.6	ND	88.2	14-176			
Phenanthrene (SIM)	43.1	1.1	µg/L	52.6	ND	81.8	54-120			
Pyrene (SIM)	41.1	21	µg/L	52.6	0.522	77.2	52-120			
Surrogate: 2-Fluorophenol (SIM)	*88.4*		µg/L	211		42.0	15-110			

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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 B246452 - SW-846 3510C										
Matrix Spike (B246452-MS1)	**Source: 19K0854-01**			Prepared: 11/18/19 Analyzed: 11/20/19						
Surrogate: Phenol-d6 (SIM)	*75.8*		µg/L	211		36.0	15-110			
Surrogate: Nitrobenzene-d5	*88.5*		µg/L	105		84.0	30-130			
Surrogate: 2-Fluorobiphenyl	*63.9*		µg/L	105		60.7	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*221*		µg/L	211		105	15-110			
Surrogate: p-Terphenyl-d14	*64.7*		µg/L	105		61.4	30-130			
Matrix Spike Dup (B246452-MSD1)	**Source: 19K0854-01**			Prepared: 11/18/19 Analyzed: 11/20/19						
Acenaphthene (SIM)	33.4	6.3	µg/L	52.6	ND	63.4	47-145	18.9	48	
Acenaphthylene (SIM)	35.4	6.3	µg/L	52.6	ND	67.3	33-145	19.3	74	
Anthracene (SIM)	39.6	4.2	µg/L	52.6	ND	75.3	27-133	16.3	66	
Benzo(a)anthracene (SIM)	44.8	1.1	µg/L	52.6	ND	85.1	33-143	9.96	53	
Benzo(a)pyrene (SIM)	41.8	2.1	µg/L	52.6	0.277	78.9	17-163	8.40	72	
Benzo(b)fluoranthene (SIM)	43.9	1.1	µg/L	52.6	0.359	82.8	24-159	10.8	71	
Benzo(g,h,i)perylene (SIM)	40.0	11	µg/L	52.6	ND	76.0	10-219	12.2	97	
Benzo(k)fluoranthene (SIM)	44.5	4.2	µg/L	52.6	ND	84.6	11-162	15.2	63	
Bis(2-ethylhexyl)phthalate (SIM)	68.2	21	µg/L	52.6	ND	130	8-158	12.8	82	V-06
Chrysene (SIM)	36.2	4.2	µg/L	52.6	ND	68.8	17-168	10.6	87	
Dibenz(a,h)anthracene (SIM)	42.9	2.1	µg/L	52.6	ND	81.6	10-227	16.0	126	
Fluoranthene (SIM)	43.8	11	µg/L	52.6	0.568	82.2	26-137	3.82	66	
Fluorene (SIM)	37.1	21	µg/L	52.6	ND	70.4	59-121	17.3	38	
Indeno(1,2,3-cd)pyrene (SIM)	49.6	2.1	µg/L	52.6	ND	94.3	10-171	10.0	99	
2-Methylnaphthalene (SIM)	35.7	21	µg/L	52.6	ND	67.8	40-140	18.4	30	
Naphthalene (SIM)	32.6	21	µg/L	52.6	ND	61.9	21-133	18.2	65	
Pentachlorophenol (SIM)	41.7	21	µg/L	52.6	ND	79.2	14-176	10.8	86	
Phenanthrene (SIM)	38.1	1.1	µg/L	52.6	ND	72.3	54-120	12.3	39	
Pyrene (SIM)	39.6	21	µg/L	52.6	0.522	74.2	52-120	3.86	49	
Surrogate: 2-Fluorophenol (SIM)	*77.1*		µg/L	211		36.6	15-110			
Surrogate: Phenol-d6 (SIM)	*66.0*		µg/L	211		31.4	15-110			
Surrogate: Nitrobenzene-d5	*75.3*		µg/L	105		71.5	30-130			
Surrogate: 2-Fluorobiphenyl	*52.0*		µg/L	105		49.4	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*185*		µg/L	211		87.8	15-110			
Surrogate: p-Terphenyl-d14	*56.3*		µg/L	105		53.5	30-130			

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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 B246326 - SW-846 3510C										
Blank (B246326-BLK1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Acenaphthene	ND	5.00	µg/L							
Acenaphthylene	ND	5.00	µg/L							
Anthracene	ND	5.00	µg/L							
Benzidine	ND	20.0	µg/L							V-35
Benzo(g,h,i)perylene	ND	5.00	µg/L							
4-Bromophenylphenylether	ND	10.0	µg/L							
Butylbenzylphthalate	ND	10.0	µg/L							
4-Chloro-3-methylphenol	ND	10.0	µg/L							
Bis(2-chloroethyl)ether	ND	10.0	µg/L							
Bis(2-chloroisopropyl)ether	ND	10.0	µg/L							
2-Chloronaphthalene	ND	10.0	µg/L							
2-Chlorophenol	ND	10.0	µg/L							
4-Chlorophenylphenylether	ND	10.0	µg/L							
Di-n-butylphthalate	ND	10.0	µg/L							
1,3-Dichlorobenzene	ND	5.00	µg/L							
1,4-Dichlorobenzene	ND	5.00	µg/L							
1,2-Dichlorobenzene	ND	5.00	µg/L							
3,3-Dichlorobenzidine	ND	10.0	µg/L							V-20
2,4-Dichlorophenol	ND	10.0	µg/L							
Diethylphthalate	ND	10.0	µg/L							
2,4-Dimethylphenol	ND	10.0	µg/L							
Dimethylphthalate	ND	10.0	µg/L							
4,6-Dinitro-2-methylphenol	ND	10.0	µg/L							
2,4-Dinitrophenol	ND	10.0	µg/L							
2,4-Dinitrotoluene	ND	10.0	µg/L							
2,6-Dinitrotoluene	ND	10.0	µg/L							
Di-n-octylphthalate	ND	10.0	µg/L							
1,2-Diphenylhydrazine/Azobenzene	ND	10.0	µg/L							
Fluoranthene	ND	5.00	µg/L							
Fluorene	ND	5.00	µg/L							
Hexachlorobenzene	ND	10.0	µg/L							
Hexachlorobutadiene	ND	10.0	µg/L							
Hexachlorocyclopentadiene	ND	10.0	µg/L							V-05
Hexachloroethane	ND	10.0	µg/L							
Isophorone	ND	10.0	µg/L							
Naphthalene	ND	5.00	µg/L							
Nitrobenzene	ND	10.0	µg/L							
2-Nitrophenol	ND	10.0	µg/L							
4-Nitrophenol	ND	10.0	µg/L							V-20
N-Nitrosodimethylamine	ND	10.0	µg/L							
N-Nitrosodiphenylamine/Diphenylamine	ND	10.0	µg/L							
N-Nitrosodi-n-propylamine	ND	10.0	µg/L							
2-Methylnaphthalene	ND	5.00	µg/L							
Phenanthrene	ND	5.00	µg/L							
2-Methylphenol	ND	10.0	µg/L							
Phenol	ND	10.0	µg/L							
3/4-Methylphenol	ND	20.0	µg/L							
Pyrene	ND	5.00	µg/L							
1,2,4-Trichlorobenzene	ND	5.00	µg/L							
2,4,6-Trichlorophenol	ND	10.0	µg/L							
Surrogate: 2-Fluorophenol	*126*		µg/L	200		63.1	15-110			
Surrogate: Phenol-d6	*101*		µg/L	200		50.5	15-110			

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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 B246326 - SW-846 3510C											
Blank (B246326-BLK1)				Prepared: 11/18/19 Analyzed: 11/19/19							
Surrogate: Nitrobenzene-d5	*94.2*		µg/L	100		94.2		30-130			
Surrogate: 2-Fluorobiphenyl	*91.4*		µg/L	100		91.4		30-130			
Surrogate: 2,4,6-Tribromophenol	*213*		µg/L	200		106		15-110			
Surrogate: p-Terphenyl-d14	*114*		µg/L	100		114		30-130			
LCS (B246326-BS1)				Prepared: 11/18/19 Analyzed: 11/19/19							
Acenaphthene	44.0	5.00	µg/L	50.0		88.0		47-145			
Acenaphthylene	44.9	5.00	µg/L	50.0		89.7		33-145			
Anthracene	48.0	5.00	µg/L	50.0		95.9		27-133			
Benzidine	102	20.0	µg/L	50.0		**204**	*	40-140			V-35, L-02
Benzo(g,h,i)perylene	52.4	5.00	µg/L	50.0		105		10-219			
4-Bromophenylphenylether	45.5	10.0	µg/L	50.0		91.0		53-127			
Butylbenzylphthalate	51.9	10.0	µg/L	50.0		104		10-152			
4-Chloro-3-methylphenol	47.8	10.0	µg/L	50.0		95.7		22-147			
Bis(2-chloroethyl)ether	44.0	10.0	µg/L	50.0		88.1		12-158			
Bis(2-chloroisopropyl)ether	55.5	10.0	µg/L	50.0		111		36-166			
2-Chloronaphthalene	39.0	10.0	µg/L	50.0		78.0		60-120			
2-Chlorophenol	39.3	10.0	µg/L	50.0		78.5		23-134			
4-Chlorophenylphenylether	43.6	10.0	µg/L	50.0		87.3		25-158			
Di-n-butylphthalate	48.1	10.0	µg/L	50.0		96.2		10-120			
1,3-Dichlorobenzene	33.7	5.00	µg/L	50.0		67.4		10-172			
1,4-Dichlorobenzene	34.2	5.00	µg/L	50.0		68.5		20-124			
1,2-Dichlorobenzene	35.2	5.00	µg/L	50.0		70.3		32-129			
3,3-Dichlorobenzidine	65.4	10.0	µg/L	50.0		131		10-262			V-20
2,4-Dichlorophenol	42.9	10.0	µg/L	50.0		85.7		39-135			
Diethylphthalate	46.8	10.0	µg/L	50.0		93.6		10-120			
2,4-Dimethylphenol	42.6	10.0	µg/L	50.0		85.2		32-120			
Dimethylphthalate	44.9	10.0	µg/L	50.0		89.9		10-120			
4,6-Dinitro-2-methylphenol	40.2	10.0	µg/L	50.0		80.4		10-181			
2,4-Dinitrophenol	33.2	10.0	µg/L	50.0		66.4		10-191			
2,4-Dinitrotoluene	43.0	10.0	µg/L	50.0		86.0		39-139			
2,6-Dinitrotoluene	44.9	10.0	µg/L	50.0		89.8		50-158			
Di-n-octylphthalate	48.8	10.0	µg/L	50.0		97.7		4-146			
1,2-Diphenylhydrazine/Azobenzene	58.3	10.0	µg/L	50.0		117		40-140			
Fluoranthene	44.9	5.00	µg/L	50.0		89.9		26-137			
Fluorene	45.2	5.00	µg/L	50.0		90.4		59-121			
Hexachlorobenzene	48.1	10.0	µg/L	50.0		96.2		10-152			
Hexachlorobutadiene	35.9	10.0	µg/L	50.0		71.9		24-120			
Hexachlorocyclopentadiene	30.2	10.0	µg/L	50.0		60.5		40-140			V-05
Hexachloroethane	36.1	10.0	µg/L	50.0		72.3		40-120			
Isophorone	49.6	10.0	µg/L	50.0		99.1		21-196			
Naphthalene	40.2	5.00	µg/L	50.0		80.5		21-133			
Nitrobenzene	43.7	10.0	µg/L	50.0		87.4		35-180			
2-Nitrophenol	41.7	10.0	µg/L	50.0		83.5		29-182			
4-Nitrophenol	31.6	10.0	µg/L	50.0		63.2		10-132			V-20
N-Nitrosodimethylamine	31.5	10.0	µg/L	50.0		63.0		40-140			
N-Nitrosodiphenylamine/Diphenylamine	50.2	10.0	µg/L	50.0		100		40-140			
N-Nitrosodi-n-propylamine	49.1	10.0	µg/L	50.0		98.3		10-230			
2-Methylnaphthalene	47.5	5.00	µg/L	50.0		95.1		40-140			
Phenanthrene	48.4	5.00	µg/L	50.0		96.7		54-120			
2-Methylphenol	38.7	10.0	µg/L	50.0		77.5		40-140			
Phenol	24.1	10.0	µg/L	50.0		48.2		5-120			

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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 B246326 - SW-846 3510C											
LCS (B246326-BS1)				Prepared: 11/18/19 Analyzed: 11/19/19							
3/4-Methylphenol	39.7	20.0	µg/L	50.0		79.4		40-140			
Pyrene	51.8	5.00	µg/L	50.0		104		52-120			
1,2,4-Trichlorobenzene	37.7	5.00	µg/L	50.0		75.4		44-142			
2,4,6-Trichlorophenol	44.8	10.0	µg/L	50.0		89.5		37-144			
Surrogate: 2-Fluorophenol	*120*		µg/L	200		60.0		15-110			
Surrogate: Phenol-d6	*99.4*		µg/L	200		49.7		15-110			
Surrogate: Nitrobenzene-d5	*91.5*		µg/L	100		91.5		30-130			
Surrogate: 2-Fluorobiphenyl	*95.9*		µg/L	100		95.9		30-130			
Surrogate: 2,4,6-Tribromophenol	*217*		µg/L	200		109		15-110			
Surrogate: p-Terphenyl-d14	*113*		µg/L	100		113		30-130			
LCS Dup (B246326-BSD1)				Prepared: 11/18/19 Analyzed: 11/19/19							
Acenaphthene	44.6	5.00	µg/L	50.0		89.3		47-145	1.42	48	
Acenaphthylene	46.1	5.00	µg/L	50.0		92.2		33-145	2.73	74	
Anthracene	48.4	5.00	µg/L	50.0		96.7		27-133	0.810	66	
Benzidine	78.0	20.0	µg/L	50.0		**156**	*	40-140	26.8	30	L-02, V-35
Benzo(g,h,i)perylene	53.2	5.00	µg/L	50.0		106		10-219	1.48	97	
4-Bromophenylphenylether	46.0	10.0	µg/L	50.0		92.0		53-127	1.11	43	
Butylbenzylphthalate	52.7	10.0	µg/L	50.0		105		10-152	1.63	60	
4-Chloro-3-methylphenol	48.3	10.0	µg/L	50.0		96.7		22-147	0.998	73	
Bis(2-chloroethyl)ether	44.9	10.0	µg/L	50.0		89.9		12-158	2.02	108	
Bis(2-chloroisopropyl)ether	56.4	10.0	µg/L	50.0		113		36-166	1.59	76	
2-Chloronaphthalene	41.2	10.0	µg/L	50.0		82.4		60-120	5.48	24	
2-Chlorophenol	39.8	10.0	µg/L	50.0		79.5		23-134	1.27	61	
4-Chlorophenylphenylether	43.7	10.0	µg/L	50.0		87.5		25-158	0.183	61	
Di-n-butylphthalate	47.7	10.0	µg/L	50.0		95.3		10-120	0.919	47	
1,3-Dichlorobenzene	34.0	5.00	µg/L	50.0		68.0		10-172	0.886	30	
1,4-Dichlorobenzene	34.8	5.00	µg/L	50.0		69.5		20-124	1.45	30	
1,2-Dichlorobenzene	35.6	5.00	µg/L	50.0		71.2		32-129	1.24	30	
3,3-Dichlorobenzidine	66.6	10.0	µg/L	50.0		133		10-262	1.80	108	V-20
2,4-Dichlorophenol	44.3	10.0	µg/L	50.0		88.5		39-135	3.19	50	
Diethylphthalate	46.6	10.0	µg/L	50.0		93.2		10-120	0.428	100	
2,4-Dimethylphenol	44.0	10.0	µg/L	50.0		88.0		32-120	3.23	58	
Dimethylphthalate	44.4	10.0	µg/L	50.0		88.9		10-120	1.10	183	
4,6-Dinitro-2-methylphenol	41.5	10.0	µg/L	50.0		83.1		10-181	3.23	203	
2,4-Dinitrophenol	34.7	10.0	µg/L	50.0		69.4		10-191	4.48	132	
2,4-Dinitrotoluene	43.4	10.0	µg/L	50.0		86.8		39-139	0.926	42	
2,6-Dinitrotoluene	45.8	10.0	µg/L	50.0		91.6		50-158	2.01	48	
Di-n-octylphthalate	49.1	10.0	µg/L	50.0		98.1		4-146	0.470	69	
1,2-Diphenylhydrazine/Azobenzene	58.4	10.0	µg/L	50.0		117		40-140	0.189	30	
Fluoranthene	44.9	5.00	µg/L	50.0		89.8		26-137	0.111	66	
Fluorene	45.6	5.00	µg/L	50.0		91.3		59-121	0.925	38	
Hexachlorobenzene	47.7	10.0	µg/L	50.0		95.5		10-152	0.731	55	
Hexachlorobutadiene	38.3	10.0	µg/L	50.0		76.6		24-120	6.39	62	
Hexachlorocyclopentadiene	32.0	10.0	µg/L	50.0		64.0		40-140	5.72	30	V-05
Hexachloroethane	37.1	10.0	µg/L	50.0		74.3		40-120	2.73	52	
Isophorone	50.4	10.0	µg/L	50.0		101		21-196	1.72	93	
Naphthalene	41.2	5.00	µg/L	50.0		82.3		21-133	2.29	65	
Nitrobenzene	45.0	10.0	µg/L	50.0		89.9		35-180	2.82	62	
2-Nitrophenol	42.9	10.0	µg/L	50.0		85.7		29-182	2.65	55	
4-Nitrophenol	32.6	10.0	µg/L	50.0		65.3		10-132	3.24	131	V-20
N-Nitrosodimethylamine	32.6	10.0	µg/L	50.0		65.1		40-140	3.31	30	

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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 B246326 - SW-846 3510C											
LCS Dup (B246326-BSD1)				Prepared: 11/18/19 Analyzed: 11/19/19							
N-Nitrosodiphenylamine/Diphenylamine	50.6	10.0	µg/L	50.0		101		40-140	0.655	30	
N-Nitrosodi-n-propylamine	49.8	10.0	µg/L	50.0		99.7		10-230	1.41	87	
2-Methylnaphthalene	48.3	5.00	µg/L	50.0		96.6		40-140	1.59	30	
Phenanthrene	48.6	5.00	µg/L	50.0		97.2		54-120	0.433	39	
2-Methylphenol	39.9	10.0	µg/L	50.0		79.8		40-140	3.00	30	
Phenol	24.8	10.0	µg/L	50.0		49.6		5-120	2.74	64	
3/4-Methylphenol	40.2	20.0	µg/L	50.0		80.4		40-140	1.23	30	
Pyrene	52.4	5.00	µg/L	50.0		105		52-120	1.09	49	
1,2,4-Trichlorobenzene	39.1	5.00	µg/L	50.0		78.1		44-142	3.52	50	
2,4,6-Trichlorophenol	45.0	10.0	µg/L	50.0		90.1		37-144	0.624	58	
Surrogate: 2-Fluorophenol	*122*		µg/L	200		61.0		15-110			
Surrogate: Phenol-d6	*102*		µg/L	200		50.8		15-110			
Surrogate: Nitrobenzene-d5	*92.1*		µg/L	100		92.1		30-130			
Surrogate: 2-Fluorobiphenyl	*96.7*		µg/L	100		96.7		30-130			
Surrogate: 2,4,6-Tribromophenol	*217*		µg/L	200		108		15-110			
Surrogate: p-Terphenyl-d14	*111*		µg/L	100		111		30-130			
Matrix Spike (B246326-MS1)		**Source: 19K0854-01**		Prepared: 11/18/19 Analyzed: 11/20/19							
Acenaphthene	48.5	5.26	µg/L	52.6	ND	92.1		47-145			
Acenaphthylene	49.1	5.26	µg/L	52.6	ND	93.3		33-145			
Anthracene	51.2	5.26	µg/L	52.6	ND	97.3		27-133			
Benzidine	0.568	21.1	µg/L	52.6	ND	**1.08**	*	40-140			V-05, V-35, MS-09
Benzo(g,h,i)perylene	42.9	5.26	µg/L	52.6	ND	81.6		10-219			
4-Bromophenylphenylether	47.6	10.5	µg/L	52.6	ND	90.5		53-127			
Butylbenzylphthalate	55.8	10.5	µg/L	52.6	ND	106		10-152			
4-Chloro-3-methylphenol	55.1	10.5	µg/L	52.6	ND	105		22-147			
Bis(2-chloroethyl)ether	51.9	10.5	µg/L	52.6	ND	98.7		12-158			
Bis(2-chloroisopropyl)ether	61.9	10.5	µg/L	52.6	ND	118		36-166			
2-Chloronaphthalene	41.2	10.5	µg/L	52.6	ND	78.4		60-120			
2-Chlorophenol	42.7	10.5	µg/L	52.6	ND	81.0		23-134			
4-Chlorophenylphenylether	47.7	10.5	µg/L	52.6	ND	90.6		25-158			
Di-n-butylphthalate	53.4	10.5	µg/L	52.6	ND	102		10-120			
1,3-Dichlorobenzene	36.5	5.26	µg/L	52.6	ND	69.3		10-172			
1,4-Dichlorobenzene	37.4	5.26	µg/L	52.6	ND	71.1		20-124			
1,2-Dichlorobenzene	39.0	5.26	µg/L	52.6	ND	74.0		32-129			
3,3-Dichlorobenzidine	47.5	10.5	µg/L	52.6	ND	90.2		10-262			
2,4-Dichlorophenol	48.8	10.5	µg/L	52.6	ND	92.8		39-135			
Diethylphthalate	54.2	10.5	µg/L	52.6	ND	103		10-120			
2,4-Dimethylphenol	48.7	10.5	µg/L	52.6	ND	92.5		32-120			
Dimethylphthalate	50.3	10.5	µg/L	52.6	ND	95.5		10-120			
4,6-Dinitro-2-methylphenol	33.5	10.5	µg/L	52.6	ND	63.7		10-181			
2,4-Dinitrophenol	29.6	10.5	µg/L	52.6	ND	56.2		10-191			
2,4-Dinitrotoluene	51.1	10.5	µg/L	52.6	ND	97.1		39-139			
2,6-Dinitrotoluene	49.1	10.5	µg/L	52.6	ND	93.3		50-158			
Di-n-octylphthalate	64.5	10.5	µg/L	52.6	ND	122		4-146			
1,2-Diphenylhydrazine/Azobenzene	62.4	10.5	µg/L	52.6	ND	118		40-140			
Fluoranthene	51.5	5.26	µg/L	52.6	0.570	96.7		26-137			
Fluorene	52.0	5.26	µg/L	52.6	0.580	97.7		59-121			
Hexachlorobenzene	49.8	10.5	µg/L	52.6	ND	94.6		10-152			
Hexachlorobutadiene	40.7	10.5	µg/L	52.6	ND	77.3		24-120			
Hexachlorocyclopentadiene	19.5	10.5	µg/L	52.6	ND	**37.0**	*	40-140			MS-09
Hexachloroethane	39.7	10.5	µg/L	52.6	ND	75.5		40-120			

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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 B246326 - SW-846 3510C											
Matrix Spike (B246326-MS1)	**Source: 19K0854-01**			Prepared: 11/18/19 Analyzed: 11/20/19							
Isophorone	56.3	10.5	µg/L	52.6	ND	107		21-196			
Naphthalene	45.6	5.26	µg/L	52.6	ND	86.7		21-133			
Nitrobenzene	50.4	10.5	µg/L	52.6	ND	95.8		35-180			
2-Nitrophenol	45.5	10.5	µg/L	52.6	ND	86.5		29-182			
4-Nitrophenol	35.6	10.5	µg/L	52.6	ND	67.7		10-132			V-06
N-Nitrosodimethylamine	31.9	10.5	µg/L	52.6	ND	60.7		40-140			
N-Nitrosodiphenylamine/Diphenylamine	52.0	10.5	µg/L	52.6	ND	98.7		40-140			
N-Nitrosodi-n-propylamine	57.2	10.5	µg/L	52.6	ND	109		10-230			
2-Methylnaphthalene	53.6	5.26	µg/L	52.6	ND	102		40-140			
Phenanthrene	52.1	5.26	µg/L	52.6	ND	98.9		54-120			
2-Methylphenol	41.3	10.5	µg/L	52.6	ND	78.6		40-140			
Phenol	21.5	10.5	µg/L	52.6	ND	40.8		5-120			
3/4-Methylphenol	42.4	21.1	µg/L	52.6	ND	80.6		40-140			
Pyrene	53.1	5.26	µg/L	52.6	0.600	99.8		52-120			
1,2,4-Trichlorobenzene	42.0	5.26	µg/L	52.6	ND	79.8		44-142			
2,4,6-Trichlorophenol	48.7	10.5	µg/L	52.6	ND	92.6		37-144			
Surrogate: 2-Fluorophenol	*114*		µg/L	211		53.9		15-110			
Surrogate: Phenol-d6	*89.9*		µg/L	211		42.7		15-110			
Surrogate: Nitrobenzene-d5	*109*		µg/L	105		104		30-130			
Surrogate: 2-Fluorobiphenyl	*106*		µg/L	105		101		30-130			
Surrogate: 2,4,6-Tribromophenol	*266*		µg/L	211		**126**	*	15-110			S-07
Surrogate: p-Terphenyl-d14	*114*		µg/L	105		108		30-130			
Matrix Spike Dup (B246326-MSD1)	**Source: 19K0854-01**			Prepared: 11/18/19 Analyzed: 11/20/19							
Acenaphthene	43.8	5.26	µg/L	52.6	ND	83.2		47-145	10.1	48	
Acenaphthylene	44.7	5.26	µg/L	52.6	ND	84.9		33-145	9.43	74	
Anthracene	47.1	5.26	µg/L	52.6	ND	89.6		27-133	8.28	66	
Benzidine	ND	21.1	µg/L	52.6	ND		*	40-140		30	MS-09, V-35, V-05
Benzo(g,h,i)perylene	42.6	5.26	µg/L	52.6	ND	80.9		10-219	0.812	97	
4-Bromophenylphenylether	41.1	10.5	µg/L	52.6	ND	78.1		53-127	14.8	43	
Butylbenzylphthalate	51.2	10.5	µg/L	52.6	ND	97.2		10-152	8.73	60	
4-Chloro-3-methylphenol	51.6	10.5	µg/L	52.6	ND	98.0		22-147	6.55	73	
Bis(2-chloroethyl)ether	47.7	10.5	µg/L	52.6	ND	90.6		12-158	8.52	108	
Bis(2-chloroisopropyl)ether	55.7	10.5	µg/L	52.6	ND	106		36-166	10.5	76	
2-Chloronaphthalene	37.2	10.5	µg/L	52.6	ND	70.7		60-120	10.2	24	
2-Chlorophenol	39.7	10.5	µg/L	52.6	ND	75.5		23-134	7.08	61	
4-Chlorophenylphenylether	43.3	10.5	µg/L	52.6	ND	82.3		25-158	9.55	61	
Di-n-butylphthalate	48.3	10.5	µg/L	52.6	ND	91.7		10-120	10.1	47	
1,3-Dichlorobenzene	33.3	5.26	µg/L	52.6	ND	63.2		10-172	9.20	30	
1,4-Dichlorobenzene	33.6	5.26	µg/L	52.6	ND	63.8		20-124	10.8	30	
1,2-Dichlorobenzene	35.3	5.26	µg/L	52.6	ND	67.1		32-129	9.83	30	
3,3-Dichlorobenzidine	30.4	10.5	µg/L	52.6	ND	57.8		10-262	43.8	108	
2,4-Dichlorophenol	45.2	10.5	µg/L	52.6	ND	85.9		39-135	7.68	50	
Diethylphthalate	48.9	10.5	µg/L	52.6	ND	92.9		10-120	10.3	100	
2,4-Dimethylphenol	44.9	10.5	µg/L	52.6	ND	85.3		32-120	8.08	58	
Dimethylphthalate	45.6	10.5	µg/L	52.6	ND	86.6		10-120	9.71	183	
4,6-Dinitro-2-methylphenol	31.2	10.5	µg/L	52.6	ND	59.3		10-181	7.09	203	
2,4-Dinitrophenol	29.5	10.5	µg/L	52.6	ND	56.1		10-191	0.0356	132	
2,4-Dinitrotoluene	46.4	10.5	µg/L	52.6	ND	88.2		39-139	9.63	42	
2,6-Dinitrotoluene	45.4	10.5	µg/L	52.6	ND	86.2		50-158	7.87	48	
Di-n-octylphthalate	59.9	10.5	µg/L	52.6	ND	114		4-146	7.36	69	
1,2-Diphenylhydrazine/Azobenzene	54.9	10.5	µg/L	52.6	ND	104		40-140	12.7	30	

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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 B246326 - SW-846 3510C											
Matrix Spike Dup (B246326-MSD1)	**Source: 19K0854-01**			Prepared: 11/18/19 Analyzed: 11/20/19							
Fluoranthene	53.6	5.26	µg/L	52.6	0.570	101		26-137	4.17	66	
Fluorene	47.4	5.26	µg/L	52.6	0.580	88.9		59-121	9.24	38	
Hexachlorobenzene	45.6	10.5	µg/L	52.6	ND	86.6		10-152	8.92	55	
Hexachlorobutadiene	37.8	10.5	µg/L	52.6	ND	71.8		24-120	7.38	62	
Hexachlorocyclopentadiene	18.9	10.5	µg/L	52.6	ND	**35.9**	*	40-140	3.18	30	MS-09
Hexachloroethane	37.3	10.5	µg/L	52.6	ND	70.8		40-120	6.37	52	
Isophorone	51.7	10.5	µg/L	52.6	ND	98.1		21-196	8.68	93	
Naphthalene	42.3	5.26	µg/L	52.6	ND	80.3		21-133	7.62	65	
Nitrobenzene	46.2	10.5	µg/L	52.6	ND	87.7		35-180	8.76	62	
2-Nitrophenol	41.9	10.5	µg/L	52.6	ND	79.6		29-182	8.31	55	
4-Nitrophenol	35.4	10.5	µg/L	52.6	ND	67.2		10-132	0.742	131	V-06
N-Nitrosodimethylamine	31.6	10.5	µg/L	52.6	ND	60.0		40-140	1.13	30	
N-Nitrosodiphenylamine/Diphenylamine	46.6	10.5	µg/L	52.6	ND	88.6		40-140	10.8	30	
N-Nitrosodi-n-propylamine	51.7	10.5	µg/L	52.6	ND	98.2		10-230	10.2	87	
2-Methylnaphthalene	49.3	5.26	µg/L	52.6	ND	93.6		40-140	8.47	30	
Phenanthrene	50.2	5.26	µg/L	52.6	ND	95.4		54-120	3.66	39	
2-Methylphenol	38.9	10.5	µg/L	52.6	ND	73.9		40-140	6.06	30	
Phenol	21.1	10.5	µg/L	52.6	ND	40.2		5-120	1.68	64	
3/4-Methylphenol	39.9	21.1	µg/L	52.6	ND	75.8		40-140	6.16	30	
Pyrene	55.5	5.26	µg/L	52.6	0.600	104		52-120	4.42	49	
1,2,4-Trichlorobenzene	38.1	5.26	µg/L	52.6	ND	72.4		44-142	9.67	50	
2,4,6-Trichlorophenol	44.4	10.5	µg/L	52.6	ND	84.4		37-144	9.27	58	
Surrogate: 2-Fluorophenol	*110*		µg/L	211		52.1		15-110			
Surrogate: Phenol-d6	*87.7*		µg/L	211		41.7		15-110			
Surrogate: Nitrobenzene-d5	*98.9*		µg/L	105		93.9		30-130			
Surrogate: 2-Fluorobiphenyl	*94.1*		µg/L	105		89.4		30-130			
Surrogate: 2,4,6-Tribromophenol	*252*		µg/L	211		**120**	*	15-110			S-07
Surrogate: p-Terphenyl-d14	*106*		µg/L	105		101		30-130			

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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 B246371 - SW-846 3510C										
Blank (B246371-BLK1)				Prepared: 11/19/19 Analyzed: 11/20/19						
Aroclor-1016	ND	0.0100	µg/L							
Aroclor-1016 [2C]	ND	0.0100	µg/L							
Aroclor-1221	ND	0.0100	µg/L							
Aroclor-1221 [2C]	ND	0.0100	µg/L							
Aroclor-1232	ND	0.0100	µg/L							
Aroclor-1232 [2C]	ND	0.0100	µg/L							
Aroclor-1242	ND	0.0100	µg/L							
Aroclor-1242 [2C]	ND	0.0100	µg/L							
Aroclor-1248	ND	0.0100	µg/L							
Aroclor-1248 [2C]	ND	0.0100	µg/L							
Aroclor-1254	ND	0.0100	µg/L							
Aroclor-1254 [2C]	ND	0.0100	µg/L							
Aroclor-1260	ND	0.0100	µg/L							
Aroclor-1260 [2C]	ND	0.0100	µg/L							
Surrogate: Decachlorobiphenyl	*0.131*		µg/L	0.200		65.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.133*		µg/L	0.200		66.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.123*		µg/L	0.200		61.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.142*		µg/L	0.200		70.8	30-150			
LCS (B246371-BS1)				Prepared: 11/19/19 Analyzed: 11/20/19						
Aroclor-1016	0.336	0.200	µg/L	0.500		67.1	50-140			
Aroclor-1016 [2C]	0.352	0.200	µg/L	0.500		70.4	50-140			
Aroclor-1260	0.272	0.200	µg/L	0.500		54.4	8-140			
Aroclor-1260 [2C]	0.275	0.200	µg/L	0.500		55.1	8-140			
Surrogate: Decachlorobiphenyl	*1.21*		µg/L	2.00		60.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.22*		µg/L	2.00		60.8	30-150			
Surrogate: Tetrachloro-m-xylene	*1.08*		µg/L	2.00		54.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.23*		µg/L	2.00		61.5	30-150			
LCS Dup (B246371-BSD1)				Prepared: 11/19/19 Analyzed: 11/20/19						
Aroclor-1016	0.314	0.200	µg/L	0.500		62.8	50-140	6.70		
Aroclor-1016 [2C]	0.308	0.200	µg/L	0.500		61.6	50-140	13.3		
Aroclor-1260	0.253	0.200	µg/L	0.500		50.6	8-140	7.33		
Aroclor-1260 [2C]	0.250	0.200	µg/L	0.500		50.0	8-140	9.66		
Surrogate: Decachlorobiphenyl	*1.09*		µg/L	2.00		54.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.10*		µg/L	2.00		54.8	30-150			
Surrogate: Tetrachloro-m-xylene	*1.10*		µg/L	2.00		55.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.22*		µg/L	2.00		60.9	30-150			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B246126 - EPA 245.1										
Blank (B246126-BLK1)				Prepared & Analyzed: 11/15/19						
Mercury	ND	0.00010	mg/L							
LCS (B246126-BS1)				Prepared & Analyzed: 11/15/19						
Mercury	0.00461	0.00010	mg/L	0.00400		115	85-115			
LCS Dup (B246126-BSD1)				Prepared & Analyzed: 11/15/19						
Mercury	0.00402	0.00010	mg/L	0.00400		101	85-115	13.7	20	
Batch B246348 - EPA 200.8										
Blank (B246348-BLK1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Antimony	ND	1.0	µg/L							
Arsenic	ND	0.80	µg/L							
Cadmium	ND	0.20	µg/L							
Chromium	ND	1.0	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	10	µg/L							
LCS (B246348-BS1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Antimony	522	10	µg/L	500		104	85-115			
Arsenic	508	8.0	µg/L	500		102	85-115			
Cadmium	510	2.0	µg/L	500		102	85-115			
Chromium	508	10	µg/L	500		102	85-115			
Copper	993	10	µg/L	1000		99.3	85-115			
Lead	527	5.0	µg/L	500		105	85-115			
Nickel	508	50	µg/L	500		102	85-115			
Selenium	519	50	µg/L	500		104	85-115			
Silver	512	2.0	µg/L	500		102	85-115			
Zinc	1030	100	µg/L	1000		103	85-115			
LCS Dup (B246348-BSD1)				Prepared: 11/18/19 Analyzed: 11/19/19						
Antimony	526	10	µg/L	500		105	85-115	0.809	20	
Arsenic	526	8.0	µg/L	500		105	85-115	3.52	20	
Cadmium	516	2.0	µg/L	500		103	85-115	1.11	20	
Chromium	515	10	µg/L	500		103	85-115	1.33	20	
Copper	1020	10	µg/L	1000		102	85-115	2.42	20	
Lead	533	5.0	µg/L	500		107	85-115	1.08	20	
Nickel	517	50	µg/L	500		103	85-115	1.84	20	
Selenium	536	50	µg/L	500		107	85-115	3.10	20	
Silver	518	2.0	µg/L	500		104	85-115	1.26	20	
Zinc	1060	100	µg/L	1000		106	85-115	3.38	20	

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B246351 - EPA 200.7										
Blank (B246351-BLK1)				Prepared: 11/18/19 Analyzed: 11/20/19						
Iron	ND	0.050	mg/L							
LCS (B246351-BS1)				Prepared: 11/18/19 Analyzed: 11/20/19						
Iron	4.00	0.050	mg/L	4.00		99.9	85-115			
LCS Dup (B246351-BSD1)				Prepared: 11/18/19 Analyzed: 11/20/19						
Iron	3.96	0.050	mg/L	4.00		98.9	85-115	0.986	20	

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QUALITY CONTROL

Metals Analyses (Dissolved) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B247798 - EPA 200.7 Dissolved										
Blank (B247798-BLK1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Iron	ND	0.050	mg/L							
LCS (B247798-BS1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Iron	3.84	0.050	mg/L	4.00		96.1	85-115			
LCS Dup (B247798-BSD1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Iron	3.78	0.050	mg/L	4.00		94.5	85-115	1.60	20	
Batch B247799 - EPA 200.8 Dissolved										
Blank (B247799-BLK1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Antimony	ND	1.0	µg/L							
Arsenic	ND	0.80	µg/L							
Cadmium	ND	0.20	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							
LCS (B247799-BS1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Antimony	494	10	µg/L	500		98.7	85-115			
Arsenic	486	8.0	µg/L	500		97.2	85-115			
Cadmium	491	2.0	µg/L	500		98.3	85-115			
Copper	1010	10	µg/L	1000		101	85-115			
Lead	507	5.0	µg/L	500		101	85-115			
Nickel	518	50	µg/L	500		104	85-115			
Selenium	497	50	µg/L	500		99.4	85-115			
Silver	490	2.0	µg/L	500		98.0	85-115			
LCS Dup (B247799-BSD1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Antimony	494	10	µg/L	500		98.7	85-115	0.00814	20	
Arsenic	491	8.0	µg/L	500		98.2	85-115	1.08	20	
Cadmium	495	2.0	µg/L	500		99.0	85-115	0.739	20	
Copper	1020	10	µg/L	1000		102	85-115	0.737	20	
Lead	501	5.0	µg/L	500		100	85-115	1.19	20	
Nickel	527	50	µg/L	500		105	85-115	1.70	20	
Selenium	504	50	µg/L	500		101	85-115	1.46	20	
Silver	487	2.0	µg/L	500		97.3	85-115	0.626	20	
Batch B247846 - EPA 245.1 Dissolved										
Blank (B247846-BLK1)				Prepared & Analyzed: 12/07/19						
Mercury	ND	0.00010	mg/L							

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QUALITY CONTROL

Metals Analyses (Dissolved) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B247846 - EPA 245.1 Dissolved										
LCS (B247846-BS1)				Prepared & Analyzed: 12/07/19						
Mercury	0.00380	0.00010	mg/L	0.00400		95.1	85-115			
LCS Dup (B247846-BSD1)				Prepared & Analyzed: 12/07/19						
Mercury	0.00397	0.00010	mg/L	0.00400		99.2	85-115	4.21	20	
Batch B248044 - EPA 200.8 Dissolved										
Blank (B248044-BLK1)				Prepared: 12/10/19 Analyzed: 12/11/19						
Zinc	ND	10	µg/L							
LCS (B248044-BS1)				Prepared: 12/10/19 Analyzed: 12/11/19						
Zinc	1130	100	µg/L	1000		113	85-115			
LCS Dup (B248044-BSD1)				Prepared: 12/10/19 Analyzed: 12/11/19						
Zinc	1010	100	µg/L	1000		101	85-115	11.3	20	
Duplicate (B248044-DUP1)		**Source: 19K0854-02RE1**		Prepared: 12/10/19 Analyzed: 12/11/19						
Zinc	13.9	10	µg/L		14.1			0.942	20	
Matrix Spike (B248044-MS1)		**Source: 19K0854-02RE1**		Prepared: 12/10/19 Analyzed: 12/11/19						
Zinc	1020	100	µg/L	1000	ND	102	70-130			

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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 B246095 - SM21-22 3500 Cr B										
Blank (B246095-BLK1)				Prepared & Analyzed: 11/14/19						
Hexavalent Chromium	ND	0.0040	mg/L							
LCS (B246095-BS1)				Prepared & Analyzed: 11/14/19						
Hexavalent Chromium	0.11	0.0040	mg/L	0.100		110	83.9-121			
LCS Dup (B246095-BSD1)				Prepared & Analyzed: 11/14/19						
Hexavalent Chromium	0.11	0.0040	mg/L	0.100		106	83.9-121	3.67	10	
Duplicate (B246095-DUP1)	**Source: 19K0854-01**			Prepared & Analyzed: 11/14/19						
Hexavalent Chromium	ND	0.0040	mg/L		ND			NC	45.7	
Matrix Spike (B246095-MS1)	**Source: 19K0854-02**			Prepared & Analyzed: 11/14/19						
Hexavalent Chromium	0.086	0.0040	mg/L	0.100	ND	86.0	25.5-193			
Batch B246097 - SM21-22 4500 CL G										
Blank (B246097-BLK1)				Prepared & Analyzed: 11/14/19						
Chlorine, Residual	ND	0.020	mg/L							Z-01a
LCS (B246097-BS1)				Prepared & Analyzed: 11/14/19						
Chlorine, Residual	1.3	0.020	mg/L	1.34		98.5	66.3-134			Z-01a
LCS Dup (B246097-BSD1)				Prepared & Analyzed: 11/14/19						
Chlorine, Residual	1.3	0.020	mg/L	1.34		98.8	66.3-134	0.303	9.96	Z-01a
Duplicate (B246097-DUP1)	**Source: 19K0854-01**			Prepared & Analyzed: 11/14/19						
Chlorine, Residual	ND	0.10	mg/L		ND			NC	32.5	W-06, Z-01a
Matrix Spike (B246097-MS1)	**Source: 19K0854-01**			Prepared & Analyzed: 11/14/19						
Chlorine, Residual	1.3	0.10	mg/L	2.00	ND	66.5	10-167			Z-01a
Batch B246113 - SM21-22 2540D										
Blank (B246113-BLK1)				Prepared & Analyzed: 11/15/19						
Total Suspended Solids	ND	2.5	mg/L							
LCS (B246113-BS1)				Prepared & Analyzed: 11/15/19						
Total Suspended Solids	204	10	mg/L	200		102	57.6-118			
Duplicate (B246113-DUP2)	**Source: 19K0854-01**			Prepared & Analyzed: 11/15/19						
Total Suspended Solids	3000	20	mg/L		3400			**11.7**	* 5	R-02

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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 B246455 - EPA 300.0										
Blank (B246455-BLK1)				Prepared & Analyzed: 11/19/19						
Chloride	ND	1.0	mg/L							
LCS (B246455-BS1)				Prepared & Analyzed: 11/19/19						
Chloride	11	1.0	mg/L	10.0		107	90-110			
LCS Dup (B246455-BSD1)				Prepared & Analyzed: 11/19/19						
Chloride	11	1.0	mg/L	10.0		107	90-110	0.104	20	
Batch B246506 - EPA 1664B										
Blank (B246506-BLK1)				Prepared & Analyzed: 11/20/19						
Silica Gel Treated HEM (SGT-HEM)	ND	1.4	mg/L							
Blank (B246506-BLK2)				Prepared & Analyzed: 11/20/19						
Silica Gel Treated HEM (SGT-HEM)	ND	5.6	mg/L							
LCS (B246506-BS1)				Prepared & Analyzed: 11/20/19						
Silica Gel Treated HEM (SGT-HEM)	10		mg/L	10.0		100	64-132			
LCS (B246506-BS2)				Prepared & Analyzed: 11/20/19						
Silica Gel Treated HEM (SGT-HEM)	38		mg/L	40.0		96.0	64-132			
Batch B246523 - EPA 300.0										
Blank (B246523-BLK1)				Prepared & Analyzed: 11/25/19						
Chloride	ND	1.0	mg/L							
LCS (B246523-BS1)				Prepared & Analyzed: 11/25/19						
Chloride	11	1.0	mg/L	10.0		108	90-110			
LCS Dup (B246523-BSD1)				Prepared & Analyzed: 11/25/19						
Chloride	11	1.0	mg/L	10.0		107	90-110	0.868	20	

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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 B246437 - EPA 504 water										
Blank (B246437-BLK1)				Prepared & Analyzed: 11/19/19						
1,2-Dibromoethane (EDB)	ND	0.021	µg/L							
1,2-Dibromoethane (EDB) [2C]	ND	0.021	µg/L							
Surrogate: 1,3-Dibromopropane	*1.02*		µg/L	1.05		97.2	70-130			
Surrogate: 1,3-Dibromopropane [2C]	*1.01*		µg/L	1.05		96.8	70-130			
LCS (B246437-BS1)				Prepared & Analyzed: 11/19/19						
1,2-Dibromoethane (EDB)	0.222	0.021	µg/L	0.179		123	70-130			
1,2-Dibromoethane (EDB) [2C]	0.206	0.021	µg/L	0.179		115	70-130			
Surrogate: 1,3-Dibromopropane	*0.997*		µg/L	1.03		97.2	70-130			
Surrogate: 1,3-Dibromopropane [2C]	*0.988*		µg/L	1.03		96.3	70-130			
LCS Dup (B246437-BSD1)				Prepared & Analyzed: 11/19/19						
1,2-Dibromoethane (EDB)	0.227	0.021	µg/L	0.184		123	70-130	2.46		
1,2-Dibromoethane (EDB) [2C]	0.214	0.021	µg/L	0.184		117	70-130	3.94		
Surrogate: 1,3-Dibromopropane	*1.11*		µg/L	1.05		105	70-130			
Surrogate: 1,3-Dibromopropane [2C]	*1.06*		µg/L	1.05		101	70-130			

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

LCS

Lab Sample ID: B246371-BS1 Date(s) Analyzed: 11/20/2019 11/20/2019

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	0.336	
	2	0.000	0.000	0.000	0.352	3.5
Aroclor-1260	1	0.000	0.000	0.000	0.272	
	2	0.000	0.000	0.000	0.275	1.8

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

LCS Dup

Lab Sample ID: B246371-BSD1 Date(s) Analyzed: 11/20/2019 11/20/2019

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	0.314	
	2	0.000	0.000	0.000	0.308	0.6
Aroclor-1260	1	0.000	0.000	0.000	0.253	
	2	0.000	0.000	0.000	0.250	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

LCS

Lab Sample ID: B246437-BS1 Date(s) Analyzed: 11/19/2019 11/19/2019

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	3.615	0.000	0.000	0.222	
	2	3.468	0.000	0.000	0.206	6.6

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

LCS Dup

Lab Sample ID: B246437-BSD1 Date(s) Analyzed: 11/19/2019 11/19/2019

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	3.617	0.000	0.000	0.227	
	2	3.471	0.000	0.000	0.214	7.2

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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.
L-02	Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.
MS-09	Matrix spike recovery and/or matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a low bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
R-02	Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.
S-07	One associated surrogate standard recovery is outside of control limits but the other(s) is/are within limits. All recoveries are > 10%.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
V-35	Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.
W-06	Elevated method reporting limit due to intense color of sample
Z-01	Filtered in Field by Client
Z-01a	SM 4500 CL G test had a calibration point outside of acceptable back calculated 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
Bromomethane	CT,NY,MA,NH,RI,NC,ME,VA
tert-Butyl Alcohol (TBA)	NY,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
1,2-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
1,3-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
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,NH
Ethylbenzene	CT,NY,MA,NH,RI,NC,ME,VA
Methyl tert-Butyl Ether (MTBE)	NY,MA,NH,NC
Methylene Chloride	CT,NY,MA,NH,RI,NC,ME,VA
1,1,2,2-Tetrachloroethane	CT,NY,MA,NH,RI,NC,ME,VA
Tetrachloroethylene	CT,NY,MA,NH,RI,NC,ME,VA

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
624.1 in Water	
Toluene	CT,NY,MA,NH,RI,NC,ME,VA
1,2,4-Trichlorobenzene	MA,NC
1,1,1-Trichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
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	
Benzidine	CT,MA,NH,NY,NC,RI,ME,VA
4-Bromophenylphenylether	CT,MA,NH,NY,NC,RI,ME,VA
Butylbenzylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
4-Chloro-3-methylphenol	CT,MA,NH,NY,NC,RI,VA
Bis(2-chloroethyl)ether	CT,MA,NH,NY,NC,RI,ME,VA
Bis(2-chloroisopropyl)ether	CT,MA,NH,NY,NC,RI,ME,VA
2-Chloronaphthalene	CT,MA,NH,NY,NC,RI,ME,VA
2-Chlorophenol	CT,MA,NH,NY,NC,RI,ME,VA
4-Chlorophenylphenylether	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
3,3-Dichlorobenzidine	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dichlorophenol	CT,MA,NH,NY,NC,RI,ME,VA
Diethylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dimethylphenol	CT,MA,NH,NY,NC,RI,ME,VA
Dimethylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
4,6-Dinitro-2-methylphenol	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dinitrophenol	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dinitrotoluene	CT,MA,NH,NY,NC,RI,ME,VA
2,6-Dinitrotoluene	CT,MA,NH,NY,NC,RI,ME,VA
Di-n-octylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
1,2-Diphenylhydrazine/Azobenzene	NC
Hexachlorobenzene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachlorobutadiene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachlorocyclopentadiene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachloroethane	CT,MA,NH,NY,NC,RI,ME,VA
Isophorone	CT,MA,NH,NY,NC,RI,ME,VA
Nitrobenzene	CT,MA,NH,NY,NC,RI,ME,VA
2-Nitrophenol	CT,MA,NH,NY,NC,RI,ME,VA
4-Nitrophenol	CT,MA,NH,NY,NC,RI,ME,VA
N-Nitrosodimethylamine	CT,MA,NH,NY,NC,RI,ME,VA
N-Nitrosodi-n-propylamine	CT,MA,NH,NY,NC,RI,ME,VA
2-Methylphenol	NY,NC
Phenol	CT,MA,NH,NY,NC,RI,ME,VA

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
625.1 in Water	
3/4-Methylphenol	NY,NC
1,2,4-Trichlorobenzene	CT,MA,NH,NY,NC,RI,ME,VA
2,4,6-Trichlorophenol	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
Iron	CT,MA,NH,NY,RI,NC,ME,VA
Hardness	CT,MA,NH,NY,RI,VA
EPA 200.8 in Water	
Antimony	CT,MA,NH,NY,RI,NC,ME,VA
Antimony	CT,MA,NH,NY,RI,NC,ME,VA
Arsenic	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
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
Copper	CT,MA,NH,NY,RI,NC,ME,VA
Lead	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
Nickel	CT,MA,NH,NY,RI,NC,ME,VA
Selenium	CT,MA,NH,NY,RI,NC,ME,VA
Selenium	CT,MA,NH,NY,RI,NC,ME,VA
Silver	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
Zinc	CT,MA,NH,RI,NY,NC,ME,VA
EPA 245.1 in Water	
Mercury	CT,MA,NH,RI,NY,NC,ME,VA
Mercury	CT,MA,NH,RI,NY,NC,ME,VA
EPA 300.0 in Water	
Chloride	NC,NY,MA,VA,ME,NH,CT,RI
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

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

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SM21-22 4500 CN E in Water	
Cyanide	CT,MA,NH,NY,RI,NC,ME,VA
SW-846 8015C in Water	
Ethanol	NY

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
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	12/30/2020
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY

JCH

Phone: 413-525-2332 1940854
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

Doc # 381 Rev 0 5 8 2015

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1

Company Name:	NSTAR/Eversource - Monthly Billing
Address:	247 Station Drive, Westwood, MA 02090
Phone:	781-441-3804
Project Name:	Woburn to Wakefield Line Project
Project Location:	Woburn, Winchester, Stoneham, MA
Project Number:	1906240
Project Manager:	Mike Zylich
Purchase Order Numbe	10948702
Invoice Recipient:	Eversource Energy Direct Bill Attn Dean Bebis
Sampled By:	

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Other: 5 days

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

Data Delivery
Format: PDF ☑ EXCEL ☑
Other: GISKey
Enhanced Data Package Required: ☐
Email To: moliveira@trcsolutions.com, pzhou@trcsolutions.com

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	[1]Matrix Code	Conc Code	VOCs via 624	SVOCs via 625/PAHs via 625-SIM	TPH (SGT) via 1664	PCBs via 608	RGP List Metals (total and aq)	Hexavalent Chromium via SM3500	Total Cyanide via SM4500	EDB via 504.1	Ethanol	Ammonia via SM4500	Chloride via 300.0	Total Residual Chlorine via SM4500	TSS via SM2540D	Hardness via SM 2340B
1	BH-01 MW	11/14/19	0945		X	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	BH-02 MW	↓	1045		X	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	X

ANALYSIS REQUESTED

[2]Preservation Code	H	O	S	O	N	O	X	X	H	S	O	O	O	N							
[3]Container Code	V	A	A	A	P	P	P	V	V	P	P	P	P	P							
# of Containers	3	2	2	2	1	1	1	3	3	1	1	1	1	1							

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Comments: RLs must meet EPA RGP Appendix VII limits. VOC list to include Tert-butyl alcohol. RGP SVOCs to include pentachlorophenol, DEH phthalate, total phthalates, and total phenol.

RGP Metals include antimony, arsenic, cadmium, chromium (III), chromium (VI), copper, iron, lead, mercury, nichel, selenium, silver, and zinc.

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

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil/Solid
SL = Sludge
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)

Relinquished by: (signature)	Date/Time: 11/14/19 1450
Received by: (signature)	Date/Time: 11/14/19 1450
Relinquished by: (signature)	Date/Time: 11/14 600
Received by: (signature)	Date/Time: 11/14/19 18:00
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Detection Limit Requirements

MA	<RCGW-1, <EPA Region 1 RGP criteria
CT	
Other:	

Program Information

● MCP Analytical Certification Form Required
○ RCP Analysis Certification Form Required
○ MA State DW Form Required
PWSID # _____

NELAC and AIHA-LAP, LLC Accredited

TURNAROUND TIME (BUSINESS DAYS) STARTS AT 9:00 AM THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON THIS CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME CANNOT START UNTIL ALL QUESTIONS HAVE BEEN ANSWERED.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Table of Contents

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 Eversource

Received By mp Date 11/14/19 Time 1800

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 # 2 Actual Temp - 3.3 5 1

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? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name F

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F

Are there Rushes? F Who was notified? _____

Are there Short Holds? T Who was notified? _____

Is there enough Volume? T Who was notified? Miranda

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

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

Were trip blanks received? F On COC? F

Do all samples have the proper pH? Acid T<2 Base T>12

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	16	1 Liter Plastic	2	16 oz Amb.	
HCL-	6	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	10	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-	6	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:

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

January 17, 2020

Michael Zylich
Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230

Project Location: Woburn, Winchester, Stoneham, MA
Client Job Number:
Project Number: 1906240
Laboratory Work Order Number: 19K0766

Enclosed are results of analyses for samples received by the laboratory on November 13, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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Table of Contents (continued)

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

Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230
ATTN: Michael Zylich

REPORT DATE: 1/17/2020

PURCHASE ORDER NUMBER: 10948702

PROJECT NUMBER: 1906240

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19K0766

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

PROJECT LOCATION: Woburn, Winchester, Stoneham, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
8+12 MW	19K0766-01	Ground Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 504.1	
				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.	
173+14 MW	19K0766-02	Ground Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 504.1	
				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.	

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Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230
ATTN: Michael Zylich

REPORT DATE: 1/17/2020

PURCHASE ORDER NUMBER: 10948702

PROJECT NUMBER: 1906240

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19K0766

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

PROJECT LOCATION: Woburn, Winchester, Stoneham, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
171+88 MW	19K0766-03	Ground Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 504.1	
				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.	

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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.

REVISON: 1/9/2020 cis-1.2-DCE added to 624.1 list.

REVISON: 1/2/2020 Ethanol added to the 624.1 list.

Note: Dissolved samples contained some sediment, water decanted.

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624.1

Qualifications:

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:

Ethanol
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW], B246136-BLK1, B246136-BS1, S042703-CCV1

625.1

Qualifications:

L-07A

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD outside of control limits. Reduced precision anticipated for any reported result for this compound.

Analyte & Samples(s) Qualified:

Benzidine
B245987-BSD1

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:

Benzidine
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW], B245987-BLK1, B245987-BS1

V-04

Initial calibration did not meet method specifications. Compound was calibrated using a response factor where %RSD is outside of method specified criteria. Reported result is estimated.

Analyte & Samples(s) Qualified:

Benzidine
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW], B245987-BLK1, B245987-BS1, B245987-BSD1, S042716-CCV1

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:

Benzidine
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW], B245987-BLK1, B245987-BS1, B245987-BSD1, S042716-CCV1

V-06

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

Analyte & Samples(s) Qualified:

Bis(2-ethylhexyl)phthalate (SIM)
B246287-BLK1, B246287-BS1, B246287-BSD1, S042736-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:

Bis(2-ethylhexyl)phthalate (SIM)
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

V-35

Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:

Benzidine
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW], B245987-BLK1, B245987-BS1, B245987-BSD1, S042716-CCV1

EPA 200.7

Qualifications:

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B

Analyte is found in the associated laboratory blank as well as in the sample.

Analyte & Samples(s) Qualified:

Hardness
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW], B246036-BS1, B246036-BSD1, B247827-BS1, B247827-BSD1

Z-01

Filtered in Field by Client

Analyte & Samples(s) Qualified:

Iron
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

EPA 200.8

Qualifications:

Z-01

Filtered in Field by Client

Analyte & Samples(s) Qualified:

Antimony
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

Arsenic
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

Cadmium
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

Copper
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

Lead
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

Nickel
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

Selenium
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

Silver
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

Zinc
19K0766-01RE1[8+12 MW], 19K0766-02RE1[173+14 MW], 19K0766-03[171+88 MW]

EPA 245.1

Qualifications:

Z-01

Filtered in Field by Client

Analyte & Samples(s) Qualified:

Mercury
19K0766-01[8+12 MW], 19K0766-02[173+14 MW], 19K0766-03[171+88 MW]

SM21-22 4500 CL G

Qualifications:

DL-03

Elevated reporting limit due to matrix interference.

Analyte & Samples(s) Qualified:

Chlorine, Residual
19K0766-02[173+14 MW]

con-test® ANALYTICAL LABORATORY
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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.

Tod E. Kopyscinski
Laboratory Director

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	<0.540	50.0	0.540	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
tert-Amyl Methyl Ether (TAME)	<0.110	0.500	0.110	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Benzene	<0.180	1.00	0.180	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Bromodichloromethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Bromoform	<0.460	2.00	0.460	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Bromomethane	<0.780	2.00	0.780	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
tert-Butyl Alcohol (TBA)	<3.50	20.0	3.50	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Carbon Tetrachloride	<0.110	2.00	0.110	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Chlorobenzene	<0.150	2.00	0.150	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Chlorodibromomethane	<0.210	2.00	0.210	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Chloroethane	<0.350	2.00	0.350	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Chloroform	<0.170	2.00	0.170	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Chloromethane	<0.450	2.00	0.450	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,2-Dichlorobenzene	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,3-Dichlorobenzene	<0.120	2.00	0.120	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,4-Dichlorobenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,2-Dichloroethane	<0.410	2.00	0.410	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
cis-1,2-Dichloroethylene	<0.0500	1.00	0.0500	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,1-Dichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,1-Dichloroethylene	<0.320	2.00	0.320	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
trans-1,2-Dichloroethylene	<0.310	2.00	0.310	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,2-Dichloropropane	<0.200	2.00	0.200	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
cis-1,3-Dichloropropene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,4-Dioxane	<3.50	50.0	3.50	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
trans-1,3-Dichloropropene	<0.230	2.00	0.230	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Ethanol	<27.9	50.0	27.9	µg/L	1	V-05	624.1	11/15/19	11/15/19 19:47	MFF
Ethylbenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Methyl tert-Butyl Ether (MTBE)	<0.250	2.00	0.250	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Methylene Chloride	<0.340	5.00	0.340	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,1,2,2-Tetrachloroethane	<0.220	2.00	0.220	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Tetrachloroethylene	<0.180	2.00	0.180	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Toluene	<0.140	1.00	0.140	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,1,1-Trichloroethane	<0.200	2.00	0.200	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
1,1,2-Trichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Trichloroethylene	<0.240	2.00	0.240	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Trichlorofluoromethane (Freon 11)	<0.330	2.00	0.330	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
Vinyl Chloride	<0.450	2.00	0.450	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
m+p Xylene	<0.300	2.00	0.300	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF
o-Xylene	<0.170	2.00	0.170	µg/L	1		624.1	11/15/19	11/15/19 19:47	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	103	70-130		11/15/19 19:47
Toluene-d8	97.8	70-130		11/15/19 19:47
4-Bromofluorobenzene	94.0	70-130		11/15/19 19:47

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

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)	<0.32	0.32	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Acenaphthylene (SIM)	<0.32	0.32	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Anthracene (SIM)	<0.21	0.21	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Benzo(a)anthracene (SIM)	<0.053	0.053	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Benzo(a)pyrene (SIM)	<0.11	0.11	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Benzo(b)fluoranthene (SIM)	<0.053	0.053	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Benzo(g,h,i)perylene (SIM)	<0.53	0.53	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Benzo(k)fluoranthene (SIM)	<0.21	0.21	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Bis(2-ethylhexyl)phthalate (SIM)	<1.1	1.1	µg/L	1	V-20	625.1	11/14/19	11/18/19 13:38	CLA
Chrysene (SIM)	<0.21	0.21	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Dibenz(a,h)anthracene (SIM)	<0.11	0.11	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Fluoranthene (SIM)	<0.53	0.53	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Fluorene (SIM)	<1.1	1.1	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Indeno(1,2,3-cd)pyrene (SIM)	<0.11	0.11	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
2-Methylnaphthalene (SIM)	<1.1	1.1	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Naphthalene (SIM)	<1.1	1.1	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Pentachlorophenol (SIM)	<1.1	1.1	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Phenanthrene (SIM)	<0.053	0.053	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA
Pyrene (SIM)	<1.1	1.1	µg/L	1		625.1	11/14/19	11/18/19 13:38	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	49.6	15-110		11/18/19 13:38
Phenol-d6 (SIM)	38.9	15-110		11/18/19 13:38
Nitrobenzene-d5	86.1	30-130		11/18/19 13:38
2-Fluorobiphenyl	56.8	30-130		11/18/19 13:38
2,4,6-Tribromophenol (SIM)	97.5	15-110		11/18/19 13:38
p-Terphenyl-d14	70.5	30-130		11/18/19 13:38

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Benzidine	<21.1	21.1	µg/L	1	V-04, V-05, R-05, V-35	625.1	11/14/19	11/16/19 22:14	KLB
4-Bromophenylphenylether	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Butylbenzylphthalate	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
4-Chloro-3-methylphenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Bis(2-chloroethyl)ether	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Bis(2-chloroisopropyl)ether	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2-Chloronaphthalene	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2-Chlorophenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
4-Chlorophenylphenylether	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Di-n-butylphthalate	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
1,3-Dichlorobenzene	<5.26	5.26	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
1,4-Dichlorobenzene	<5.26	5.26	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
1,2-Dichlorobenzene	<5.26	5.26	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
3,3-Dichlorobenzidine	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2,4-Dichlorophenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Diethylphthalate	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2,4-Dimethylphenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Dimethylphthalate	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
4,6-Dinitro-2-methylphenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2,4-Dinitrophenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2,4-Dinitrotoluene	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2,6-Dinitrotoluene	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Di-n-octylphthalate	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
1,2-Diphenylhydrazine/Azobenzene	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Hexachlorobenzene	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Hexachlorobutadiene	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Hexachlorocyclopentadiene	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Hexachloroethane	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Isophorone	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Nitrobenzene	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2-Nitrophenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
4-Nitrophenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
N-Nitrosodimethylamine	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
N-Nitrosodiphenylamine/Diphenylamine	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
N-Nitrosodi-n-propylamine	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2-Methylphenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
Phenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
3/4-Methylphenol	<21.1	21.1	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
1,2,4-Trichlorobenzene	<5.26	5.26	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB
2,4,6-Trichlorophenol	<10.5	10.5	µg/L	1		625.1	11/14/19	11/16/19 22:14	KLB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	49.0	15-110		11/16/19 22:14
Phenol-d6	35.5	15-110		11/16/19 22:14
Nitrobenzene-d5	70.5	30-130		11/16/19 22:14

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		**% Recovery**	**Recovery Limits**		**Flag/Qual**				
2-Fluorobiphenyl		75.4	30-130					11/16/19 22:14	
2,4,6-Tribromophenol		88.6	15-110					11/16/19 22:14	
p-Terphenyl-d14		86.5	30-130					11/16/19 22:14	

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Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

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]	<0.0920	0.100	0.0920	µg/L	1		608.3	11/14/19	11/15/19 17:42	TG
Aroclor-1221 [1]	<0.0805	0.100	0.0805	µg/L	1		608.3	11/14/19	11/15/19 17:42	TG
Aroclor-1232 [1]	<0.0995	0.100	0.0995	µg/L	1		608.3	11/14/19	11/15/19 17:42	TG
Aroclor-1242 [1]	<0.0865	0.100	0.0865	µg/L	1		608.3	11/14/19	11/15/19 17:42	TG
Aroclor-1248 [1]	<0.0950	0.100	0.0950	µg/L	1		608.3	11/14/19	11/15/19 17:42	TG
Aroclor-1254 [1]	<0.0525	0.100	0.0525	µg/L	1		608.3	11/14/19	11/15/19 17:42	TG
Aroclor-1260 [1]	<0.0980	0.100	0.0980	µg/L	1		608.3	11/14/19	11/15/19 17:42	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	45.7	30-150		11/15/19 17:42
Decachlorobiphenyl [2]	44.3	30-150		11/15/19 17:42
Tetrachloro-m-xylene [1]	45.8	30-150		11/15/19 17:42
Tetrachloro-m-xylene [2]	46.2	30-150		11/15/19 17:42

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

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	11/16/19	11/18/19 13:01	QNW
Arsenic	5.4	0.80		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Cadmium	0.35	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Chromium	33	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Chromium, Trivalent	0.033			mg/L	1		Tri Chrome Calc.	11/16/19	11/18/19 13:01	QNW
Copper	29	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Iron	28	0.050		mg/L	1		EPA 200.7	12/7/19	12/9/19 15:18	MJH
Lead	21	0.50		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:30	AJL
Nickel	20	5.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Zinc	99	10		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:01	QNW
Hardness	130			mg/L	2	B	EPA 200.7	12/7/19	12/10/19 15:06	MJH

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

Sample Matrix: Ground Water

Metals Analyses (Dissolved)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:26	QNW
Arsenic	0.86	0.80		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:26	QNW
Cadmium	ND	0.20		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:26	QNW
Copper	2.6	1.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:26	QNW
Iron	1.5	0.050		mg/L	1	Z-01	EPA 200.7	11/14/19	11/15/19 13:17	MJH
Lead	0.55	0.50		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:26	QNW
Mercury	ND	0.00010		mg/L	1	Z-01	EPA 245.1	12/7/19	12/7/19 12:53	AJL
Nickel	ND	5.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:26	QNW
Selenium	ND	5.0	1.6	µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:26	QNW
Silver	ND	0.20		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:26	QNW
Zinc	ND	10		µg/L	1	Z-01	EPA 200.8	12/10/19	12/11/19 10:33	QNW

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

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	200	10		mg/L	10		EPA 300.0	11/17/19	11/17/19 22:06	IS
Chlorine, Residual	0.22	0.20		mg/L	10		SM21-22 4500 CL G	11/13/19	11/13/19 21:00	MJG
Hexavalent Chromium	ND	0.0040		mg/L	1		SM21-22 3500 Cr B	11/13/19	11/13/19 22:02	AIA
Total Suspended Solids	3000	20		mg/L	1		SM21-22 2540D	11/14/19	11/14/19 14:00	LL
Silica Gel Treated HEM (SGT-HEM)	ND	2.8		mg/L	1		EPA 1664B	11/20/19	11/20/19 12:00	LL

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Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

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) (1)	ND	0.020	µg/L	1		EPA 504.1	11/19/19	11/19/19 18:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,3-Dibromopropane (1)	96.7	70-130		11/19/19 18:28

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 8+12 MW Sampled: 11/13/2019 08:30

Sample ID: 19K0766-01

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	0.416	0.15	0.048	mg/L	2		121,4500NH3-BH		11/19/19 23:16	AAL
Cyanide	ND	0.005	0.001	mg/L	1		121,4500CN-CE		11/15/19 14:42	AAL

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	<0.540	50.0	0.540	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
tert-Amyl Methyl Ether (TAME)	<0.110	0.500	0.110	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Benzene	<0.180	1.00	0.180	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Bromodichloromethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Bromoform	<0.460	2.00	0.460	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Bromomethane	<0.780	2.00	0.780	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
tert-Butyl Alcohol (TBA)	<3.50	20.0	3.50	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Carbon Tetrachloride	<0.110	2.00	0.110	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Chlorobenzene	<0.150	2.00	0.150	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Chlorodibromomethane	<0.210	2.00	0.210	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Chloroethane	<0.350	2.00	0.350	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Chloroform	<0.170	2.00	0.170	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Chloromethane	<0.450	2.00	0.450	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,2-Dichlorobenzene	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,3-Dichlorobenzene	<0.120	2.00	0.120	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,4-Dichlorobenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,2-Dichloroethane	<0.410	2.00	0.410	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
cis-1,2-Dichloroethylene	<0.0500	1.00	0.0500	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,1-Dichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,1-Dichloroethylene	<0.320	2.00	0.320	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
trans-1,2-Dichloroethylene	<0.310	2.00	0.310	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,2-Dichloropropane	<0.200	2.00	0.200	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
cis-1,3-Dichloropropene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,4-Dioxane	<3.50	50.0	3.50	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
trans-1,3-Dichloropropene	<0.230	2.00	0.230	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Ethanol	<27.9	50.0	27.9	µg/L	1	V-05	624.1	11/15/19	11/15/19 20:13	MFF
Ethylbenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Methyl tert-Butyl Ether (MTBE)	<0.250	2.00	0.250	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Methylene Chloride	<0.340	5.00	0.340	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,1,2,2-Tetrachloroethane	<0.220	2.00	0.220	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Tetrachloroethylene	<0.180	2.00	0.180	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Toluene	<0.140	1.00	0.140	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,1,1-Trichloroethane	<0.200	2.00	0.200	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
1,1,2-Trichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Trichloroethylene	<0.240	2.00	0.240	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Trichlorofluoromethane (Freon 11)	<0.330	2.00	0.330	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
Vinyl Chloride	<0.450	2.00	0.450	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
m+p Xylene	<0.300	2.00	0.300	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF
o-Xylene	<0.170	2.00	0.170	µg/L	1		624.1	11/15/19	11/15/19 20:13	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	104	70-130		11/15/19 20:13
Toluene-d8	97.7	70-130		11/15/19 20:13
4-Bromofluorobenzene	95.5	70-130		11/15/19 20:13

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

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)	<0.31	0.31	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Acenaphthylene (SIM)	<0.31	0.31	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Anthracene (SIM)	<0.20	0.20	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Benzo(a)anthracene (SIM)	<0.051	0.051	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Benzo(a)pyrene (SIM)	<0.10	0.10	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Benzo(b)fluoranthene (SIM)	<0.051	0.051	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Benzo(g,h,i)perylene (SIM)	<0.51	0.51	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Benzo(k)fluoranthene (SIM)	<0.20	0.20	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Bis(2-ethylhexyl)phthalate (SIM)	<1.0	1.0	µg/L	1	V-20	625.1	11/14/19	11/18/19 14:01	CLA
Chrysene (SIM)	<0.20	0.20	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Dibenz(a,h)anthracene (SIM)	<0.10	0.10	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Fluoranthene (SIM)	<0.51	0.51	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Fluorene (SIM)	<1.0	1.0	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Indeno(1,2,3-cd)pyrene (SIM)	<0.10	0.10	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
2-Methylnaphthalene (SIM)	<1.0	1.0	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Naphthalene (SIM)	<1.0	1.0	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Pentachlorophenol (SIM)	<1.0	1.0	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Phenanthrene (SIM)	<0.051	0.051	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA
Pyrene (SIM)	<1.0	1.0	µg/L	1		625.1	11/14/19	11/18/19 14:01	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	41.4	15-110		11/18/19 14:01
Phenol-d6 (SIM)	31.5	15-110		11/18/19 14:01
Nitrobenzene-d5	74.4	30-130		11/18/19 14:01
2-Fluorobiphenyl	50.0	30-130		11/18/19 14:01
2,4,6-Tribromophenol (SIM)	83.9	15-110		11/18/19 14:01
p-Terphenyl-d14	60.3	30-130		11/18/19 14:01

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Benzidine	<20.4	20.4	µg/L	1	R-05, V-04, V-05, V-35	625.1	11/14/19	11/16/19 22:38	KLB
4-Bromophenylphenylether	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Butylbenzylphthalate	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
4-Chloro-3-methylphenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Bis(2-chloroethyl)ether	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Bis(2-chloroisopropyl)ether	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2-Chloronaphthalene	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2-Chlorophenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
4-Chlorophenylphenylether	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Di-n-butylphthalate	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
1,3-Dichlorobenzene	<5.10	5.10	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
1,4-Dichlorobenzene	<5.10	5.10	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
1,2-Dichlorobenzene	<5.10	5.10	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
3,3-Dichlorobenzidine	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2,4-Dichlorophenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Diethylphthalate	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2,4-Dimethylphenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Dimethylphthalate	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
4,6-Dinitro-2-methylphenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2,4-Dinitrophenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2,4-Dinitrotoluene	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2,6-Dinitrotoluene	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Di-n-octylphthalate	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
1,2-Diphenylhydrazine/Azobenzene	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Hexachlorobenzene	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Hexachlorobutadiene	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Hexachlorocyclopentadiene	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Hexachloroethane	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Isophorone	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Nitrobenzene	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2-Nitrophenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
4-Nitrophenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
N-Nitrosodimethylamine	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
N-Nitrosodiphenylamine/Diphenylamine	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
N-Nitrosodi-n-propylamine	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2-Methylphenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
Phenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
3/4-Methylphenol	<20.4	20.4	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
1,2,4-Trichlorobenzene	<5.10	5.10	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB
2,4,6-Trichlorophenol	<10.2	10.2	µg/L	1		625.1	11/14/19	11/16/19 22:38	KLB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	42.0	15-110		11/16/19 22:38
Phenol-d6	29.5	15-110		11/16/19 22:38
Nitrobenzene-d5	62.3	30-130		11/16/19 22:38

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		**% Recovery**	**Recovery Limits**		**Flag/Qual**				
2-Fluorobiphenyl		65.1	30-130					11/16/19 22:38	
2,4,6-Tribromophenol		76.0	15-110					11/16/19 22:38	
p-Terphenyl-d14		73.7	30-130					11/16/19 22:38	

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

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]	<0.0920	0.100	0.0920	µg/L	1		608.3	11/14/19	11/15/19 18:00	TG
Aroclor-1221 [1]	<0.0805	0.100	0.0805	µg/L	1		608.3	11/14/19	11/15/19 18:00	TG
Aroclor-1232 [1]	<0.0995	0.100	0.0995	µg/L	1		608.3	11/14/19	11/15/19 18:00	TG
Aroclor-1242 [1]	<0.0865	0.100	0.0865	µg/L	1		608.3	11/14/19	11/15/19 18:00	TG
Aroclor-1248 [1]	<0.0950	0.100	0.0950	µg/L	1		608.3	11/14/19	11/15/19 18:00	TG
Aroclor-1254 [1]	<0.0525	0.100	0.0525	µg/L	1		608.3	11/14/19	11/15/19 18:00	TG
Aroclor-1260 [1]	<0.0980	0.100	0.0980	µg/L	1		608.3	11/14/19	11/15/19 18:00	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	49.2	30-150		11/15/19 18:00
Decachlorobiphenyl [2]	47.8	30-150		11/15/19 18:00
Tetrachloro-m-xylene [1]	59.8	30-150		11/15/19 18:00
Tetrachloro-m-xylene [2]	60.8	30-150		11/15/19 18:00

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

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	11/16/19	11/18/19 13:03	QNW
Arsenic	3.1	0.80		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Cadmium	0.21	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Chromium	1.7	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Chromium, Trivalent	0.0017			mg/L	1		Tri Chrome Calc.	11/16/19	11/18/19 13:03	QNW
Copper	6.6	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Iron	9.8	0.050		mg/L	1		EPA 200.7	12/7/19	12/9/19 15:43	MJH
Lead	0.52	0.50		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:23	AJL
Nickel	ND	5.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Zinc	37	10		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:03	QNW
Hardness	82			mg/L	1	B	EPA 200.7	12/7/19	12/9/19 15:43	MJH

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

Sample Matrix: Ground Water

Metals Analyses (Dissolved)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:29	QNW
Arsenic	ND	0.80		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:29	QNW
Cadmium	ND	0.20		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:29	QNW
Copper	2.9	1.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:29	QNW
Iron	4.7	0.050		mg/L	1	Z-01	EPA 200.7	11/14/19	11/15/19 13:22	MJH
Lead	ND	0.50		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:29	QNW
Mercury	ND	0.00010		mg/L	1	Z-01	EPA 245.1	12/7/19	12/7/19 12:54	AJL
Nickel	ND	5.0		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:29	QNW
Selenium	ND	5.0	1.6	µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:29	QNW
Silver	ND	0.20		µg/L	1	Z-01	EPA 200.8	12/6/19	12/9/19 14:29	QNW
Zinc	10	10		µg/L	1	Z-01	EPA 200.8	12/10/19	12/11/19 10:35	QNW

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

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	280	10		mg/L	10		EPA 300.0	11/17/19	11/17/19 22:28	IS
Chlorine, Residual	ND	0.10		mg/L	5	DL-03	SM21-22 4500 CL G	11/13/19	11/13/19 21:00	MJG
Hexavalent Chromium	ND	0.0040		mg/L	1		SM21-22 3500 Cr B	11/13/19	11/13/19 22:02	AIA
Total Suspended Solids	44	2.0		mg/L	1		SM21-22 2540D	11/14/19	11/14/19 14:00	LL
Silica Gel Treated HEM (SGT-HEM)	ND	2.8		mg/L	1		EPA 1664B	11/20/19	11/20/19 12:00	LL

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

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) (1)	ND	0.020	µg/L	1		EPA 504.1	11/19/19	11/19/19 18:58	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual				
1,3-Dibromopropane (1)	95.7	70-130					11/19/19 18:58

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 173+14 MW Sampled: 11/13/2019 12:30

Sample ID: 19K0766-02

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	0.43	0.075	0.024	mg/L	1		121,4500NH3-BH		11/19/19 23:17	AAL
Cyanide	ND	0.005	0.001	mg/L	1		121,4500CN-CE		11/15/19 14:43	AAL

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	<0.540	50.0	0.540	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
tert-Amyl Methyl Ether (TAME)	<0.110	0.500	0.110	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Benzene	<0.180	1.00	0.180	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Bromodichloromethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Bromoform	<0.460	2.00	0.460	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Bromomethane	<0.780	2.00	0.780	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
tert-Butyl Alcohol (TBA)	<3.50	20.0	3.50	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Carbon Tetrachloride	<0.110	2.00	0.110	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Chlorobenzene	<0.150	2.00	0.150	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Chlorodibromomethane	<0.210	2.00	0.210	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Chloroethane	<0.350	2.00	0.350	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Chloroform	<0.170	2.00	0.170	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Chloromethane	<0.450	2.00	0.450	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,2-Dichlorobenzene	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,3-Dichlorobenzene	<0.120	2.00	0.120	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,4-Dichlorobenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,2-Dichloroethane	<0.410	2.00	0.410	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
cis-1,2-Dichloroethylene	<0.0500	1.00	0.0500	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,1-Dichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,1-Dichloroethylene	<0.320	2.00	0.320	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
trans-1,2-Dichloroethylene	<0.310	2.00	0.310	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,2-Dichloropropane	<0.200	2.00	0.200	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
cis-1,3-Dichloropropene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,4-Dioxane	<3.50	50.0	3.50	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
trans-1,3-Dichloropropene	<0.230	2.00	0.230	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Ethanol	<27.9	50.0	27.9	µg/L	1	V-05	624.1	11/15/19	11/15/19 20:40	MFF
Ethylbenzene	<0.130	2.00	0.130	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Methyl tert-Butyl Ether (MTBE)	<0.250	2.00	0.250	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Methylene Chloride	<0.340	5.00	0.340	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,1,2,2-Tetrachloroethane	<0.220	2.00	0.220	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Tetrachloroethylene	<0.180	2.00	0.180	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Toluene	<0.140	1.00	0.140	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,1,1-Trichloroethane	<0.200	2.00	0.200	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
1,1,2-Trichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Trichloroethylene	2.38	2.00	0.240	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Trichlorofluoromethane (Freon 11)	<0.330	2.00	0.330	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
Vinyl Chloride	<0.450	2.00	0.450	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
m+p Xylene	<0.300	2.00	0.300	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF
o-Xylene	<0.170	2.00	0.170	µg/L	1		624.1	11/15/19	11/15/19 20:40	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	101	70-130		11/15/19 20:40
Toluene-d8	97.4	70-130		11/15/19 20:40
4-Bromofluorobenzene	94.4	70-130		11/15/19 20:40

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

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)	<0.29	0.29	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Acenaphthylene (SIM)	<0.29	0.29	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Anthracene (SIM)	<0.19	0.19	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Benzo(a)anthracene (SIM)	<0.049	0.049	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Benzo(a)pyrene (SIM)	<0.097	0.097	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Benzo(b)fluoranthene (SIM)	<0.049	0.049	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Benzo(g,h,i)perylene (SIM)	<0.49	0.49	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Benzo(k)fluoranthene (SIM)	<0.19	0.19	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Bis(2-ethylhexyl)phthalate (SIM)	<0.97	0.97	µg/L	1	V-20	625.1	11/14/19	11/18/19 14:24	CLA
Chrysene (SIM)	<0.19	0.19	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Dibenz(a,h)anthracene (SIM)	<0.097	0.097	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Fluoranthene (SIM)	<0.49	0.49	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Fluorene (SIM)	<0.97	0.97	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Indeno(1,2,3-cd)pyrene (SIM)	<0.097	0.097	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
2-Methylnaphthalene (SIM)	<0.97	0.97	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Naphthalene (SIM)	<0.97	0.97	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Pentachlorophenol (SIM)	<0.97	0.97	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Phenanthrene (SIM)	<0.049	0.049	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA
Pyrene (SIM)	<0.97	0.97	µg/L	1		625.1	11/14/19	11/18/19 14:24	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	41.6	15-110		11/18/19 14:24
Phenol-d6 (SIM)	31.9	15-110		11/18/19 14:24
Nitrobenzene-d5	79.6	30-130		11/18/19 14:24
2-Fluorobiphenyl	50.5	30-130		11/18/19 14:24
2,4,6-Tribromophenol (SIM)	84.3	15-110		11/18/19 14:24
p-Terphenyl-d14	58.1	30-130		11/18/19 14:24

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Benzidine	<19.4	19.4	µg/L	1	R-05, V-04, V-05, V-35	625.1	11/14/19	11/16/19 23:02	KLB
4-Bromophenylphenylether	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Butylbenzylphthalate	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
4-Chloro-3-methylphenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Bis(2-chloroethyl)ether	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Bis(2-chloroisopropyl)ether	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2-Chloronaphthalene	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2-Chlorophenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
4-Chlorophenylphenylether	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Di-n-butylphthalate	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
1,3-Dichlorobenzene	<4.85	4.85	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
1,4-Dichlorobenzene	<4.85	4.85	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
1,2-Dichlorobenzene	<4.85	4.85	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
3,3-Dichlorobenzidine	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2,4-Dichlorophenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Diethylphthalate	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2,4-Dimethylphenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Dimethylphthalate	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
4,6-Dinitro-2-methylphenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2,4-Dinitrophenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2,4-Dinitrotoluene	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2,6-Dinitrotoluene	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Di-n-octylphthalate	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
1,2-Diphenylhydrazine/Azobenzene	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Hexachlorobenzene	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Hexachlorobutadiene	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Hexachlorocyclopentadiene	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Hexachloroethane	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Isophorone	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Nitrobenzene	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2-Nitrophenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
4-Nitrophenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
N-Nitrosodimethylamine	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
N-Nitrosodiphenylamine/Diphenylamine	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
N-Nitrosodi-n-propylamine	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2-Methylphenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
Phenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
3/4-Methylphenol	<19.4	19.4	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
1,2,4-Trichlorobenzene	<4.85	4.85	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB
2,4,6-Trichlorophenol	<9.71	9.71	µg/L	1		625.1	11/14/19	11/16/19 23:02	KLB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	42.1	15-110		11/16/19 23:02
Phenol-d6	30.0	15-110		11/16/19 23:02
Nitrobenzene-d5	63.7	30-130		11/16/19 23:02

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		**% Recovery**	**Recovery Limits**		**Flag/Qual**				
2-Fluorobiphenyl		67.7	30-130					11/16/19 23:02	
2,4,6-Tribromophenol		76.6	15-110					11/16/19 23:02	
p-Terphenyl-d14		75.6	30-130					11/16/19 23:02	

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

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]	<0.0920	0.100	0.0920	µg/L	1		608.3	11/14/19	11/15/19 18:17	TG
Aroclor-1221 [1]	<0.0805	0.100	0.0805	µg/L	1		608.3	11/14/19	11/15/19 18:17	TG
Aroclor-1232 [1]	<0.0995	0.100	0.0995	µg/L	1		608.3	11/14/19	11/15/19 18:17	TG
Aroclor-1242 [1]	<0.0865	0.100	0.0865	µg/L	1		608.3	11/14/19	11/15/19 18:17	TG
Aroclor-1248 [1]	<0.0950	0.100	0.0950	µg/L	1		608.3	11/14/19	11/15/19 18:17	TG
Aroclor-1254 [1]	<0.0525	0.100	0.0525	µg/L	1		608.3	11/14/19	11/15/19 18:17	TG
Aroclor-1260 [1]	<0.0980	0.100	0.0980	µg/L	1		608.3	11/14/19	11/15/19 18:17	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	44.8	30-150		11/15/19 18:17
Decachlorobiphenyl [2]	43.5	30-150		11/15/19 18:17
Tetrachloro-m-xylene [1]	36.3	30-150		11/15/19 18:17
Tetrachloro-m-xylene [2]	36.9	30-150		11/15/19 18:17

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

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	12/7/19	12/9/19 10:52	QNW
Arsenic	ND	0.80		µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Cadmium	ND	0.20		µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Chromium	8.5	1.0		µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Chromium, Trivalent	0.0085			mg/L	1		Tri Chrome Calc.	12/7/19	12/9/19 10:52	QNW
Copper	11	1.0		µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Iron	3.8	0.050		mg/L	1		EPA 200.7	11/14/19	11/15/19 13:46	MJH
Lead	2.5	0.50		µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	12/9/19	12/9/19 11:56	AJL
Nickel	5.4	5.0		µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Zinc	36	10		µg/L	1		EPA 200.8	12/7/19	12/9/19 10:52	QNW
Hardness	200			mg/L	1	B	EPA 200.7	11/14/19	11/15/19 13:46	MJH

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

Sample Matrix: Ground Water

Metals Analyses (Dissolved)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW
Arsenic	ND	0.80		µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW
Cadmium	ND	0.20		µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW
Copper	12	1.0		µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW
Iron	0.66	0.050		mg/L	1	Z-01	EPA 200.7	12/6/19	12/9/19 18:52	MJH
Lead	ND	0.50		µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW
Mercury	ND	0.00010		mg/L	1	Z-01	EPA 245.1	11/15/19	11/15/19 15:28	CJV
Nickel	ND	5.0		µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW
Selenium	ND	5.0	1.6	µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW
Silver	ND	0.20		µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW
Zinc	ND	10		µg/L	1	Z-01	EPA 200.8	11/16/19	11/18/19 13:06	QNW

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

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	700	25		mg/L	25		EPA 300.0	11/18/19	11/18/19 1:28	IS
Chlorine, Residual	0.042	0.020		mg/L	1		SM21-22 4500 CL G	11/13/19	11/13/19 21:00	MJG
Hexavalent Chromium	ND	0.0040		mg/L	1		SM21-22 3500 Cr B	11/13/19	11/13/19 22:02	AIA
Total Suspended Solids	350	1.3		mg/L	1		SM21-22 2540D	11/14/19	11/14/19 14:00	LL
Silica Gel Treated HEM (SGT-HEM)	ND	2.8		mg/L	1		EPA 1664B	11/20/19	11/20/19 12:00	LL

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

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) (1)	ND	0.020	µg/L	1		EPA 504.1	11/19/19	11/19/19 19:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,3-Dibromopropane (1)	96.5	70-130		11/19/19 19:28

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0766

Date Received: 11/13/2019

Field Sample #: 171+88 MW Sampled: 11/13/2019 13:40

Sample ID: 19K0766-03

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	0.047	0.075	0.024	mg/L	1		121,4500NH3-BH		11/19/19 23:18	AAL
Cyanide	ND	0.005	0.001	mg/L	1		121,4500CN-CE		11/15/19 14:44	AAL

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Sample Extraction Data

Prep Method: SW-846 3510C-608.3

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246008	1000	5.00	11/14/19
19K0766-02 [173+14 MW]	B246008	1000	5.00	11/14/19
19K0766-03 [171+88 MW]	B246008	1000	5.00	11/14/19

Prep Method: SW-846 5030B-624.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246136	5	5.00	11/15/19
19K0766-02 [173+14 MW]	B246136	5	5.00	11/15/19
19K0766-03 [171+88 MW]	B246136	5	5.00	11/15/19

Prep Method: SW-846 3510C-625.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B245987	950	1.00	11/14/19
19K0766-02 [173+14 MW]	B245987	980	1.00	11/14/19
19K0766-03 [171+88 MW]	B245987	1030	1.00	11/14/19

Prep Method: SW-846 3510C-625.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246287	950	1.00	11/14/19
19K0766-02 [173+14 MW]	B246287	980	1.00	11/14/19
19K0766-03 [171+88 MW]	B246287	1030	1.00	11/14/19

EPA 1664B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246506	500		11/20/19
19K0766-02 [173+14 MW]	B246506	500		11/20/19
19K0766-03 [171+88 MW]	B246506	500		11/20/19

Prep Method: EPA 200.7-EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-03 [171+88 MW]	B246036	50.0	50.0	11/14/19
19K0766-03 [171+88 MW]	B246036	50.0		11/14/19

Prep Method: EPA 200.7 Dissolved-EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B247797	50.0	50.0	11/14/19
19K0766-02 [173+14 MW]	B247797	50.0	50.0	11/14/19

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Sample Extraction Data

Prep Method: EPA 200.7 Dissolved-EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-03 [171+88 MW]	B247798	50.0	50.0	12/06/19

Prep Method: EPA 200.7-EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B247827	50.0	50.0	12/07/19
19K0766-01 [8+12 MW]	B247827	50.0		12/07/19
19K0766-02 [173+14 MW]	B247827	50.0	50.0	12/07/19
19K0766-02 [173+14 MW]	B247827	50.0		12/07/19

Prep Method: EPA 200.8-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246262	50.0	50.0	11/16/19
19K0766-02 [173+14 MW]	B246262	50.0	50.0	11/16/19

Prep Method: EPA 200.8 Dissolved-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-03 [171+88 MW]	B247796	50.0	50.0	11/16/19

Prep Method: EPA 200.8 Dissolved-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B247799	50.0	50.0	12/06/19
19K0766-02 [173+14 MW]	B247799	50.0	50.0	12/06/19

Prep Method: EPA 200.8-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-03 [171+88 MW]	B247828	50.0	50.0	12/07/19

Prep Method: EPA 200.8 Dissolved-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01RE1 [8+12 MW]	B248044	50.0	50.0	12/10/19
19K0766-02RE1 [173+14 MW]	B248044	50.0	50.0	12/10/19

Prep Method: EPA 245.1-EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246126	6.00	6.00	11/15/19
19K0766-02 [173+14 MW]	B246126	6.00	6.00	11/15/19

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Sample Extraction Data

Prep Method: EPA 245.1 Dissolved-EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-03 [171+88 MW]	B247802	6.00	6.00	11/15/19

Prep Method: EPA 245.1 Dissolved-EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B247846	6.00	6.00	12/07/19
19K0766-02 [173+14 MW]	B247846	6.00	6.00	12/07/19

Prep Method: EPA 245.1-EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-03RE2 [171+88 MW]	B247891	6.00	6.00	12/09/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246245	10.0	10.0	11/17/19
19K0766-02 [173+14 MW]	B246245	10.0	10.0	11/17/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-03 [171+88 MW]	B246254	10.0	10.0	11/18/19

Prep Method: EPA 504 water-EPA 504.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246437	35.4	35.0	11/19/19
19K0766-02 [173+14 MW]	B246437	35.5	35.0	11/19/19
19K0766-03 [171+88 MW]	B246437	35.3	35.0	11/19/19

SM21-22 2540D

Lab Number [Field ID]	Batch	Initial [mL]	Date
19K0766-01 [8+12 MW]	B245997	25.0	11/14/19
19K0766-02 [173+14 MW]	B245997	250	11/14/19
19K0766-03 [171+88 MW]	B245997	380	11/14/19

SM21-22 3500 Cr B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246046	50.0	50.0	11/13/19
19K0766-02 [173+14 MW]	B246046	50.0	50.0	11/13/19
19K0766-03 [171+88 MW]	B246046	50.0	50.0	11/13/19

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Sample Extraction Data

SM21-22 4500 CL G

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0766-01 [8+12 MW]	B246045	100	100	11/13/19
19K0766-02 [173+14 MW]	B246045	100	100	11/13/19
19K0766-03 [171+88 MW]	B246045	100	100	11/13/19

Prep Method: EPA 200.8-Tri Chrome Calc.

Lab Number [Field ID]	Batch	Initial [mL]	Date
19K0766-01 [8+12 MW]	B246262	50.0	11/16/19
19K0766-02 [173+14 MW]	B246262	50.0	11/16/19

Prep Method: EPA 200.8-Tri Chrome Calc.

Lab Number [Field ID]	Batch	Initial [mL]	Date
19K0766-03 [171+88 MW]	B247828	50.0	12/07/19

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B246136 - SW-846 5030B										
Blank (B246136-BLK1)				Prepared & Analyzed: 11/15/19						
Acetone	ND	50.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.500	µg/L							
Benzene	ND	1.00	µg/L							
Bromodichloromethane	ND	2.00	µg/L							
Bromoform	ND	2.00	µg/L							
Bromomethane	ND	2.00	µg/L							
tert-Butyl Alcohol (TBA)	ND	20.0	µg/L							
Carbon Tetrachloride	ND	2.00	µg/L							
Chlorobenzene	ND	2.00	µg/L							
Chlorodibromomethane	ND	2.00	µg/L							
Chloroethane	ND	2.00	µg/L							
Chloroform	ND	2.00	µg/L							
Chloromethane	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							
trans-1,2-Dichloroethylene	ND	2.00	µg/L							
1,2-Dichloropropane	ND	2.00	µg/L							
cis-1,3-Dichloropropene	ND	2.00	µg/L							
1,4-Dioxane	ND	50.0	µg/L							
trans-1,3-Dichloropropene	ND	2.00	µg/L							
Ethanol	ND	50.0	µg/L							V-05
Ethylbenzene	ND	2.00	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	2.00	µg/L							
Methylene Chloride	ND	5.00	µg/L							
1,1,2,2-Tetrachloroethane	ND	2.00	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							
Trichlorofluoromethane (Freon 11)	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	*24.8*		µg/L	25.0		99.3	70-130			
Surrogate: Toluene-d8	*24.7*		µg/L	25.0		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	*22.4*		µg/L	25.0		89.8	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B246136 - SW-846 5030B											
LCS (B246136-BS1)				Prepared & Analyzed: 11/15/19							
Acetone	190	50.0	µg/L	200		94.3	70-160				†
tert-Amyl Methyl Ether (TAME)	16	0.500	µg/L	20.0		78.6	70-130				
Benzene	21	1.00	µg/L	20.0		105	65-135				
Bromodichloromethane	22	2.00	µg/L	20.0		109	65-135				
Bromoform	21	2.00	µg/L	20.0		107	70-130				
Bromomethane	20	2.00	µg/L	20.0		99.0	15-185				
tert-Butyl Alcohol (TBA)	170	20.0	µg/L	200		85.1	40-160				†
Carbon Tetrachloride	22	2.00	µg/L	20.0		112	70-130				
Chlorobenzene	24	2.00	µg/L	20.0		118	65-135				
Chlorodibromomethane	22	2.00	µg/L	20.0		108	70-135				
Chloroethane	21	2.00	µg/L	20.0		106	40-160				
Chloroform	21	2.00	µg/L	20.0		107	70-135				
Chloromethane	16	2.00	µg/L	20.0		79.0	20-205				
1,2-Dichlorobenzene	22	2.00	µg/L	20.0		111	65-135				
1,3-Dichlorobenzene	23	2.00	µg/L	20.0		117	70-130				
1,4-Dichlorobenzene	22	2.00	µg/L	20.0		110	65-135				
1,2-Dichloroethane	22	2.00	µg/L	20.0		111	70-130				
cis-1,2-Dichloroethylene	21	1.00	µg/L	20.0		106	70-130				
1,1-Dichloroethane	20	2.00	µg/L	20.0		102	70-130				
1,1-Dichloroethylene	22	2.00	µg/L	20.0		108	50-150				
trans-1,2-Dichloroethylene	20	2.00	µg/L	20.0		100	70-130				
1,2-Dichloropropane	21	2.00	µg/L	20.0		105	35-165				
cis-1,3-Dichloropropene	20	2.00	µg/L	20.0		102	25-175				
1,4-Dioxane	190	50.0	µg/L	200		93.3	40-130				†
trans-1,3-Dichloropropene	20	2.00	µg/L	20.0		102	50-150				
Ethanol	220	50.0	µg/L	200		108	40-160			V-05	
Ethylbenzene	22	2.00	µg/L	20.0		110	60-140				
Methyl tert-Butyl Ether (MTBE)	19	2.00	µg/L	20.0		97.1	70-130				
Methylene Chloride	21	5.00	µg/L	20.0		107	60-140				
1,1,2,2-Tetrachloroethane	23	2.00	µg/L	20.0		116	60-140				
Tetrachloroethylene	24	2.00	µg/L	20.0		118	70-130				
Toluene	22	1.00	µg/L	20.0		109	70-130				
1,1,1-Trichloroethane	22	2.00	µg/L	20.0		108	70-130				
1,1,2-Trichloroethane	23	2.00	µg/L	20.0		113	70-130				
Trichloroethylene	22	2.00	µg/L	20.0		111	65-135				
Trichlorofluoromethane (Freon 11)	20	2.00	µg/L	20.0		99.6	50-150				
Vinyl Chloride	16	2.00	µg/L	20.0		81.8	5-195				
m+p Xylene	44	2.00	µg/L	40.0		109	70-130				
o-Xylene	22	2.00	µg/L	20.0		111	70-130				
Surrogate: 1,2-Dichloroethane-d4	*24.5*		µg/L	25.0		97.8	70-130				
Surrogate: Toluene-d8	*25.2*		µg/L	25.0		101	70-130				
Surrogate: 4-Bromofluorobenzene	*24.6*		µg/L	25.0		98.5	70-130				

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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 B246287 - SW-846 3510C										
Blank (B246287-BLK1)				Prepared: 11/14/19 Analyzed: 11/18/19						
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							V-06
Chrysene (SIM)	ND	0.20	µg/L							
Dibenz(a,h)anthracene (SIM)	ND	0.10	µg/L							
Fluoranthene (SIM)	ND	0.50	µg/L							
Fluorene (SIM)	ND	1.0	µg/L							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	µg/L							
2-Methylnaphthalene (SIM)	ND	1.0	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)	*87.5*		µg/L	200		43.8	15-110			
Surrogate: Phenol-d6 (SIM)	*66.7*		µg/L	200		33.3	15-110			
Surrogate: Nitrobenzene-d5	*82.7*		µg/L	100		82.7	30-130			
Surrogate: 2-Fluorobiphenyl	*52.4*		µg/L	100		52.4	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*184*		µg/L	200		91.8	15-110			
Surrogate: p-Terphenyl-d14	*73.5*		µg/L	100		73.5	30-130			
LCS (B246287-BS1)				Prepared: 11/14/19 Analyzed: 11/18/19						
Acenaphthene (SIM)	32.6	6.0	µg/L	50.0		65.1	47-145			
Acenaphthylene (SIM)	33.6	6.0	µg/L	50.0		67.3	33-145			
Anthracene (SIM)	37.6	4.0	µg/L	50.0		75.2	27-133			
Benzo(a)anthracene (SIM)	38.7	1.0	µg/L	50.0		77.5	33-143			
Benzo(a)pyrene (SIM)	36.0	2.0	µg/L	50.0		71.9	17-163			
Benzo(b)fluoranthene (SIM)	39.5	1.0	µg/L	50.0		79.0	24-159			
Benzo(g,h,i)perylene (SIM)	37.1	10	µg/L	50.0		74.2	10-219			
Benzo(k)fluoranthene (SIM)	41.4	4.0	µg/L	50.0		82.8	11-162			
Bis(2-ethylhexyl)phthalate (SIM)	51.2	20	µg/L	50.0		102	8-158			V-06
Chrysene (SIM)	31.0	4.0	µg/L	50.0		62.0	17-168			
Dibenz(a,h)anthracene (SIM)	39.7	2.0	µg/L	50.0		79.5	10-227			
Fluoranthene (SIM)	35.6	10	µg/L	50.0		71.1	26-137			
Fluorene (SIM)	34.1	20	µg/L	50.0		68.3	59-121			
Indeno(1,2,3-cd)pyrene (SIM)	44.3	2.0	µg/L	50.0		88.6	10-171			
2-Methylnaphthalene (SIM)	33.0	20	µg/L	50.0		66.1	40-140			
Naphthalene (SIM)	31.1	20	µg/L	50.0		62.1	21-133			
Pentachlorophenol (SIM)	33.0	20	µg/L	50.0		66.0	14-176			
Phenanthrene (SIM)	34.6	1.0	µg/L	50.0		69.2	54-120			
Pyrene (SIM)	33.7	20	µg/L	50.0		67.5	52-120			
Surrogate: 2-Fluorophenol (SIM)	*77.4*		µg/L	200		38.7	15-110			
Surrogate: Phenol-d6 (SIM)	*60.0*		µg/L	200		30.0	15-110			
Surrogate: Nitrobenzene-d5	*66.6*		µg/L	100		66.6	30-130			
Surrogate: 2-Fluorobiphenyl	*53.5*		µg/L	100		53.5	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*158*		µg/L	200		79.2	15-110			
Surrogate: p-Terphenyl-d14	*51.7*		µg/L	100		51.7	30-130			

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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 B246287 - SW-846 3510C										
LCS Dup (B246287-BSD1)				Prepared: 11/14/19 Analyzed: 11/18/19						
Acenaphthene (SIM)	34.3	6.0	µg/L	50.0		68.6	47-145	5.15	48	
Acenaphthylene (SIM)	35.3	6.0	µg/L	50.0		70.6	33-145	4.82	74	
Anthracene (SIM)	38.5	4.0	µg/L	50.0		77.0	27-133	2.36	66	
Benzo(a)anthracene (SIM)	39.7	1.0	µg/L	50.0		79.4	33-143	2.50	53	
Benzo(a)pyrene (SIM)	37.5	2.0	µg/L	50.0		75.0	17-163	4.19	72	
Benzo(b)fluoranthene (SIM)	40.7	1.0	µg/L	50.0		81.4	24-159	2.99	71	
Benzo(g,h,i)perylene (SIM)	38.5	10	µg/L	50.0		77.0	10-219	3.76	97	
Benzo(k)fluoranthene (SIM)	42.2	4.0	µg/L	50.0		84.4	11-162	1.82	63	
Bis(2-ethylhexyl)phthalate (SIM)	55.9	20	µg/L	50.0		112	8-158	8.82	82	V-06
Chrysene (SIM)	32.3	4.0	µg/L	50.0		64.5	17-168	4.05	87	
Dibenz(a,h)anthracene (SIM)	41.3	2.0	µg/L	50.0		82.6	10-227	3.80	126	
Fluoranthene (SIM)	36.9	10	µg/L	50.0		73.7	26-137	3.59	66	
Fluorene (SIM)	35.7	20	µg/L	50.0		71.4	59-121	4.47	38	
Indeno(1,2,3-cd)pyrene (SIM)	46.2	2.0	µg/L	50.0		92.4	10-171	4.11	99	‡
2-Methylnaphthalene (SIM)	35.0	20	µg/L	50.0		70.0	40-140	5.76	20	
Naphthalene (SIM)	32.7	20	µg/L	50.0		65.4	21-133	5.14	65	
Pentachlorophenol (SIM)	34.2	20	µg/L	50.0		68.3	14-176	3.45	86	
Phenanthrene (SIM)	35.4	1.0	µg/L	50.0		70.8	54-120	2.23	39	
Pyrene (SIM)	34.0	20	µg/L	50.0		68.0	52-120	0.768	49	
Surrogate: 2-Fluorophenol (SIM)	*81.9*		µg/L	200		41.0	15-110			
Surrogate: Phenol-d6 (SIM)	*64.2*		µg/L	200		32.1	15-110			
Surrogate: Nitrobenzene-d5	*72.8*		µg/L	100		72.8	30-130			
Surrogate: 2-Fluorobiphenyl	*53.3*		µg/L	100		53.3	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*169*		µg/L	200		84.4	15-110			
Surrogate: p-Terphenyl-d14	*51.2*		µg/L	100		51.2	30-130			

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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 B245987 - SW-846 3510C										
Blank (B245987-BLK1)				Prepared: 11/14/19 Analyzed: 11/16/19						
Acenaphthene	ND	5.00	µg/L							
Acenaphthylene	ND	5.00	µg/L							
Anthracene	ND	5.00	µg/L							
Benzidine	ND	20.0	µg/L							R-05, V-04, V-05, V-35
Benzo(g,h,i)perylene	ND	5.00	µg/L							
4-Bromophenylphenylether	ND	10.0	µg/L							
Butylbenzylphthalate	ND	10.0	µg/L							
4-Chloro-3-methylphenol	ND	10.0	µg/L							
Bis(2-chloroethyl)ether	ND	10.0	µg/L							
Bis(2-chloroisopropyl)ether	ND	10.0	µg/L							
2-Chloronaphthalene	ND	10.0	µg/L							
2-Chlorophenol	ND	10.0	µg/L							
4-Chlorophenylphenylether	ND	10.0	µg/L							
Di-n-butylphthalate	ND	10.0	µg/L							
1,3-Dichlorobenzene	ND	5.00	µg/L							
1,4-Dichlorobenzene	ND	5.00	µg/L							
1,2-Dichlorobenzene	ND	5.00	µg/L							
3,3-Dichlorobenzidine	ND	10.0	µg/L							
2,4-Dichlorophenol	ND	10.0	µg/L							
Diethylphthalate	ND	10.0	µg/L							
2,4-Dimethylphenol	ND	10.0	µg/L							
Dimethylphthalate	ND	10.0	µg/L							
4,6-Dinitro-2-methylphenol	ND	10.0	µg/L							
2,4-Dinitrophenol	ND	10.0	µg/L							
2,4-Dinitrotoluene	ND	10.0	µg/L							
2,6-Dinitrotoluene	ND	10.0	µg/L							
Di-n-octylphthalate	ND	10.0	µg/L							
1,2-Diphenylhydrazine/Azobenzene	ND	10.0	µg/L							
Fluoranthene	ND	5.00	µg/L							
Fluorene	ND	5.00	µg/L							
Hexachlorobenzene	ND	10.0	µg/L							
Hexachlorobutadiene	ND	10.0	µg/L							
Hexachlorocyclopentadiene	ND	10.0	µg/L							
Hexachloroethane	ND	10.0	µg/L							
Isophorone	ND	10.0	µg/L							
Naphthalene	ND	5.00	µg/L							
Nitrobenzene	ND	10.0	µg/L							
2-Nitrophenol	ND	10.0	µg/L							
4-Nitrophenol	ND	10.0	µg/L							
N-Nitrosodimethylamine	ND	10.0	µg/L							
N-Nitrosodiphenylamine/Diphenylamine	ND	10.0	µg/L							
N-Nitrosodi-n-propylamine	ND	10.0	µg/L							
2-Methylnaphthalene	ND	5.00	µg/L							
Phenanthrene	ND	5.00	µg/L							
2-Methylphenol	ND	10.0	µg/L							
Phenol	ND	10.0	µg/L							
3/4-Methylphenol	ND	20.0	µg/L							
Pyrene	ND	5.00	µg/L							
1,2,4-Trichlorobenzene	ND	5.00	µg/L							
2,4,6-Trichlorophenol	ND	10.0	µg/L							
Surrogate: 2-Fluorophenol	*112*		µg/L	200		56.1	15-110			

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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 B245987 - SW-846 3510C										
Blank (B245987-BLK1)				Prepared: 11/14/19 Analyzed: 11/16/19						
Surrogate: Phenol-d6	*79.9*		µg/L	200		39.9	15-110			
Surrogate: Nitrobenzene-d5	*85.0*		µg/L	100		85.0	30-130			
Surrogate: 2-Fluorobiphenyl	*87.0*		µg/L	100		87.0	30-130			
Surrogate: 2,4,6-Tribromophenol	*204*		µg/L	200		102	15-110			
Surrogate: p-Terphenyl-d14	*105*		µg/L	100		105	30-130			
LCS (B245987-BS1)				Prepared: 11/14/19 Analyzed: 11/16/19						
Acenaphthene	36.9	5.00	µg/L	50.0		73.8	47-145			
Acenaphthylene	36.1	5.00	µg/L	50.0		72.1	33-145			
Anthracene	38.9	5.00	µg/L	50.0		77.9	27-133			
Benzidine	46.6	20.0	µg/L	50.0		93.2	40-140			V-04, V-05, R-05, V-35
Benzo(g,h,i)perylene	40.5	5.00	µg/L	50.0		81.1	10-219			
4-Bromophenylphenylether	38.2	10.0	µg/L	50.0		76.4	53-127			
Butylbenzylphthalate	39.9	10.0	µg/L	50.0		79.8	10-152			
4-Chloro-3-methylphenol	36.8	10.0	µg/L	50.0		73.5	22-147			
Bis(2-chloroethyl)ether	34.5	10.0	µg/L	50.0		68.9	12-158			
Bis(2-chloroisopropyl)ether	38.4	10.0	µg/L	50.0		76.9	36-166			
2-Chloronaphthalene	32.0	10.0	µg/L	50.0		64.0	60-120			
2-Chlorophenol	33.6	10.0	µg/L	50.0		67.2	23-134			
4-Chlorophenylphenylether	36.9	10.0	µg/L	50.0		73.7	25-158			
Di-n-butylphthalate	39.4	10.0	µg/L	50.0		78.8	10-120			
1,3-Dichlorobenzene	31.4	5.00	µg/L	50.0		62.8	10-172			
1,4-Dichlorobenzene	31.9	5.00	µg/L	50.0		63.7	20-124			
1,2-Dichlorobenzene	34.3	5.00	µg/L	50.0		68.5	32-129			
3,3-Dichlorobenzidine	40.9	10.0	µg/L	50.0		81.8	10-262			
2,4-Dichlorophenol	34.8	10.0	µg/L	50.0		69.5	39-135			
Diethylphthalate	37.4	10.0	µg/L	50.0		74.7	10-120			
2,4-Dimethylphenol	34.1	10.0	µg/L	50.0		68.2	32-120			
Dimethylphthalate	37.2	10.0	µg/L	50.0		74.5	10-120			
4,6-Dinitro-2-methylphenol	45.1	10.0	µg/L	50.0		90.2	10-181			
2,4-Dinitrophenol	42.1	10.0	µg/L	50.0		84.2	10-191			
2,4-Dinitrotoluene	40.9	10.0	µg/L	50.0		81.7	39-139			
2,6-Dinitrotoluene	41.4	10.0	µg/L	50.0		82.7	50-158			
Di-n-octylphthalate	39.8	10.0	µg/L	50.0		79.7	4-146			
1,2-Diphenylhydrazine/Azobenzene	40.8	10.0	µg/L	50.0		81.6	40-140			
Fluoranthene	37.8	5.00	µg/L	50.0		75.6	26-137			
Fluorene	37.4	5.00	µg/L	50.0		74.9	59-121			
Hexachlorobenzene	39.5	10.0	µg/L	50.0		79.0	10-152			
Hexachlorobutadiene	32.0	10.0	µg/L	50.0		64.0	24-120			
Hexachlorocyclopentadiene	27.2	10.0	µg/L	50.0		54.3	40-140			
Hexachloroethane	32.8	10.0	µg/L	50.0		65.7	40-120			
Isophorone	38.6	10.0	µg/L	50.0		77.1	21-196			
Naphthalene	34.3	5.00	µg/L	50.0		68.6	21-133			
Nitrobenzene	35.9	10.0	µg/L	50.0		71.8	35-180			
2-Nitrophenol	39.2	10.0	µg/L	50.0		78.4	29-182			
4-Nitrophenol	20.6	10.0	µg/L	50.0		41.2	10-132			
N-Nitrosodimethylamine	21.8	10.0	µg/L	50.0		43.7	40-140			
N-Nitrosodiphenylamine/Diphenylamine	41.0	10.0	µg/L	50.0		82.0	40-140			
N-Nitrosodi-n-propylamine	36.8	10.0	µg/L	50.0		73.5	10-230			
2-Methylnaphthalene	38.0	5.00	µg/L	50.0		76.1	40-140			
Phenanthrene	38.8	5.00	µg/L	50.0		77.5	54-120			
2-Methylphenol	31.3	10.0	µg/L	50.0		62.7	40-140			

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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 B245987 - SW-846 3510C												
LCS (B245987-BS1)				Prepared: 11/14/19 Analyzed: 11/16/19								
Phenol	17.2	10.0	µg/L	50.0		34.3		5-120				
3/4-Methylphenol	30.0	20.0	µg/L	50.0		60.1		40-140				
Pyrene	39.0	5.00	µg/L	50.0		78.1		52-120				
1,2,4-Trichlorobenzene	32.9	5.00	µg/L	50.0		65.7		44-142				
2,4,6-Trichlorophenol	37.2	10.0	µg/L	50.0		74.3		37-144				
Surrogate: 2-Fluorophenol	*97.8*		µg/L	200		48.9		15-110				
Surrogate: Phenol-d6	*70.1*		µg/L	200		35.1		15-110				
Surrogate: Nitrobenzene-d5	*72.6*		µg/L	100		72.6		30-130				
Surrogate: 2-Fluorobiphenyl	*75.1*		µg/L	100		75.1		30-130				
Surrogate: 2,4,6-Tribromophenol	*177*		µg/L	200		88.3		15-110				
Surrogate: p-Terphenyl-d14	*85.9*		µg/L	100		85.9		30-130				
LCS Dup (B245987-BSD1)				Prepared: 11/14/19 Analyzed: 11/16/19								
Acenaphthene	35.0	5.00	µg/L	50.0		70.0		47-145	5.34		48	
Acenaphthylene	34.6	5.00	µg/L	50.0		69.2		33-145	4.16		74	
Anthracene	36.5	5.00	µg/L	50.0		72.9		27-133	6.55		66	
Benzidine	2.18	20.0	µg/L	50.0		**4.36**	*	40-140	**182**	*	30	L-07A, V-04, V-05, V-35
Benzo(g,h,i)perylene	38.7	5.00	µg/L	50.0		77.3		10-219	4.75		97	
4-Bromophenylphenylether	35.4	10.0	µg/L	50.0		70.9		53-127	7.42		43	
Butylbenzylphthalate	38.0	10.0	µg/L	50.0		76.1		10-152	4.82		60	
4-Chloro-3-methylphenol	35.8	10.0	µg/L	50.0		71.7		22-147	2.51		73	
Bis(2-chloroethyl)ether	34.0	10.0	µg/L	50.0		68.0		12-158	1.31		108	
Bis(2-chloroisopropyl)ether	36.9	10.0	µg/L	50.0		73.7		36-166	4.20		76	
2-Chloronaphthalene	30.6	10.0	µg/L	50.0		61.3		60-120	4.31		24	
2-Chlorophenol	33.3	10.0	µg/L	50.0		66.5		23-134	0.987		61	
4-Chlorophenylphenylether	35.3	10.0	µg/L	50.0		70.6		25-158	4.29		61	
Di-n-butylphthalate	37.6	10.0	µg/L	50.0		75.1		10-120	4.76		47	
1,3-Dichlorobenzene	31.1	5.00	µg/L	50.0		62.2		10-172	0.992		30	
1,4-Dichlorobenzene	32.3	5.00	µg/L	50.0		64.7		20-124	1.43		30	
1,2-Dichlorobenzene	44.7	5.00	µg/L	50.0		89.5		32-129	26.5		30	
3,3-Dichlorobenzidine	31.4	10.0	µg/L	50.0		62.7		10-262	26.4		108	
2,4-Dichlorophenol	34.2	10.0	µg/L	50.0		68.4		39-135	1.65		50	
Diethylphthalate	35.8	10.0	µg/L	50.0		71.6		10-120	4.32		100	
2,4-Dimethylphenol	32.8	10.0	µg/L	50.0		65.7		32-120	3.80		58	
Dimethylphthalate	35.1	10.0	µg/L	50.0		70.2		10-120	5.83		183	
4,6-Dinitro-2-methylphenol	42.5	10.0	µg/L	50.0		85.0		10-181	5.91		203	
2,4-Dinitrophenol	41.6	10.0	µg/L	50.0		83.3		10-191	1.10		132	
2,4-Dinitrotoluene	39.2	10.0	µg/L	50.0		78.3		39-139	4.22		42	
2,6-Dinitrotoluene	39.9	10.0	µg/L	50.0		79.9		50-158	3.49		48	
Di-n-octylphthalate	38.2	10.0	µg/L	50.0		76.5		4-146	4.15		69	
1,2-Diphenylhydrazine/Azobenzene	37.1	10.0	µg/L	50.0		74.2		40-140	9.53		30	
Fluoranthene	37.2	5.00	µg/L	50.0		74.3		26-137	1.73		66	
Fluorene	35.8	5.00	µg/L	50.0		71.7		59-121	4.39		38	
Hexachlorobenzene	36.8	10.0	µg/L	50.0		73.5		10-152	7.21		55	
Hexachlorobutadiene	31.2	10.0	µg/L	50.0		62.3		24-120	2.66		62	
Hexachlorocyclopentadiene	24.7	10.0	µg/L	50.0		49.5		40-140	9.37		30	
Hexachloroethane	31.7	10.0	µg/L	50.0		63.3		40-120	3.63		52	
Isophorone	37.2	10.0	µg/L	50.0		74.3		21-196	3.72		93	
Naphthalene	33.7	5.00	µg/L	50.0		67.4		21-133	1.68		65	
Nitrobenzene	34.4	10.0	µg/L	50.0		68.9		35-180	4.18		62	
2-Nitrophenol	39.0	10.0	µg/L	50.0		78.1		29-182	0.486		55	
4-Nitrophenol	20.4	10.0	µg/L	50.0		40.9		10-132	0.634		131	

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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 B245987 - SW-846 3510C										
LCS Dup (B245987-BSD1)				Prepared: 11/14/19 Analyzed: 11/16/19						
N-Nitrosodimethylamine	20.8	10.0	µg/L	50.0		41.7	40-140	4.78	30	
N-Nitrosodiphenylamine/Diphenylamine	37.4	10.0	µg/L	50.0		74.8	40-140	9.23	30	
N-Nitrosodi-n-propylamine	35.6	10.0	µg/L	50.0		71.3	10-230	3.07	87	
2-Methylnaphthalene	37.6	5.00	µg/L	50.0		75.1	40-140	1.24	30	
Phenanthrene	36.6	5.00	µg/L	50.0		73.2	54-120	5.65	39	
2-Methylphenol	31.0	10.0	µg/L	50.0		62.0	40-140	1.03	30	
Phenol	17.0	10.0	µg/L	50.0		34.1	5-120	0.585	64	
3/4-Methylphenol	30.1	20.0	µg/L	50.0		60.2	40-140	0.166	30	
Pyrene	36.6	5.00	µg/L	50.0		73.2	52-120	6.42	49	
1,2,4-Trichlorobenzene	32.2	5.00	µg/L	50.0		64.5	44-142	1.90	50	
2,4,6-Trichlorophenol	35.6	10.0	µg/L	50.0		71.2	37-144	4.34	58	
Surrogate: 2-Fluorophenol	*97.8*		µg/L	200		48.9	15-110			
Surrogate: Phenol-d6	*70.3*		µg/L	200		35.2	15-110			
Surrogate: Nitrobenzene-d5	*70.9*		µg/L	100		70.9	30-130			
Surrogate: 2-Fluorobiphenyl	*73.0*		µg/L	100		73.0	30-130			
Surrogate: 2,4,6-Tribromophenol	*176*		µg/L	200		88.1	15-110			
Surrogate: p-Terphenyl-d14	*83.3*		µg/L	100		83.3	30-130			

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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 B246008 - SW-846 3510C										
Blank (B246008-BLK1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Aroclor-1016	ND	0.0200	µg/L							
Aroclor-1016 [2C]	ND	0.0200	µg/L							
Aroclor-1221	ND	0.0200	µg/L							
Aroclor-1221 [2C]	ND	0.0200	µg/L							
Aroclor-1232	ND	0.0200	µg/L							
Aroclor-1232 [2C]	ND	0.0200	µg/L							
Aroclor-1242	ND	0.0200	µg/L							
Aroclor-1242 [2C]	ND	0.0200	µg/L							
Aroclor-1248	ND	0.0200	µg/L							
Aroclor-1248 [2C]	ND	0.0200	µg/L							
Aroclor-1254	ND	0.0200	µg/L							
Aroclor-1254 [2C]	ND	0.0200	µg/L							
Aroclor-1260	ND	0.0200	µg/L							
Aroclor-1260 [2C]	ND	0.0200	µg/L							
Surrogate: Decachlorobiphenyl	*0.162*		µg/L	0.200		81.0	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.159*		µg/L	0.200		79.4	30-150			
Surrogate: Tetrachloro-m-xylene	*0.137*		µg/L	0.200		68.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.138*		µg/L	0.200		69.1	30-150			
LCS (B246008-BS1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Aroclor-1016	0.350	0.200	µg/L	0.500		69.9	50-140			
Aroclor-1016 [2C]	0.337	0.200	µg/L	0.500		67.4	50-140			
Aroclor-1260	0.348	0.200	µg/L	0.500		69.6	8-140			
Aroclor-1260 [2C]	0.324	0.200	µg/L	0.500		64.8	8-140			
Surrogate: Decachlorobiphenyl	*1.50*		µg/L	2.00		74.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.46*		µg/L	2.00		72.9	30-150			
Surrogate: Tetrachloro-m-xylene	*1.26*		µg/L	2.00		63.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.28*		µg/L	2.00		63.8	30-150			
LCS Dup (B246008-BSD1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Aroclor-1016	0.383	0.200	µg/L	0.500		76.7	50-140	9.19		
Aroclor-1016 [2C]	0.374	0.200	µg/L	0.500		74.7	50-140	10.2		
Aroclor-1260	0.374	0.200	µg/L	0.500		74.7	8-140	7.20		
Aroclor-1260 [2C]	0.347	0.200	µg/L	0.500		69.3	8-140	6.69		
Surrogate: Decachlorobiphenyl	*1.56*		µg/L	2.00		78.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.52*		µg/L	2.00		76.0	30-150			
Surrogate: Tetrachloro-m-xylene	*1.36*		µg/L	2.00		68.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.39*		µg/L	2.00		69.4	30-150			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B246036 - EPA 200.7										
Blank (B246036-BLK1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Iron	ND	0.050	mg/L							
Hardness	0.080		mg/L							
LCS (B246036-BS1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Iron	4.09	0.050	mg/L	4.00		102	85-115			
Hardness	27		mg/L	26.5		101	85-115			B
LCS Dup (B246036-BSD1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Iron	4.12	0.050	mg/L	4.00		103	85-115	0.504	20	
Hardness	27		mg/L	26.5		102	85-115	0.670	20	B
Batch B246126 - EPA 245.1										
Blank (B246126-BLK1)				Prepared & Analyzed: 11/15/19						
Mercury	ND	0.00010	mg/L							
LCS (B246126-BS1)				Prepared & Analyzed: 11/15/19						
Mercury	0.00461	0.00010	mg/L	0.00400		115	85-115			
LCS Dup (B246126-BSD1)				Prepared & Analyzed: 11/15/19						
Mercury	0.00402	0.00010	mg/L	0.00400		101	85-115	13.7	20	
Duplicate (B246126-DUP1)		**Source: 19K0766-02**		Prepared & Analyzed: 11/15/19						
Mercury	ND	0.00010	mg/L		ND			NC	30	
Matrix Spike (B246126-MS1)		**Source: 19K0766-02**		Prepared & Analyzed: 11/15/19						
Mercury	0.00388	0.00010	mg/L	0.00400	ND	97.1	75-125			
Batch B246262 - EPA 200.8										
Blank (B246262-BLK1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	ND	1.0	µg/L							
Arsenic	ND	0.80	µg/L							
Cadmium	ND	0.20	µg/L							
Chromium	ND	1.0	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	10	µg/L							

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B246262 - EPA 200.8										
LCS (B246262-BS1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	519	10	µg/L	500		104	85-115			
Arsenic	517	8.0	µg/L	500		103	85-115			
Cadmium	516	2.0	µg/L	500		103	85-115			
Chromium	516	10	µg/L	500		103	85-115			
Copper	1000	10	µg/L	1000		100	85-115			
Lead	523	5.0	µg/L	500		105	85-115			
Nickel	517	50	µg/L	500		103	85-115			
Selenium	507	50	µg/L	500		101	85-115			
Silver	508	2.0	µg/L	500		102	85-115			
Zinc	1050	100	µg/L	1000		105	85-115			
LCS Dup (B246262-BSD1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	521	10	µg/L	500		104	85-115	0.450	20	
Arsenic	518	8.0	µg/L	500		104	85-115	0.146	20	
Cadmium	521	2.0	µg/L	500		104	85-115	1.02	20	
Chromium	519	10	µg/L	500		104	85-115	0.659	20	
Copper	1010	10	µg/L	1000		101	85-115	0.827	20	
Lead	522	5.0	µg/L	500		104	85-115	0.176	20	
Nickel	518	50	µg/L	500		104	85-115	0.323	20	
Selenium	524	50	µg/L	500		105	85-115	3.34	20	
Silver	512	2.0	µg/L	500		102	85-115	0.872	20	
Zinc	1040	100	µg/L	1000		104	85-115	0.808	20	
Batch B247827 - EPA 200.7										
Blank (B247827-BLK1)				Prepared: 12/07/19 Analyzed: 12/09/19						
Iron	ND	0.050	mg/L							
Hardness	0.037		mg/L							
LCS (B247827-BS1)				Prepared: 12/07/19 Analyzed: 12/09/19						
Iron	3.81	0.050	mg/L	4.00		95.3	85-115			
Hardness	25		mg/L	26.5		94.6	85-115			B
LCS Dup (B247827-BSD1)				Prepared: 12/07/19 Analyzed: 12/09/19						
Iron	3.84	0.050	mg/L	4.00		96.1	85-115	0.825	20	
Hardness	25		mg/L	26.5		95.0	85-115	0.419	20	B
Batch B247828 - EPA 200.8										
Blank (B247828-BLK1)				Prepared: 12/07/19 Analyzed: 12/09/19						
Antimony	ND	1.0	µg/L							
Arsenic	ND	0.80	µg/L							
Cadmium	ND	0.20	µg/L							
Chromium	ND	1.0	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	10	µg/L							

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B247828 - EPA 200.8										
LCS (B247828-BS1)				Prepared: 12/07/19 Analyzed: 12/09/19						
Antimony	513	10	µg/L	500		103	85-115			
Arsenic	509	8.0	µg/L	500		102	85-115			
Cadmium	515	2.0	µg/L	500		103	85-115			
Chromium	539	10	µg/L	500		108	85-115			
Copper	1050	10	µg/L	1000		105	85-115			
Lead	517	5.0	µg/L	500		103	85-115			
Nickel	537	50	µg/L	500		107	85-115			
Selenium	510	50	µg/L	500		102	85-115			
Silver	514	2.0	µg/L	500		103	85-115			
Zinc	1060	100	µg/L	1000		106	85-115			
LCS Dup (B247828-BSD1)				Prepared: 12/07/19 Analyzed: 12/09/19						
Antimony	497	10	µg/L	500		99.4	85-115	3.26	20	
Arsenic	492	8.0	µg/L	500		98.5	85-115	3.23	20	
Cadmium	497	2.0	µg/L	500		99.4	85-115	3.48	20	
Chromium	521	10	µg/L	500		104	85-115	3.41	20	
Copper	1010	10	µg/L	1000		101	85-115	3.63	20	
Lead	505	5.0	µg/L	500		101	85-115	2.33	20	
Nickel	511	50	µg/L	500		102	85-115	4.97	20	
Selenium	498	50	µg/L	500		99.7	85-115	2.32	20	
Silver	496	2.0	µg/L	500		99.3	85-115	3.48	20	
Zinc	1020	100	µg/L	1000		102	85-115	4.27	20	
Batch B247891 - EPA 245.1										
Blank (B247891-BLK1)				Prepared & Analyzed: 12/09/19						
Mercury	ND	0.00010	mg/L							
LCS (B247891-BS1)				Prepared & Analyzed: 12/09/19						
Mercury	0.00385	0.00010	mg/L	0.00400		96.2	85-115			
LCS Dup (B247891-BSD1)				Prepared & Analyzed: 12/09/19						
Mercury	0.00394	0.00010	mg/L	0.00400		98.4	85-115	2.22	20	

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QUALITY CONTROL

Metals Analyses (Dissolved) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B247796 - EPA 200.8 Dissolved										
Blank (B247796-BLK1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	ND	1.0	µg/L							
Arsenic	ND	0.80	µg/L							
Cadmium	ND	0.20	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	10	µg/L							
LCS (B247796-BS1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	519	10	µg/L	500		104	85-115			
Arsenic	517	8.0	µg/L	500		103	85-115			
Cadmium	516	2.0	µg/L	500		103	85-115			
Copper	1000	10	µg/L	1000		100	85-115			
Lead	523	5.0	µg/L	500		105	85-115			
Nickel	517	50	µg/L	500		103	85-115			
Selenium	507	50	µg/L	500		101	85-115			
Silver	508	2.0	µg/L	500		102	85-115			
Zinc	1050	100	µg/L	1000		105	85-115			
LCS Dup (B247796-BSD1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	521	10	µg/L	500		104	85-115	0.450	20	
Arsenic	518	8.0	µg/L	500		104	85-115	0.146	20	
Cadmium	521	2.0	µg/L	500		104	85-115	1.02	20	
Copper	1010	10	µg/L	1000		101	85-115	0.827	20	
Lead	522	5.0	µg/L	500		104	85-115	0.176	20	
Nickel	518	50	µg/L	500		104	85-115	0.323	20	
Selenium	524	50	µg/L	500		105	85-115	3.34	20	
Silver	512	2.0	µg/L	500		102	85-115	0.872	20	
Zinc	1040	100	µg/L	1000		104	85-115	0.808	20	
Batch B247797 - EPA 200.7 Dissolved										
Blank (B247797-BLK1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Iron	ND	0.050	mg/L							
LCS (B247797-BS1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Iron	4.09	0.050	mg/L	4.00		102	85-115			
LCS Dup (B247797-BSD1)				Prepared: 11/14/19 Analyzed: 11/15/19						
Iron	4.12	0.050	mg/L	4.00		103	85-115	0.504	20	

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QUALITY CONTROL

Metals Analyses (Dissolved) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B247798 - EPA 200.7 Dissolved										
Blank (B247798-BLK1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Iron	ND	0.050	mg/L							
LCS (B247798-BS1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Iron	3.84	0.050	mg/L	4.00		96.1	85-115			
LCS Dup (B247798-BSD1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Iron	3.78	0.050	mg/L	4.00		94.5	85-115	1.60	20	
Batch B247799 - EPA 200.8 Dissolved										
Blank (B247799-BLK1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Antimony	ND	1.0	µg/L							
Arsenic	ND	0.80	µg/L							
Cadmium	ND	0.20	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							
LCS (B247799-BS1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Antimony	494	10	µg/L	500		98.7	85-115			
Arsenic	486	8.0	µg/L	500		97.2	85-115			
Cadmium	491	2.0	µg/L	500		98.3	85-115			
Copper	1010	10	µg/L	1000		101	85-115			
Lead	507	5.0	µg/L	500		101	85-115			
Nickel	518	50	µg/L	500		104	85-115			
Selenium	497	50	µg/L	500		99.4	85-115			
Silver	490	2.0	µg/L	500		98.0	85-115			
LCS Dup (B247799-BSD1)				Prepared: 12/06/19 Analyzed: 12/09/19						
Antimony	494	10	µg/L	500		98.7	85-115	0.00814	20	
Arsenic	491	8.0	µg/L	500		98.2	85-115	1.08	20	
Cadmium	495	2.0	µg/L	500		99.0	85-115	0.739	20	
Copper	1020	10	µg/L	1000		102	85-115	0.737	20	
Lead	501	5.0	µg/L	500		100	85-115	1.19	20	
Nickel	527	50	µg/L	500		105	85-115	1.70	20	
Selenium	504	50	µg/L	500		101	85-115	1.46	20	
Silver	487	2.0	µg/L	500		97.3	85-115	0.626	20	
Batch B247802 - EPA 245.1 Dissolved										
Blank (B247802-BLK1)				Prepared & Analyzed: 11/15/19						
Mercury	ND	0.00010	mg/L							

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QUALITY CONTROL

Metals Analyses (Dissolved) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B247802 - EPA 245.1 Dissolved										
LCS (B247802-BS1)				Prepared & Analyzed: 11/15/19						
Mercury	0.00461	0.00010	mg/L	0.00400		115	85-115			
LCS Dup (B247802-BSD1)				Prepared & Analyzed: 11/15/19						
Mercury	0.00402	0.00010	mg/L	0.00400		101	85-115	13.7	20	
Duplicate (B247802-DUP1)		**Source: 19K0766-03**		Prepared & Analyzed: 11/15/19						
Mercury	ND	0.00010	mg/L		ND			NC	30	
Matrix Spike (B247802-MS1)		**Source: 19K0766-03**		Prepared & Analyzed: 11/15/19						
Mercury	0.00386	0.00010	mg/L	0.00400	ND	96.6	70-130			
Batch B247846 - EPA 245.1 Dissolved										
Blank (B247846-BLK1)				Prepared & Analyzed: 12/07/19						
Mercury	ND	0.00010	mg/L							
LCS (B247846-BS1)				Prepared & Analyzed: 12/07/19						
Mercury	0.00380	0.00010	mg/L	0.00400		95.1	85-115			
LCS Dup (B247846-BSD1)				Prepared & Analyzed: 12/07/19						
Mercury	0.00397	0.00010	mg/L	0.00400		99.2	85-115	4.21	20	
Batch B248044 - EPA 200.8 Dissolved										
Blank (B248044-BLK1)				Prepared: 12/10/19 Analyzed: 12/11/19						
Zinc	ND	10	µg/L							
LCS (B248044-BS1)				Prepared: 12/10/19 Analyzed: 12/11/19						
Zinc	1130	100	µg/L	1000		113	85-115			
LCS Dup (B248044-BSD1)				Prepared: 12/10/19 Analyzed: 12/11/19						
Zinc	1010	100	µg/L	1000		101	85-115	11.3	20	

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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 B245997 - SM21-22 2540D										
Blank (B245997-BLK1)				Prepared & Analyzed: 11/14/19						
Total Suspended Solids	ND	2.5	mg/L							
LCS (B245997-BS1)				Prepared & Analyzed: 11/14/19						
Total Suspended Solids	170	10	mg/L	200		85.0	57.6-118			
Batch B246045 - SM21-22 4500 CL G										
Blank (B246045-BLK1)				Prepared & Analyzed: 11/13/19						
Chlorine, Residual	ND	0.020	mg/L							
LCS (B246045-BS1)				Prepared & Analyzed: 11/13/19						
Chlorine, Residual	1.5	0.020	mg/L	1.34		110	66.3-134			
LCS Dup (B246045-BSD1)				Prepared & Analyzed: 11/13/19						
Chlorine, Residual	1.6	0.020	mg/L	1.34		117	66.3-134	6.51	9.96	
Duplicate (B246045-DUP1)		**Source: 19K0766-03**		Prepared & Analyzed: 11/13/19						
Chlorine, Residual	0.042	0.020	mg/L		0.042			0.00	32.5	
Matrix Spike (B246045-MS1)		**Source: 19K0766-03**		Prepared & Analyzed: 11/13/19						
Chlorine, Residual	1.3	0.020	mg/L	10.0	0.042	13.0	10-167			
Batch B246046 - SM21-22 3500 Cr B										
Blank (B246046-BLK1)				Prepared & Analyzed: 11/13/19						
Hexavalent Chromium	ND	0.0040	mg/L							
LCS (B246046-BS1)				Prepared & Analyzed: 11/13/19						
Hexavalent Chromium	0.10	0.0040	mg/L	0.100		103	83.9-121			
LCS Dup (B246046-BSD1)				Prepared & Analyzed: 11/13/19						
Hexavalent Chromium	0.099	0.0040	mg/L	0.100		98.9	83.9-121	3.67	10	
Batch B246245 - EPA 300.0										
Blank (B246245-BLK1)				Prepared & Analyzed: 11/17/19						
Chloride	ND	1.0	mg/L							
LCS (B246245-BS1)				Prepared & Analyzed: 11/17/19						
Chloride	5.2	1.0	mg/L	5.00		104	90-110			

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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 B246245 - EPA 300.0										
LCS Dup (B246245-BSD1)				Prepared & Analyzed: 11/17/19						
Chloride	5.2	1.0	mg/L	5.00		104	90-110	0.0828	20	
Batch B246254 - EPA 300.0										
Blank (B246254-BLK1)				Prepared & Analyzed: 11/17/19						
Chloride	ND	1.0	mg/L							
LCS (B246254-BS1)				Prepared & Analyzed: 11/17/19						
Chloride	5.2	1.0	mg/L	5.00		104	90-110			
LCS Dup (B246254-BSD1)				Prepared & Analyzed: 11/17/19						
Chloride	5.2	1.0	mg/L	5.00		104	90-110	0.0828	20	
Batch B246506 - EPA 1664B										
Blank (B246506-BLK1)				Prepared & Analyzed: 11/20/19						
Silica Gel Treated HEM (SGT-HEM)	ND	1.4	mg/L							
Blank (B246506-BLK2)				Prepared & Analyzed: 11/20/19						
Silica Gel Treated HEM (SGT-HEM)	ND	5.6	mg/L							
LCS (B246506-BS1)				Prepared & Analyzed: 11/20/19						
Silica Gel Treated HEM (SGT-HEM)	10		mg/L	10.0		100	64-132			
LCS (B246506-BS2)				Prepared & Analyzed: 11/20/19						
Silica Gel Treated HEM (SGT-HEM)	38		mg/L	40.0		96.0	64-132			

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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 B246437 - EPA 504 water										
Blank (B246437-BLK1)				Prepared & Analyzed: 11/19/19						
1,2-Dibromoethane (EDB)	ND	0.021	µg/L							
1,2-Dibromoethane (EDB) [2C]	ND	0.021	µg/L							
Surrogate: 1,3-Dibromopropane	*1.02*		µg/L	1.05		97.2	70-130			
Surrogate: 1,3-Dibromopropane [2C]	*1.01*		µg/L	1.05		96.8	70-130			
LCS (B246437-BS1)				Prepared & Analyzed: 11/19/19						
1,2-Dibromoethane (EDB)	0.222	0.021	µg/L	0.179		123	70-130			
1,2-Dibromoethane (EDB) [2C]	0.206	0.021	µg/L	0.179		115	70-130			
Surrogate: 1,3-Dibromopropane	*0.997*		µg/L	1.03		97.2	70-130			
Surrogate: 1,3-Dibromopropane [2C]	*0.988*		µg/L	1.03		96.3	70-130			
LCS Dup (B246437-BSD1)				Prepared & Analyzed: 11/19/19						
1,2-Dibromoethane (EDB)	0.227	0.021	µg/L	0.184		123	70-130	2.46		
1,2-Dibromoethane (EDB) [2C]	0.214	0.021	µg/L	0.184		117	70-130	3.94		
Surrogate: 1,3-Dibromopropane	*1.11*		µg/L	1.05		105	70-130			
Surrogate: 1,3-Dibromopropane [2C]	*1.06*		µg/L	1.05		101	70-130			

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

LCS

Lab Sample ID: B246008-BS1 Date(s) Analyzed: 11/15/2019 11/15/2019

Instrument ID (1): ECD10 Instrument ID (2): ECD10

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	0.350	
	2	0.000	0.000	0.000	0.337	3.8
Aroclor-1260	1	0.000	0.000	0.000	0.348	
	2	0.000	0.000	0.000	0.324	7.7

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

LCS Dup

Lab Sample ID: B246008-BSD1 Date(s) Analyzed: 11/15/2019 11/15/2019

Instrument ID (1): ECD10 Instrument ID (2): ECD10

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	0.383	
	2	0.000	0.000	0.000	0.374	1.6
Aroclor-1260	1	0.000	0.000	0.000	0.374	
	2	0.000	0.000	0.000	0.347	6.4

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

LCS

Lab Sample ID: B246437-BS1 Date(s) Analyzed: 11/19/2019 11/19/2019

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	3.615	0.000	0.000	0.222	
	2	3.468	0.000	0.000	0.206	6.6

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

LCS Dup

Lab Sample ID: B246437-BSD1 Date(s) Analyzed: 11/19/2019 11/19/2019

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	3.617	0.000	0.000	0.227	
	2	3.471	0.000	0.000	0.214	7.2

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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.
B	Analyte is found in the associated laboratory blank as well as in the sample.
DL-03	Elevated reporting limit due to matrix interference.
L-07A	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD outside of control limits. Reduced precision anticipated for any reported result for this compound.
R-05	Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.
V-04	Initial calibration did not meet method specifications. Compound was calibrated using a response factor where %RSD is outside of method specified criteria. Reported result is estimated.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
V-35	Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.
Z-01	Filtered in Field by Client

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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
Bromomethane	CT,NY,MA,NH,RI,NC,ME,VA
tert-Butyl Alcohol (TBA)	NY,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
1,2-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
1,3-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
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,NH
Ethylbenzene	CT,NY,MA,NH,RI,NC,ME,VA
Methyl tert-Butyl Ether (MTBE)	NY,MA,NH,NC
Methylene Chloride	CT,NY,MA,NH,RI,NC,ME,VA
1,1,2,2-Tetrachloroethane	CT,NY,MA,NH,RI,NC,ME,VA
Tetrachloroethylene	CT,NY,MA,NH,RI,NC,ME,VA

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
624.1 in Water	
Toluene	CT,NY,MA,NH,RI,NC,ME,VA
1,2,4-Trichlorobenzene	MA,NC
1,1,1-Trichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
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	
Benzidine	CT,MA,NH,NY,NC,RI,ME,VA
4-Bromophenylphenylether	CT,MA,NH,NY,NC,RI,ME,VA
Butylbenzylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
4-Chloro-3-methylphenol	CT,MA,NH,NY,NC,RI,VA
Bis(2-chloroethyl)ether	CT,MA,NH,NY,NC,RI,ME,VA
Bis(2-chloroisopropyl)ether	CT,MA,NH,NY,NC,RI,ME,VA
2-Chloronaphthalene	CT,MA,NH,NY,NC,RI,ME,VA
2-Chlorophenol	CT,MA,NH,NY,NC,RI,ME,VA
4-Chlorophenylphenylether	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
3,3-Dichlorobenzidine	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dichlorophenol	CT,MA,NH,NY,NC,RI,ME,VA
Diethylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dimethylphenol	CT,MA,NH,NY,NC,RI,ME,VA
Dimethylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
4,6-Dinitro-2-methylphenol	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dinitrophenol	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dinitrotoluene	CT,MA,NH,NY,NC,RI,ME,VA
2,6-Dinitrotoluene	CT,MA,NH,NY,NC,RI,ME,VA
Di-n-octylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
1,2-Diphenylhydrazine/Azobenzene	NC
Hexachlorobenzene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachlorobutadiene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachlorocyclopentadiene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachloroethane	CT,MA,NH,NY,NC,RI,ME,VA
Isophorone	CT,MA,NH,NY,NC,RI,ME,VA
Nitrobenzene	CT,MA,NH,NY,NC,RI,ME,VA
2-Nitrophenol	CT,MA,NH,NY,NC,RI,ME,VA
4-Nitrophenol	CT,MA,NH,NY,NC,RI,ME,VA
N-Nitrosodimethylamine	CT,MA,NH,NY,NC,RI,ME,VA
N-Nitrosodi-n-propylamine	CT,MA,NH,NY,NC,RI,ME,VA
2-Methylphenol	NY,NC
Phenol	CT,MA,NH,NY,NC,RI,ME,VA

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
625.1 in Water	
3/4-Methylphenol	NY,NC
1,2,4-Trichlorobenzene	CT,MA,NH,NY,NC,RI,ME,VA
2,4,6-Trichlorophenol	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
Iron	CT,MA,NH,NY,RI,NC,ME,VA
Hardness	CT,MA,NH,NY,RI,VA
EPA 200.8 in Water	
Antimony	CT,MA,NH,NY,RI,NC,ME,VA
Antimony	CT,MA,NH,NY,RI,NC,ME,VA
Arsenic	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
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
Copper	CT,MA,NH,NY,RI,NC,ME,VA
Lead	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
Nickel	CT,MA,NH,NY,RI,NC,ME,VA
Selenium	CT,MA,NH,NY,RI,NC,ME,VA
Selenium	CT,MA,NH,NY,RI,NC,ME,VA
Silver	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
Zinc	CT,MA,NH,RI,NY,NC,ME,VA
EPA 245.1 in Water	
Mercury	CT,MA,NH,RI,NY,NC,ME,VA
Mercury	CT,MA,NH,RI,NY,NC,ME,VA
EPA 300.0 in Water	
Chloride	NC,NY,MA,VA,ME,NH,CT,RI
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

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SM21-22 4500 CN E in Water	
Cyanide	CT,MA,NH,NY,RI,NC,ME,VA
SW-846 8015C in Water	
Ethanol	NY

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
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	12/30/2020
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

JLH 19K0764

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http://www.contestlabs.com

Doc # 381 Rev 0 5 8 2015

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1

Company Name:	NSTAR/Eversource - Monthly Billing
Address:	247 Station Drive, Westwood, MA 02090
Phone:	781-441-3804
Project Name:	Woburn to Wakefield Line Project
Project Location:	Woburn, Winchester, Stoneham, MA
Project Number:	1906240
Project Manager:	Mike Zylich
Purchase Order Numbe	10948702
Invoice Recipient:	Eversource Energy Direct Bill Attn Dean Bebis
Sampled By:	

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Other: 5 days

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

Data Delivery
Format: PDF ☑ EXCEL ☑
Other: GISKey
Enhanced Data Package Required: ☐
Email To: moliveira@trcsolutions.com, pzhou@trcsolutions.com

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code	VOCs via 624	SVOCs via 625/PAHs via 625-SIM	TPH (SGT) via 1664	PCBs via 608	RGP List Metals (total and aq)	Hexavalent Chromium via SM3500	Total Cyanide via SM4500	EDB via 504.1	Ethanol	Ammonia via SM4500	Chloride via 300.0	Total Residual Chlorine via SM4500	TSS via SM2540D	Hardness via SM 2340B
1	8+12 MW	11/13/19	0830		X	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	173+14 MW	11/13/19	1230		X	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	171+88 MW	11/13/19	1340		X	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	X

# of Containers	3	2		2	1	1	1	3	3	1	1	1	1	1							
Preservation Code	H	O		O	N	O	X	X	H	S	O	O	O	N							
Container Code	V	A		A	P	P	P	V	V	P	P	P	P	P							

Per client change the sample ID.
JLH 11/15/19

ANALYSIS REQUESTED

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/Solid
SL = Sludge
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) NaH

[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: RLs must meet EPA RGP Appendix VII limits. VOC list to include Tert-butyl alcohol. RGP SVOCs to include pentachlorophenol, DEH phthalate, total phthalates, and total phenol.

RGP Metals include antimony, arsenic, cadmium, chromium (III), chromium (VI), copper, iron, lead, mercury, nichel, selenium, silver, and zinc.

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

Relinquished by: (signature)	Date/Time: 11/13/19 1500
Received by: (signature)	Date/Time: 1500 11/13/19
Relinquished by: (signature)	Date/Time: 11/13/19 6:20
Received by: (signature) 2.1, 4.5, 4.3	Date/Time: 11/13 1920
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Detection Limit Requirements

MA	<RCGW-1, <EPA Region 1 RGP criteria
CT	
Other:	

Program Information

● MCP Analytical Certification Form Required
○ RCP Analysis Certification Form Required
○ MA State DW Form Required
PWSID # _____

NELAC and AIHA-LAP, LLC Accredited

TURNAROUND TIME (BUSINESS DAYS) STARTS AT 9:00 AM THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON THIS CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME CANNOT START UNTIL ALL QUESTIONS HAVE BEEN ANSWERED.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

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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 INSTAR

Received By SA Date 11/13 Time 1820

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

By Gun # 2 Actual Temp - 2.1, 4.5, 4.3

Were samples within Temperature? 2-6°C T By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

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? 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? F On COC? F

Do all samples have the proper pH? Acid PHC2 Base PHC12

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	18	1 Liter Plastic	6	16 oz Amb.	
HCL-	9	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	15	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-	9	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:

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

November 22, 2019

Michael Zylich
Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230

Project Location: Woburn, Winchester, Stoneham, MA
Client Job Number:
Project Number: 1906240
Laboratory Work Order Number: 19K0833

Enclosed are results of analyses for samples received by the laboratory on November 14, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

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

Eversource Energy - MA (Monthly Billing)
One NSTAR Way, SUM SE-250
East Sandwich, MA 02090-9230
ATTN: Michael Zylich

REPORT DATE: 11/22/2019

PURCHASE ORDER NUMBER: 10948702

PROJECT NUMBER: 1906240

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19K0833

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

PROJECT LOCATION: Woburn, Winchester, Stoneham, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MH-16 Outfall	19K0833-01	Surface Water		EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				SM19-22 4500 NH3 C	MA M-MA-086/CT PH-0574/NY11148
JB-07,08 outfall	19K0833-02	Surface Water		EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				SM19-22 4500 NH3 C	MA M-MA-086/CT PH-0574/NY11148
MH-13 outfall	19K0833-03	Surface Water		EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				SM19-22 4500 NH3 C	MA M-MA-086/CT PH-0574/NY11148
JB-06 Outfall	19K0833-04	Surface Water		EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				SM19-22 4500 NH3 C	MA M-MA-086/CT PH-0574/NY11148
JB-05 Outfall	19K0833-05	Surface Water		EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				SM19-22 4500 NH3 C	MA M-MA-086/CT PH-0574/NY11148
JB-01 Outfall	19K0833-06	Surface Water		EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				SM19-22 4500 NH3 C	MA M-MA-086/CT PH-0574/NY11148

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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.

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: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: MH-16 Outfall Sampled: 11/14/2019 12:05

Sample ID: 19K0833-01

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	11/16/19	11/18/19 13:09	QNW
Arsenic	ND	0.80		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Cadmium	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Chromium	ND	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Copper	1.6	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Iron	0.24	0.050		mg/L	1		EPA 200.7	11/18/19	11/19/19 13:24	TBC
Lead	ND	0.50		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:35	AJL
Nickel	ND	5.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Zinc	ND	10		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:09	QNW
Hardness	78			mg/L	1		EPA 200.7	11/18/19	11/19/19 13:24	TBC

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: MH-16 Outfall Sampled: 11/14/2019 12:05

Sample ID: 19K0833-01

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	0.091	0.075	0.024	mg/L	1		121,4500NH3-BH		11/20/19 21:50	AAL

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: JB-07,08 outfall Sampled: 11/14/2019 12:35

Sample ID: 19K0833-02

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	11/16/19	11/18/19 13:18	QNW
Arsenic	ND	0.80		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Cadmium	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Chromium	1.0	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Copper	3.2	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Iron	0.39	0.050		mg/L	1		EPA 200.7	11/18/19	11/19/19 13:32	TBC
Lead	ND	0.50		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:37	AJL
Nickel	ND	5.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Zinc	13	10		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:18	QNW
Hardness	120			mg/L	1		EPA 200.7	11/18/19	11/19/19 13:32	TBC

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: JB-07,08 outfall Sampled: 11/14/2019 12:35

Sample ID: 19K0833-02

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	0.164	0.075	0.024	mg/L	1		121,4500NH3-BH		11/20/19 21:54	AAL

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: MH-13 outfall Sampled: 11/14/2019 13:05

Sample ID: 19K0833-03

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	11/16/19	11/18/19 13:21	QNW
Arsenic	ND	0.80		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Cadmium	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Chromium	1.2	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Copper	6.3	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Iron	0.10	0.050		mg/L	1		EPA 200.7	11/18/19	11/19/19 13:39	TBC
Lead	1.4	0.50		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:39	AJL
Nickel	ND	5.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Zinc	13	10		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:21	QNW
Hardness	100			mg/L	1		EPA 200.7	11/18/19	11/19/19 13:39	TBC

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: MH-13 outfall Sampled: 11/14/2019 13:05

Sample ID: 19K0833-03

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	0.405	0.075	0.024	mg/L	1		121,4500NH3-BH		11/20/19 21:55	AAL

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: JB-06 Outfall Sampled: 11/14/2019 13:30

Sample ID: 19K0833-04

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	11/16/19	11/18/19 13:24	QNW
Arsenic	ND	0.80		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Cadmium	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Chromium	1.2	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Copper	3.2	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Iron	0.18	0.050		mg/L	1		EPA 200.7	11/18/19	11/19/19 13:10	TBC
Lead	ND	0.50		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:40	AJL
Nickel	ND	5.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Zinc	16	10		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:24	QNW
Hardness	120			mg/L	1		EPA 200.7	11/18/19	11/19/19 13:10	TBC

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: JB-06 Outfall Sampled: 11/14/2019 13:30

Sample ID: 19K0833-04

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	0.065	0.075	0.024	mg/L	1		121,4500NH3-BH		11/20/19 21:56	AAL

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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: JB-05 Outfall Sampled: 11/14/2019 13:45

Sample ID: 19K0833-05

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	11/16/19	11/18/19 13:27	QNW
Arsenic	14	0.80		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Cadmium	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Chromium	6.3	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Copper	6.6	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Iron	3.2	0.050		mg/L	1		EPA 200.7	11/18/19	11/19/19 13:59	TBC
Lead	3.0	0.50		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:42	AJL
Nickel	ND	5.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Zinc	66	10		µg/L	1		EPA 200.8	11/16/19	11/18/19 13:27	QNW
Hardness	160			mg/L	1		EPA 200.7	11/18/19	11/19/19 13:59	TBC

con-test® ANALYTICAL LABORATORY
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Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: JB-05 Outfall Sampled: 11/14/2019 13:45

Sample ID: 19K0833-05

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	1.39	0.075	0.024	mg/L	1		121,4500NH3-BH		11/20/19 21:57	AAL

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: JB-01 Outfall Sampled: 11/14/2019 14:10

Sample ID: 19K0833-06

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	11/16/19	11/18/19 12:58	QNW
Arsenic	ND	0.80		µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Cadmium	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Chromium	ND	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Copper	2.1	1.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Iron	0.39	0.050		mg/L	1		EPA 200.7	11/18/19	11/19/19 14:06	TBC
Lead	ND	0.50		µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	11/15/19	11/15/19 15:43	AJL
Nickel	ND	5.0		µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Silver	ND	0.20		µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Zinc	ND	10		µg/L	1		EPA 200.8	11/16/19	11/18/19 12:58	QNW
Hardness	80			mg/L	1		EPA 200.7	11/18/19	11/19/19 14:06	TBC

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

Project Location: Woburn, Winchester, Stoneham, M Sample Description: Work Order: 19K0833

Date Received: 11/14/2019

Field Sample #: JB-01 Outfall Sampled: 11/14/2019 14:10

Sample ID: 19K0833-06

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		121,4500NH3-BH		11/20/19 21:58	AAL

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 200.7-EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0833-01 [MH-16 Outfall]	B246351	50.0	50.0	11/18/19
19K0833-01 [MH-16 Outfall]	B246351	50.0		11/18/19
19K0833-02 [JB-07,08 outfall]	B246351	50.0	50.0	11/18/19
19K0833-02 [JB-07,08 outfall]	B246351	50.0		11/18/19
19K0833-03 [MH-13 outfall]	B246351	50.0	50.0	11/18/19
19K0833-03 [MH-13 outfall]	B246351	50.0		11/18/19
19K0833-04 [JB-06 Outfall]	B246351	50.0	50.0	11/18/19
19K0833-04 [JB-06 Outfall]	B246351	50.0		11/18/19
19K0833-05 [JB-05 Outfall]	B246351	50.0	50.0	11/18/19
19K0833-05 [JB-05 Outfall]	B246351	50.0		11/18/19
19K0833-06 [JB-01 Outfall]	B246351	50.0	50.0	11/18/19
19K0833-06 [JB-01 Outfall]	B246351	50.0		11/18/19

Prep Method: EPA 200.8-EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0833-01 [MH-16 Outfall]	B246262	50.0	50.0	11/16/19
19K0833-02 [JB-07,08 outfall]	B246262	50.0	50.0	11/16/19
19K0833-03 [MH-13 outfall]	B246262	50.0	50.0	11/16/19
19K0833-04 [JB-06 Outfall]	B246262	50.0	50.0	11/16/19
19K0833-05 [JB-05 Outfall]	B246262	50.0	50.0	11/16/19
19K0833-06 [JB-01 Outfall]	B246262	50.0	50.0	11/16/19

Prep Method: EPA 245.1-EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0833-01 [MH-16 Outfall]	B246126	6.00	6.00	11/15/19
19K0833-02 [JB-07,08 outfall]	B246126	6.00	6.00	11/15/19
19K0833-03 [MH-13 outfall]	B246126	6.00	6.00	11/15/19
19K0833-04 [JB-06 Outfall]	B246126	6.00	6.00	11/15/19
19K0833-05 [JB-05 Outfall]	B246126	6.00	6.00	11/15/19
19K0833-06 [JB-01 Outfall]	B246126	6.00	6.00	11/15/19

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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 B246126 - EPA 245.1										
Blank (B246126-BLK1)				Prepared & Analyzed: 11/15/19						
Mercury	ND	0.00010	mg/L							
LCS (B246126-BS1)				Prepared & Analyzed: 11/15/19						
Mercury	0.00461	0.00010	mg/L	0.00400		115	85-115			
LCS Dup (B246126-BSD1)				Prepared & Analyzed: 11/15/19						
Mercury	0.00402	0.00010	mg/L	0.00400		101	85-115	13.7	20	
Batch B246262 - EPA 200.8										
Blank (B246262-BLK1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	ND	1.0	µg/L							
Arsenic	ND	0.80	µg/L							
Cadmium	ND	0.20	µg/L							
Chromium	ND	1.0	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	10	µg/L							
LCS (B246262-BS1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	519	10	µg/L	500		104	85-115			
Arsenic	517	8.0	µg/L	500		103	85-115			
Cadmium	516	2.0	µg/L	500		103	85-115			
Chromium	516	10	µg/L	500		103	85-115			
Copper	1000	10	µg/L	1000		100	85-115			
Lead	523	5.0	µg/L	500		105	85-115			
Nickel	517	50	µg/L	500		103	85-115			
Selenium	507	50	µg/L	500		101	85-115			
Silver	508	2.0	µg/L	500		102	85-115			
Zinc	1050	100	µg/L	1000		105	85-115			
LCS Dup (B246262-BSD1)				Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	521	10	µg/L	500		104	85-115	0.450	20	
Arsenic	518	8.0	µg/L	500		104	85-115	0.146	20	
Cadmium	521	2.0	µg/L	500		104	85-115	1.02	20	
Chromium	519	10	µg/L	500		104	85-115	0.659	20	
Copper	1010	10	µg/L	1000		101	85-115	0.827	20	
Lead	522	5.0	µg/L	500		104	85-115	0.176	20	
Nickel	518	50	µg/L	500		104	85-115	0.323	20	
Selenium	524	50	µg/L	500		105	85-115	3.34	20	
Silver	512	2.0	µg/L	500		102	85-115	0.872	20	
Zinc	1040	100	µg/L	1000		104	85-115	0.808	20	

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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 B246262 - EPA 200.8										
Duplicate (B246262-DUP1)	**Source: 19K0833-06**			Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	ND	1.0	µg/L		ND			NC	20	
Arsenic	ND	0.80	µg/L		ND			NC	20	
Cadmium	ND	0.20	µg/L		ND			NC	20	
Chromium	ND	1.0	µg/L		ND			NC	20	
Copper	2.51	1.0	µg/L		2.08			19.0	20	
Lead	ND	0.50	µg/L		ND			NC	20	
Nickel	ND	5.0	µg/L		ND			NC	20	
Selenium	ND	5.0	µg/L		ND			NC	20	
Silver	ND	0.20	µg/L		ND			NC	20	
Zinc	ND	10	µg/L		ND			NC	20	
Matrix Spike (B246262-MS1)	**Source: 19K0833-06**			Prepared: 11/16/19 Analyzed: 11/18/19						
Antimony	509	10	µg/L	500	ND	102	70-130			
Arsenic	513	8.0	µg/L	500	ND	103	70-130			
Cadmium	505	2.0	µg/L	500	ND	101	70-130			
Chromium	509	10	µg/L	500	ND	102	70-130			
Copper	1000	10	µg/L	1000	ND	100	70-130			
Lead	515	5.0	µg/L	500	ND	103	70-130			
Nickel	507	50	µg/L	500	ND	101	70-130			
Selenium	507	50	µg/L	500	ND	101	70-130			
Silver	500	2.0	µg/L	500	ND	100	70-130			
Zinc	1020	100	µg/L	1000	ND	102	70-130			
Batch B246351 - EPA 200.7										
Blank (B246351-BLK1)				Prepared: 11/18/19 Analyzed: 11/20/19						
Iron	ND	0.050	mg/L							
LCS (B246351-BS1)				Prepared: 11/18/19 Analyzed: 11/20/19						
Iron	4.00	0.050	mg/L	4.00		99.9	85-115			
LCS Dup (B246351-BSD1)				Prepared: 11/18/19 Analyzed: 11/20/19						
Iron	3.96	0.050	mg/L	4.00		98.9	85-115	0.986	20	
Duplicate (B246351-DUP1)	**Source: 19K0833-04**			Prepared: 11/18/19 Analyzed: 11/19/19						
Iron	0.180	0.050	mg/L		0.179			0.431	20	
Hardness	120		mg/L		120			0.878		
Matrix Spike (B246351-MS1)	**Source: 19K0833-04**			Prepared: 11/18/19 Analyzed: 11/19/19						
Iron	4.26	0.050	mg/L	4.00	0.179	102	70-130			
Hardness	150		mg/L	26.5	120	130	70-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

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

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.7 in Water	
Iron	CT,MA,NH,NY,RI,NC,ME,VA
Hardness	CT,MA,NH,NY,RI,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
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
SM19-22 4500 NH3 C in Water	
Ammonia as N	NY,MA,CT,RI,VA,NC,ME

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
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	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
39 Spruce Street
East Longmeadow, MA 01028

19k0833

CHAIN OF CUSTODY RECORD

Company Name:	NSTAR/Eversource - Monthly Billing
Address:	247 Station Drive, Westwood, MA 02090
Phone:	781-441-3804
Project Name:	Woburn to Wakefield Line Project
Project Location:	Woburn, Winchester, Stoneham, MA
Project Number:	1906240
Project Manager:	Mike Zylich
Purchase Order Numb	10948702
Invoice Recipient:	Eversource Energy Direct Bill Attn Dean Bebis
Sampled By:	

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Other: 5 days

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

Data Delivery
Format: PDF ☑ EXCEL ☑
Other: GISKey
Enhanced Data Package Required: ☐
Email To: moliveira@trcsolutions.com, pzhou@trcsolutions.com

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	[1]Matrix Code	Conc Code	Ammonia via SM4500	RGP List Metals (total only)	Hardness via SM 2340B
								1	1	1
								S	N	N
								P	P	P
1	MH-16 Outfall	11/14/19	1205		X	SW	L	X	X	X
2	JB-07,08 outfall	↓	1225		X	SW	L	X	X	X
3	MH-13 Outfall	↓	1305		X	SW	L	X	X	X
4	JB-06 Outfall	↓	1330		X	SW	L	X	X	X
5	JB-05 outfall	↓	1345		X	SW	L	X	X	X
6	JB-01 Outfall	↓	1410		X	SW	L	X	X	X

ANALYSIS REQUESTED

# of Containers
[2] Preservation Code
[3] Container Code

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Collection time added per client. JLH 11/15/19

Comments: RLs must meet EPA RGP Appendix VII limits. Matrix is surface water (SW).

RGP Metals include antimony, arsenic, cadmium, chromium (III), chromium (VI), copper, iron, lead, mercury, nichel, selenium, silver, and zinc.

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

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

[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)

Relinquished by: (signature)	Date/Time: 11/14/19 1450
Received by: (signature)	Date/Time: 11/14/19 1450
Relinquished by: (signature)	Date/Time: 11/14 6:00
Received by: (signature)	Date/Time: 11/14/19 18:00
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Detection Limit Requirements
MA: <RCGW-1, <EPA Region 1 RGP criteria
CT:
Other:

Program Information
● MCP Analytical Certification Form Required
○ RCP Analysis Certification Form Required
○ MA State DW Form Required
PWSID # _____

NELAC and AIHA-LAP, LLC Accredited

TURNAROUND TIME (BUSINESS DAYS) STARTS AT 9:00 AM THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON THIS CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME CANNOT START UNTIL ALL QUESTIONS HAVE BEEN ANSWERED.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Table of Contents

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 EverSource

Received By mp Date 11/14/19 Time 18:00

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 # 2 Actual Temp - 4.5

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? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name F

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? N/A MS/MSD? F

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

Were trip blanks received? F On COC? F

Do all samples have the proper pH? ~~N~~ Acid TCL Base _____

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	18	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:

ATTACHMENT E

STREAMSTATS DATABASE EXPORT ABERJONA RIVER / MASSDEP DILUTION FACTOR CONFIRMATION DOCUMENTATION

USGS
science for a changing world

StreamStats Data-Collection Station Report

USGS Station Number	**01102465**
Station Name	**ABERJONA RIVER AT MONTVALE AVE NEAR WOBURN, MA**

Click here to link to available data on NWIS-Web for this site.

Descriptive Information

Station Type	Low Flow, partial record
Location	
Gage	
Regulation and Diversions	
Regulated?	False
Period of Record	1973-75
Remarks	None
Latitude (degrees NAD83)	42.4795397
Longitude (degrees NAD83)	-71.1181092
Hydrologic unit code	01090001
County	017-Middlesex
HCDN2009	No

Physical Characteristics

Characteristic Name	Value	Units	Citation Number
Descriptive Information			
State_Code	25	dimensionless	30
Datum_of_Latitude_Longitude	NAD83	dimensionless	30
District_Code	25	dimensionless	30
Basin Dimensional Characteristics			
Drainage_Area	8.93	square miles	30

Streamflow Statistics

Statistic Name	Value	Units	Citation Number	Preferred?	Years of Record	Standard Error, percent	Variance log-10	Lower 95% Confidence Interval	Upper 95% Confidence Interval	Start Date	End Date	Remarks
Low-Flow Statistics												
7_Day_2_Year_Low_Flow	1.2	cubic feet per second	19	Y								
7_Day_10_Year_Low_Flow	0.4	cubic feet	19	Y								

	per second

Citations

Citation Number	*Citation Name and URL*
19	Wandle, S.W., Jr., 1984, Gazetteer of Hydrologic Characteristics of Streams in Massachusetts--Coastal River Basins of the North Shore and Massachusetts Bay: U.S. Geological Survey Water-Resources Investigations Report 84-4281
30	Imported from NWIS file

From: Vakalopoulos, Catherine (DEP)
To: Stapleton, Jamie
Subject: RE: 7Q10/DFs for RGP NOI - Horn Pond Brook, Aberjona River, and Sweetwater Brook
Date: Tuesday, April 24, 2018 7:12:04 PM

Hi Jamie,
Yes, the dilution factors listed below for 130 gpm discharges to multiple locations on Horn Pond Brook, Aberjona River and Sweetwater Brook are correct. We have discovered a discrepancy in the MassDEP regulations and the RGP so please do not submit any fees to MassDEP. If you have done so already, I will find a way to refund them. We can discuss this by phone tomorrow.
Cathy

Cathy Vakalopoulos, Massachusetts Department of Environmental Protection
1 Winter St., Boston, MA 02108, 617-348-4026
Please consider the environment before printing this e-mail

From: Stapleton, Jamie [mailto:JStapleton@trcsolutions.com]
Sent: Monday, April 23, 2018 9:02 AM
To: Vakalopoulos, Catherine (DEP)
Cc: Oliveira, Matthew; Little, Shauna; Michael.Zylich@eversource.com
Subject: 7Q10/DFs for RGP NOI - Horn Pond Brook, Aberjona River, and Sweetwater Brook

Hi Cathy,

As discussed previously, I am resubmitting this request to confirm the below 7Q10 info and dilution factors for a linear project in Woburn, Winchester, and Stoneham. This was previously conveyed as an attachment.

I will append your comments and approval to the RGP NOIs. Since the Sweetwater Brook does not have a MassDEP ID it will be classified as a tributary to the Aberjona River which is MA71-01.

Dewatering Location	Receiving Waterbody	Lat	Long	7Q10 (cfs)			StreamStats Output Link for 7Q10 Entered Into Column F	Treatment Discharge Rate			Dilution Factor
				cfs	gpm	MGD		cfs	gpm	MGD	
JB-1	Horn Pond Brook	42.465160	-71.151466	0.4	179.5	0.259	See email attachment - Horn Brook Pond at Canal St.	0.286	130.0	0.187	2.4
MH-5, JB-2, JB-3	Aberjona River	42.467068	-71.130559	0.4	179.5	0.259	https://streamstatsags.cr.usgs.gov/gagepages/html/01102474.htm.	0.286	130.0	0.187	2.4
JB-4	Aberjona River	42.469347	-71.125144								
JB-5	Aberjona River	42.479536	-71.117970	0.4	179.5	0.259	https://streamstatsags.cr.usgs.gov/gagepages/html/01102465.htm				
JB-6, MH-12	Sweetwater Brook	42.480996	-71.109026	0.12	53.9	0.078	https://streamstatsags.cr.usgs.gov/gagepages/html/01102470.htm	0.286	130.0	0.187	1.4
MH-13	Sweetwater Brook	42.482910	-71.104947								
JB-7, JB-8, MH-15	Sweetwater Brook	42.487483	-71.100305								
MH-16	Sweetwater Brook	42.489111	-71.092510	0.00	0.0	0.000	See email attachment - Sweetwater Brook at 75 Washington St	0.286	130.0	0.187	1.0

Thank you. -Jamie

Jamie Stapleton, PG
Project Manager/Senior Geologist
Engineering, Construction, and Remediation

670 N. Commercial Street, Suite 203, Manchester, NH 03101
C: 603.325.5480

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ATTACHMENT F

SAFETY DATA SHEETS

SAFETY DATA SHEET

Creation Date 22-Sep-2009 **Revision Date** 18-Jan-2018 **Revision Number** 5

1. Identification

Product Name **Sodium hydroxide**

Cat No. : **SS4141; SS256500; SS263500; SS2641; SS264-1LC; SS414-200**

Synonyms Caustic soda; Lye.

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Skin Corrosion/irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Causes severe skin burns and eye damage
May cause respiratory irritation

Precautionary Statements
Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Water	7732-18-5	75 - 85
Sodium hydroxide	1310-73-2	15 - 25

4. First-aid measures

General Advice Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Obtain medical attention.

Ingestion Do not induce vomiting. Obtain medical attention.

Most important symptoms and effects Causes burns by all exposure routes. . Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media CO_2, dry chemical, dry sand, alcohol-resistant foam.

Unsuitable Extinguishing Media No information available

Flash Point	Not applicable
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Oxidizing Properties	Not oxidising
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes.

Hazardous Combustion Products
Thermal decomposition can lead to release of irritating gases and vapors
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	0	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
Environmental Precautions	Should not be released into the environment. See Section 12 for additional ecological information.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Use only under a chemical fume hood. Wear personal protective equipment. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Do not ingest.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Sodium hydroxide	Ceiling: 2 mg/m³	Ceiling: 2 mg/m³ TWA: 2 mg/m³	IDLH: 10 mg/m³ Ceiling: 2 mg/m³	Ceiling: 2 mg/m³

Legend

ACGIH *- American Conference of Governmental Industrial Hygienists*
OSHA *- Occupational Safety and Health Administration*
NIOSH IDLH: *The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health*

Engineering Measures	Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Clear
Odor	Odorless
Odor Threshold	No information available
pH	14 @ 20°C Alkaline
Melting Point/Range	< 0 °C / 32 °F
Boiling Point/Range	approx 120 °C / 248 °F
Flash Point	Not applicable
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	14 mmHg
Vapor Density	> 1.0
Specific Gravity	1.182
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products. Excess heat.
Incompatible Materials	Metals, Acids, halocarbons
Hazardous Decomposition Products	Thermal decomposition can lead to release of irritating gases and vapors
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing. Contact with metals may evolve flammable hydrogen gas. Corrosive to metals.

11. Toxicological information

Acute Toxicity

Product Information

Oral LD50	Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Dermal LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Mist LC50 Based on ATE data, the classification criteria are not met. ATE > 5 mg/l.
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	Not listed	Not listed
Sodium hydroxide	Not listed	LD50 = 1350 mg/kg (Rabbit)	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed
Sodium hydroxide	1310-73-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants. Large amounts will affect pH and harm aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sodium hydroxide	Not listed	LC50: = 45.4 mg/L, 96h static (Oncorhynchus mykiss)	Not listed	Not listed

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and

national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN1824
Proper Shipping Name	SODIUM HYDROXIDE SOLUTION
Hazard Class	8
Packing Group	II

TDG

UN-No	UN1824
Proper Shipping Name	SODIUM HYDROXIDE SOLUTION
Hazard Class	8
Packing Group	II

IATA

UN-No	UN1824
Proper Shipping Name	SODIUM HYDROXIDE SOLUTION
Hazard Class	8
Packing Group	II

IMDG/IMO

UN-No	UN1824
Proper Shipping Name	SODIUM HYDROXIDE SOLUTION
Hazard Class	8
Packing Group	II

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Water	X	X	-	231-791-2	-		X	-	X	X	X
Sodium hydroxide	X	X	-	215-185-5	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Sodium hydroxide	X	1000 lb	-	-

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA Not applicable

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sodium hydroxide	1000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Water	-	-	X	-	-
Sodium hydroxide	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 22-Sep-2009
Revision Date 18-Jan-2018
Print Date 18-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Safety Data Sheet

Citric Acid 50% (w/w)

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Citric Acid 50% (w/w)

Synonyms/Generic Names: 3-carboxy-3-hydroxy pentanedioic acid, 2-hydroxypropane- 1,2,3-tricarboxylic acid, 3-hydroxypentanedioic acid-3-carboxylic acid, hydrogen citrate

Product Number: 8481

Product Use: Industrial, Manufacturing or Laboratory use

Manufacturer: Columbus Chemical Industries, Inc.
N4335 Temkin Rd.
Columbus, WI. 53925

For More Information Call: 920-623-2140 (Monday-Friday 8:00-4:30)

In Case of Emergency Call: CHEMTREC – 800-424-9300 or 703-527-3887 (24 Hours/Day, 7 Days/Week)

2. HAZARDS IDENTIFICATION

OSHA Hazards: Irritant

Target Organs: None

Signal Words: Warning

Pictograms: None

GHS Classification:

Eye Irritant	Category 2B

GHS Label Elements, including precautionary statements:

Hazard Statements:

H320	Causes eye irritation.

Precautionary Statements:

P264	Wash hands thoroughly after handling.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.

Potential Health Effects

Eyes	Causes eye irritation.
Inhalation	May cause respiratory tract irritation.
Skin	May cause skin irritation.
Ingestion	May be harmful if swallowed.

NFPA Ratings

Health	1
Flammability	0
Reactivity	0
Specific hazard	Not Available

HMIS Ratings

Health	1
Fire	0
Reactivity	0
Personal	B

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight %	CAS #	EINECS# / ELINCS#	Formula	Molecular Weight
Citric Acid	49-51	77-92-2	201-069-1	$C_6H_8O_7$	210.14 g/mol
Water	Balance	7732-18-5	231-791-2	H_2O	18.00 g/mol

4. FIRST-AID MEASURES

Eyes	Rinse with plenty of water for at least 15 minutes and seek medical attention if necessary.
Inhalation	Move casualty to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention if necessary.
Skin	Flush with plenty of water and wash using soap. Get medical attention if necessary.
Ingestion	**Do Not Induce Vomiting!** Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention if necessary.

5. FIREFIGHTING MEASURES

Suitable (and unsuitable) extinguishing media	Product is not flammable. Use appropriate media for adjacent fire. Use water spray, dry chemical, or carbon dioxide to extinguish supporting fire. Cool unopened containers with water.
Special protective equipment and precautions for firefighters	Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.
Specific hazards arising from the chemical	Emits toxic fumes (carbon oxides) under fire conditions. (See also Stability and Reactivity section).

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	See section 8 for recommendations on the use of personal protective equipment.
Environmental precautions	Do not let product enter drains. Any release to the environment may be subject to federal/national or local reporting requirements.
Methods and materials for containment and cleaning up	Absorb neutralized spill with vermiculite or other inert absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste and cleanup materials in accordance with regulations. Containers, even when empty, will retain residue and vapors.

7. HANDLING AND STORAGE

Precautions for safe handling
See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use. Avoid formation of aerosols.

Conditions for safe storage, including any incompatibilities
Store in cool, dry well ventilated area. Protect against moisture and light. Maintain adequate ventilation. Keep away from incompatible materials (see section 10 for incompatibilities).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Controls:

Component	Exposure Limits	Basis	Entity
Citric Acid	5 mg/m^3	PEL	OSHA

TWA: Time Weighted Average over 8 hours of work.
TLV: Threshold Limit Value over 8 hours of work.
REL: Recommended Exposure Limit
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit during x minutes.
IDLH: Immediately Dangerous to Life or Health
WEEL: Workplace Environmental Exposure Levels
CEIL: Ceiling

Personal Protection

Eyes	Wear chemical safety glasses with a face shield for splash protection.
Inhalation	Provide local exhaust, preferably mechanical. If exposure levels are excessive, use an approved respirator.
Skin	Wear neoprene or rubber gloves, apron and other protective clothing appropriate to the risk of exposure.
Other	Not Available

Other Recommendations
Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling. Have supplies and equipment for neutralization and running water available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Clear, colorless solution. Liquid
Odor	Odorless
Odor threshold	Not Available
pH	Not Available
Melting point/freezing point	Not Available
Initial boiling point and boiling range	Not Available
Flash point	Not Flammable
Evaporation rate	Not Available
Flammability (solid, gas)	Not Flammable
Upper/lower flammability or explosive limit	Not Explosive
Vapor pressure	Not Available
Vapor density	Not Available
Specific gravity	1.2410
Solubility (ies)	Soluble in water
Partition coefficient: n-octanol/water	Not Available

Auto-ignition temperature	Not Available
Decomposition temperature	Not Available

10. STABILITY AND REACTIVITY

Chemical Stability	Stable
Possibility of Hazardous Reactions	Will not occur.
Conditions to Avoid	Not Available
Incompatible Materials	Oxidizers, alkalis
Hazardous Decomposition Products	Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Citric Acid

Skin	Skin – rabbit – Mild skin irritation 24 hours
Eyes	Eyes – rabbit – Severe eye irritation 24 hours
Respiratory	Not Available
Ingestion	LD50 Oral – rat – 3,000 mg/kg

Carcinogenicity

IARC	No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP	No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Signs & Symptoms of Exposure

Skin	Irritation, itching, swelling, redness and pain.
Eyes	Irritation.
Respiratory	Irritation to the mucous membranes and upper respiratory tract.
Ingestion	Gastrointestinal discomfort and possible pain upon ingestion.

Chronic Toxicity	Not Available
Teratogenicity	Not Available
Mutagenicity	Not Available
Embryotoxicity	Not Available
Specific Target Organ Toxicity	Not Available
Reproductive Toxicity	Not Available
Respiratory/Skin Sensitization	Not Available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Citric Acid

Aquatic Vertebrate	LC50 – Leuciscus idus melanotus – 440 mg/l – 48 h
Aquatic Invertebrate	Not Available
Terrestrial	Not Available

Persistence and Degradability	Not Available
Bioaccumulative Potential	Does not accumulate
Mobility in Soil	Not Available
PBT and vPvB Assessment	Not Available
Other Adverse Effects	Not Available

13. DISPOSAL CONSIDERATIONS

Waste Product or Residues	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product or residue.
Product Containers	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

14. TRANSPORTATION INFORMATION

US DOT	Not Dangerous Goods
TDG	Not Dangerous Goods
IMDG	Not Dangerous Goods
Marine Pollutant	No
IATA/ICAO	Not Dangerous Goods

15. REGULATORY INFORMATION

TSCA Inventory Status	All ingredients are listed on the TSCA inventory.
DSCL (EEC)	All ingredients are listed on the DSCL inventory.
California Proposition 65	Not Listed
SARA 302	Not Listed
SARA 304	Not Listed
SARA 311	Acute Health Hazard
SARA 312	Acute Health Hazard
SARA 313	Not Listed
WHMIS Canada	Class E: Corrosive material

16. OTHER INFORMATION

Revision	Date
Revision 1	08/27/2013
Revision 2	10/21/2015

Sulfuric Acid, 50% v/v

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 11/26/2013 Revision date: 03/20/2019 Supersedes: 09/07/2016 Version: 1.2

SECTION 1: Identification

1.1. Identification

Product form : Mixtures

Product name : Sulfuric Acid, 50% v/v

Product code : LC25640

1.2. Recommended use and restrictions on use

Use of the substance/mixture : For laboratory and manufacturing use only.

Recommended use : Laboratory chemicals

Restrictions on use : Not for food, drug or household use

1.3. Supplier

LabChem, Inc.

Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court

Zelienople, PA 16063 - USA

T 412-826-5230 - F 724-473-0647

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or +1-703-741-5970

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin corrosion/irritation Category 1B	H314	Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :

GHS05

Signal word (GHS US) : Danger

Hazard statements (GHS US) : H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS US) : P260 - Do not breathe mist, spray, vapors.
P264 - Wash exposed skin thoroughly after handling.
P280 - Wear eye protection, face protection, protective clothing, protective gloves.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a poison center or doctor/physician.
P363 - Wash contaminated clothing before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to comply with local, state and federal regulations
If inhaled: Remove person to fresh air and keep comfortable for breathing

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS-US classification
Sulfuric Acid	(CAS-No.) 7664-93-9	59.23	Skin Corr. 1A, H314 Eye Dam. 1, H318
Water	(CAS-No.) 7732-18-5	40.77	Not classified

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a poison center or doctor/physician.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Causes severe skin burns and eye damage.

Symptoms/effects after inhalation : Coughing. Irritation of the respiratory tract.

Symptoms/effects after skin contact : Caustic burns/corrosion of the skin.

Symptoms/effects after eye contact : Corrosion of the eye tissue.

Symptoms/effects after ingestion : Bleeding of the gastrointestinal tract.

Symptoms/effects upon intravenous administration : Not available.

Chronic symptoms : Respiratory difficulties. Inflammation/damage of the eye tissue. Irritation of the respiratory tract. Skin rash/inflammation.

4.3. Immediate medical attention and special treatment, if necessary

Obtain medical assistance.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard : Reacts exothermically with water (moisture).

Explosion hazard : Not applicable.

Reactivity : Violent exothermic reaction with (some) bases.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

Other information : Not applicable.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate area.

6.1.1. For non-emergency personnel

Protective equipment : Face-shield. Gloves. Protective clothing. Protective goggles.

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment	:	Equip cleanup crew with proper protection.
Emergency procedures	:	Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up	:	Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. Do not breathe mist, vapors, spray. Avoid contact during pregnancy/while nursing.
Hygiene measures	:	Wash exposed skin thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Comply with applicable regulations.
Storage conditions	:	Keep only in the original container in a cool, well ventilated place away from : incompatible materials. Keep container closed when not in use.
Incompatible products	:	Strong bases. combustible materials. metals.
Incompatible materials	:	Sources of ignition. Direct sunlight.
Prohibitions on mixed storage	:	KEEP SUBSTANCE AWAY FROM: (strong) bases. combustible materials. metals. metal powders.
Storage area	:	Keep container in a well-ventilated place. Keep only in the original container.
Packaging materials	:	MATERIAL TO AVOID: aluminium, bronze, copper, iron, lead, monel steel, nickel, steel, tin, zinc.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Sulfuric Acid (7664-93-9)		
ACGIH	ACGIH TWA (mg/m³)	0.2 mg/m³ (Thoracic fraction)
NIOSH	NIOSH REL (TWA) (mg/m³)	1 mg/m³

Water (7732-18-5)
Not applicable

8.2. Appropriate engineering controls

Appropriate engineering controls	:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Protective goggles. Gloves. Protective clothing. Face shield. Mist formation: aerosol mask with filter type P1.

Hand protection:

Wear protective gloves.

Eye protection:

Chemical goggles or face shield

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Mist formation: aerosol mask

Thermal hazard protection:

None necessary.

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Clear, colorless liquid.
	:	Colorless
	:	odorless
Odor threshold	:	No data available
pH	:	≤ 1
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	Not flammable Non flammable.
Vapor pressure	:	No data available
Relative vapor density at 20 °C	:	No data available
Relative density	:	No data available
Specific gravity / density	:	1.49 g/ml
Molecular mass	:	98.08 g/mol
Solubility	:	Exothermically soluble in water.
Log Pow	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	3.9 cSt
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	Not applicable.
Oxidizing properties	:	None.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Violent exothermic reaction with (some) bases.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reacts violently with (some) bases: release of heat.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

metals. Strong bases. combustible materials.

10.6. Hazardous decomposition products

Sulfur compounds. Thermal decomposition generates : Corrosive vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Skin and eye contact

Acute toxicity : Not classified

Sulfuric Acid (7664-93-9)	
LD50 oral rat	2140 mg/kg body weight (Rat, Experimental value, Oral)
ATE US (oral)	2140 mg/kg body weight

Water (7732-18-5)	
LD50 oral rat	≥ 90000 mg/kg
ATE US (oral)	90000 mg/kg body weight

Skin corrosion/irritation : Causes severe skin burns and eye damage.
pH: ≤ 1

Serious eye damage/irritation : Causes serious eye damage.
pH: ≤ 1

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified
Based on available data, the classification criteria are not met

Carcinogenicity : Not classified

Sulfuric Acid (7664-93-9)	
Additional information	Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans
National Toxicology Program (NTP) Status	2 - Known Human Carcinogens

Reproductive toxicity : Not classified
Based on available data, the classification criteria are not met

Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/effects after inhalation : Coughing. Irritation of the respiratory tract.

Symptoms/effects after skin contact : Caustic burns/corrosion of the skin.

Symptoms/effects after eye contact : Corrosion of the eye tissue.

Symptoms/effects after ingestion : Bleeding of the gastrointestinal tract.

Symptoms/effects upon intravenous administration : Not available.

Chronic symptoms : Respiratory difficulties. Inflammation/damage of the eye tissue. Irritation of the respiratory tract. Skin rash/inflammation.

SECTION 12: Ecological information

12.1. Toxicity

Sulfuric Acid (7664-93-9)	
LC50 fish 1	42 mg/l (96 h, Gambusia affinis)
EC50 Daphnia 1	29 mg/l (24 h, Daphnia magna)

12.2. Persistence and degradability

Sulfuric Acid, 50% v/v	
Persistence and degradability	Not established.

Sulfuric Acid (7664-93-9)	
Persistence and degradability	Biodegradability: not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

Water (7732-18-5)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Sulfuric Acid, 50% v/v	
Bioaccumulative potential	Not established.

Sulfuric Acid (7664-93-9)	
Log Pow	-2.2 (Estimated value)
Bioaccumulative potential	Not bioaccumulative.

Water (7732-18-5)	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with local, state and federal regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN1830 Sulfuric acid (with more than 51 percent acid), 8, II

UN-No.(DOT) : UN1830

Proper Shipping Name (DOT) : Sulfuric acid
with more than 51 percent acid

Transport hazard class(es) (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT) : II - Medium Danger

Hazard labels (DOT) : 8 - Corrosive

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Special Provisions (49 CFR 172.102)	:	A3 - For combination packaging, if glass inner packaging (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in outer packaging. A7 - Steel packaging must be corrosion-resistant or have protection against corrosion. B3 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks and DOT 57 portable tanks are not authorized. B83 - Bottom outlets are prohibited on tank car tanks transporting sulfuric acid in concentrations over 65.25 percent. B84 - Packaging must be protected with non-metallic linings impervious to the lading or have a suitable corrosion allowance for sulfuric acid or spent sulfuric acid in concentration up to 65.25 percent. IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material. T8 - 4 178.274(d)(2) Normal..... Prohibited TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively. TP12 - This material is considered highly corrosive to steel.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	154
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	1 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	30 L
DOT Vessel Stowage Location	:	C - The material must be stowed ‘‘on deck only’’ on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other	:	14 - For metal drums, stowage permitted under deck on cargo vessels
Other information	:	No supplementary information available.

Transport by sea

Transport document description (IMDG)	:	UN 1830 SULPHURIC ACID, 8, II
UN-No. (IMDG)	:	1830
Proper Shipping Name (IMDG)	:	SULPHURIC ACID
Class (IMDG)	:	8 - Corrosive substances
Packing group (IMDG)	:	II - substances presenting medium danger

Air transport

Transport document description (IATA)	:	UN 1830 Sulphuric acid, 8, II
UN-No. (IATA)	:	1830
Proper Shipping Name (IATA)	:	Sulphuric acid
Class (IATA)	:	8 - Corrosives
Packing group (IATA)	:	II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Sulfuric Acid, 50% v/v	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Health hazard - Serious eye damage or eye irritation Health hazard - Skin corrosion or Irritation

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Sulfuric Acid	CAS-No. 7664-93-9	59.23%

Sulfuric Acid (7664-93-9)	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	1000 lb
SARA Section 311/312 Hazard Classes	Health hazard - Skin corrosion or Irritation Health hazard - Serious eye damage or eye irritation

15.2. International regulations

CANADA

Sulfuric Acid, 50% v/v
Listed on the Canadian DSL (Domestic Substances List)

Water (7732-18-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Sulfuric Acid, 50% v/v
Listed on the Canadian IDL (Ingredient Disclosure List)

Sulfuric Acid (7664-93-9)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date : 03/20/2019

Other information : None.

Full text of H-phrases: see section 16:

H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

NFPA health hazard : 4 - Materials that, under emergency conditions, can be lethal.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.

NFPA specific hazard : W - Materials that react violently or explosively with water.

Hazard Rating

Health : 4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Personal protection : H

H - Splash goggles, Gloves, Synthetic apron, Vapor respirator

SDS US LabChem

Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.

Borden & Remington Corp
63 Water Street
PO Box 2573
Fall River, MA, USA 02722
(508) 675-0096

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SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Borchlor 5**

Product Code(s) : Borchlor 5

Recommended use of the chemical and restrictions on use

: Reagent; Chemical intermediate.

Chemical family : Mixture of inorganic sodium compounds.

Name, address, and telephone number of the supplier:

Borden & Remington Corp

63 Water St.
PO Box 2573
Fall River, MA, USA
02722

Supplier's Telephone # : (508) 675-0096

Name, address, and telephone number of the manufacturer:

Refer to supplier

24 Hr. Emergency Tel # : Chemtrec 1-800-424-9300 (Within Continental U.S.); Chemtrec 703-527-3887 (Outside U.S.).

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Greenish-yellow liquid. Chlorine or bleach odor.

Most important hazards:
OSHA: This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012).
Hazardous classification:
Corrosive to metals - Category 1
Skin corrosion - Category 1
Serious eye damage - Category 1
STOT - single exposure - Category 3

WHMIS information: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR). WHMIS classification:
Class E (Corrosive Material)

Label elements

The following label information is applicable only to the United States according to OSHA Regulations (29 CFR 1910.1200) (Hazcom 2012):

Signal Word

DANGER!

Hazard statement(s)

May be corrosive to metals.
Causes severe skin burns and eye damage.
May cause respiratory irritation.

Precautionary statement(s)

SAFETY DATA SHEET

Keep only in original container.
Wash hands and face thoroughly after handling.
Do not breathe mist/vapors/spray.
Wear protective gloves/clothing and eye/face protection.
Use only outdoors or in a well-ventilated area.

Absorb spillage to prevent material damage.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Immediately call a POISON CENTER or doctor/physician.
Wash contaminated clothing before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.

Dispose of contents/container in accordance with local regulation.

Hazard pictograms

The following label information is applicable only to Canada according to the Canadian Controlled Products Regulations (CPR/WHMIS):

DANGER! Corrosive liquid. May be corrosive to metals. Causes skin and eye burns. May be harmful or fatal if inhaled. Causes respiratory tract irritation. May be harmful or fatal if swallowed. Ingestion may cause severe burns to the mucous membranes of the digestive tract.

PRECAUTIONS: Keep only in original container. Use only outdoors or in a well-ventilated area. Wear chemically resistant protective equipment during handling. Do not breathe fumes, mists or vapours. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid contact with incompatible materials. Wash thoroughly after handling. Keep containers tightly closed when not in use. Store in a cool, dry, well ventilated area. Store in corrosive resistant container with a resistant inner liner.

FIRST AID: For all cases, obtain medical attention immediately. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Flush skin thoroughly with running water for at least 15 to 20 minutes. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Flush eyes with large amounts of running water for at least 30 minutes.

Refer To Material Safety Data Sheet for further information.

Hazard pictograms:

SAFETY DATA SHEET

Other hazards

Other hazards which do not result in classification Burning produces obnoxious and toxic fumes. Ingestion may cause severe burns to the mucous membranes of the digestive tract. Prolonged skin contact may cause dermatitis (rash), characterized by red, dry, itching skin.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS #	Concentration
sodium hypochlorite	7681-52-9	**5.0 - 15.0**
sodium hydroxide	1310-73-2	**0.30**

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

Ingestion : Do NOT induce vomiting. Have victim rinse mouth with water, then give one to two glasses of water to drink. Never give anything by mouth to an unconscious person. Seek immediate medical attention/advice.

Inhalation : Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Seek immediate medical attention/advice.

Skin contact : Take off all contaminated clothing immediately. Flush affected skin with gently flowing lukewarm water for at least 30 minutes. Do not rub area of contact. Seek immediate medical attention/advice. Wash contaminated clothing before re-use. Leather and shoes that have been contaminated with the solution may need to be destroyed.

Eye contact : Immediate medical attention is required. Immediately flush eyes thoroughly with running water for at least 20 to 30 minutes. Delays greater than 5 seconds may cause permanent eye damage. Continue rinsing eyes during transport to hospital. Seek immediate medical attention/advice.

Most important symptoms and effects, both acute and delayed

: Harmful if swallowed.
Harmful if inhaled.
Corrosive to all tissues.

Indication of any immediate medical attention and special treatment needed

: Corrosive liquid. Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

: Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical.

Unsuitable extinguishing media

: Do not use water jet, as this may spread burning material.

Special hazards arising from the substance or mixture / Conditions of flammability

: Not flammable under normal conditions of use. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

Flammability classification (OSHA 29 CFR 1910.106)

: Non-flammable.

Explosion Data: Sensitivity to Mechanical Impact / Static Discharge:

: Not expected to be sensitive to mechanical impact or static discharge.

Hazardous combustion products

: Chlorine; Carbon oxides; irritating fumes and smoke.

Special protective equipment and precautions for firefighters

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Protective equipment for fire-fighters

: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. A full-body chemical resistant suit should be worn.

Special fire-fighting procedures

: Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. Individuals involved in the cleanup must wear alkali resistant personal protective equipment. For personal protection see section 8.

Environmental precautions : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. For large spills, dike the area to prevent spreading.

Methods and material for containment and cleaning up

: Ventilate area of release. Eliminate all ignition sources if safe to do so. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Notify the appropriate authorities as required.

Special spill response procedures

: If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8802).
US CERCLA Reportable quantity (RQ): See section 15.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

: Use only in well-ventilated areas. Wear chemically resistant protective equipment during handling. Avoid breathing vapour or mist. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks, and open flames. Keep away from metals and incompatibles. Label containers appropriately. Keep containers tightly closed when not in use. Wash thoroughly after handling.

Conditions for safe storage : Store in a cool, dry, well ventilated area, away from heat and ignition sources. Store away from incompatible materials. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Store in corrosion-resistant containers.

Incompatible materials : Acids; Metals (e.g. tin, aluminum, zinc and alloys containing these metals); Oxidizing agents; Organic materials.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
sodium hypochlorite	N/Av	N/Av	N/Av	N/Av
sodium hydroxide	2 mg/m³ (Ceiling)	N/Av	2 mg/m³	N/Av

Exposure controls

Ventilation and engineering measures

SAFETY DATA SHEET

	:	Provide exhaust ventilation or other engineering controls to keep the airborne concentration of vapours below their respective threshold limit value.
Respiratory protection	:	Respiratory protection is required if the concentrations exceed the TLV. If respiratory proteciton is warranted, wear NIOSH-approved respirators. Advice should be sought from respiratory protection specialists.
Skin protection	:	Impervious gloves must be worn when using this product. The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye / face protection	:	Chemical splash goggles must be worn when handling this material. A full face shield may also be necessary.
Other protective equipment	:	Wear chemically protective gloves (impervious), boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.
General hygiene considerations	:	Avoid breathing vapour or mist. Avoid contact with skin, eyes and clothing. Do not eat, drink, smoke or use cosmetics while working with this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove soiled clothing and wash it thoroughly before reuse.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Greenish-yellow liquid.
Odour	:	Chlorine or bleach odor.
Odour threshold	:	N/Av
pH	:	12.5
Melting/Freezing point	:	N/Av
Initial boiling point and boiling range	:	104°C (220°F)
Flash point	:	N/Ap
Flashpoint (Method)	:	N/Ap
Evaporation rate (BuAe = 1)	:	N/Av
Flammability (solid, gas)	:	N/Ap
Lower flammable limit (% by vol.)	:	N/Av
Upper flammable limit (% by vol.)	:	N/Av
Oxidizing properties	:	None known.
Explosive properties	:	Not explosive
Vapour pressure	:	N/Av
Vapour density	:	N/Av
Relative density / Specific gravity	:	1.20
Solubility in water	:	soluble
Other solubility(ies)	:	N/Av
Partition coefficient: n-octanol/water or Coefficient of water/oil distribution	:	N/Av
Auto-ignition temperature	:	N/Ap
Decomposition temperature	:	N/Av
Viscosity	:	N/Av
Volatiles (% by weight)	:	N/Av
Volatile organic Compounds (VOC's)	:	N/Av

SAFETY DATA SHEET

Absolute pressure of container

: N/Ap

Flame projection length : N/Ap

Other physical/chemical comments

: No additional information.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not normally reactive.

Chemical stability : Stable under the recommended storage and handling conditions prescribed. Solutions slowly decompose with air to form chlorine gas.

Possibility of hazardous reactions

: Hazardous polymerization will not occur.

Conditions to avoid : Avoid heat and open flame. Avoid contact with incompatible materials. Metals (e.g. tin, aluminum, zinc and alloys containing these metals).

Incompatible materials : Acids; Metals (e.g. tin, aluminum, zinc and alloys containing these metals); Oxidizing agents; Organic materials.

Hazardous decomposition products

: Solutions slowly decompose with air to form chlorine gas. Refer also to hazardous combustion products, Section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation : YES

Routes of entry skin & eye : YES

Routes of entry Ingestion : YES

Routes of exposure skin absorption

: NO

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation

: May cause severe irritation to the nose, throat and respiratory tract. Symptoms may include coughing, choking and wheezing. Very high concentrations may cause unconsciousness and death.

Sign and symptoms ingestion

: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding and eventually death.

Sign and symptoms skin : Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring.

Sign and symptoms eyes : Severe irritation, burns and possibly permanent eye damage may result from direct contact.

Potential Chronic Health Effects

: Chronic skin contact with low concentrations may cause dermatitis.

Mutagenicity : Not expected to be mutagenic in humans.

Carcinogenicity : No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.

Reproductive effects & Teratogenicity

: Not expected to have other reproductive effects.

Senitization to material : Not expected to be a skin or respiratory sensitizer.

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Specific target organ effects : This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Classification: Specific target organ toxicity - single exposure. May cause respiratory irritation.

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Irritancy : Corrosive

Medical conditions aggravated by overexposure

: Pre-existing skin, eye and respiratory disorders.

Synergistic materials : No information available.

Toxicological data : Contains no ingredients that are considered to have acute toxicity hazards.

See below for individual ingredient acute toxicity data.

Chemical name	LC_{50}(4hr) inh, rat	LD_{50} (Oral, rat)	LD_{50} (Rabbit, dermal)
sodium hypochlorite	>5250 mg/m³ (>5.25 mg/L)	8800 mg/kg (12.5%); 5800 mg/kg (mouse)	>20 g/kg (12.5%)
sodium hydroxide	N/Av	N/Av	N/Av

Other important toxicological hazards

: None known or reported by the manufacturer.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : No data is available on the product itself. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

Ingredients	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
sodium hypochlorite	7681-52-9	0.059 mg/L (Rainbow trout)	0.04 mg/L (Tidewater silverside)	10
sodium hydroxide	1310-73-2	N/Av	N/Av	None.

Ingredients	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
sodium hypochlorite	7681-52-9	0.032 mg/L (Water flea)	0.02 mg/L (NOEC) (Mysid shrimp)	10
sodium hydroxide	1310-73-2	40 mg/L (Water flea)	N/Av	None.

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Ingredients	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
sodium hypochlorite	7681-52-9	46 mg/L/96hr (Red algae)	N/Av	None.
sodium hydroxide	1310-73-2	N/Av	N/Av	None.

Persistence and degradability

: No data is available on the product itself.

Bioaccumulation potential : No data is available on the product itself.

Mobility in soil : No data is available on the product itself.

Other Adverse Environmental effects

: No data is available on the product itself.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal : See Section 7 (Handling and Storage) for further details. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

Methods of Disposal : Dispose of in accordance with federal, provincial and local hazardous waste laws.

RCRA : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
49CFR/DOT	UN1791	HYPOCHLORITE SOLUTION	8	II	
49CFR/DOT Additional information	This material may be shipped as a limited quantity according to 49CFR section 173.154.				
TDG	UN1791	HYPOCHLORITE SOLUTION	8	II	
TDG Additional information	Within Canada, the Limited Quantity Exemption may apply for containers which hold specific quantities of the product. Under the TDGR, refer to section 1.17 for Limited Quantity Exemption information, if shipping under this exemption.				

Special precautions for user : Appropriate advice on safety must accompany the package.

Environmental hazards : This mixture meets the criteria for an environmentally hazardous material according to the IMDG Code. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: This information is not available.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

SAFETY DATA SHEET

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
sodium hypochlorite	7681-52-9	Yes	100 lb/ 45.4 kg	N/Av	No	N/Ap
sodium hydroxide	1310-73-2	Yes	1000 lb/ 454 kg	N/Av	No	N/Ap

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

Ingredients	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
sodium hypochlorite	7681-52-9	No	N/Ap	Yes	Yes	Yes	Yes	Yes	No
sodium hydroxide	1310-73-2	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes

Canadian Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this MSDS contains all the information required by the CPR.

International Information:

Components listed below are present on the following International Inventory list:

Ingredients	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
sodium hypochlorite	7681-52-9	231-668-3	Present	Present	(1)-237	KE-31506	Present	HSR003698
sodium hydroxide	1310-73-2	215-185-5	Present	Present	(2)-1972; (1)-410	KE-31487	Present	HSR001547

SECTION 16. OTHER INFORMATION

SAFETY DATA SHEET

Legend :

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
DOT: Department of Transportation
EPA: Environmental Protection Agency
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
Inh: Inhalation
LC: Lethal Concentration
LD: Lethal Dose
N/Ap: Not Applicable
N/Av: Not Available
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible exposure limit
RCRA: Resource Conservation and Recovery Act
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TPQ: Threshold Planning Quantity
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

References :

1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2013.
2. International Agency for Research on Cancer Monographs, searched 2013.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases (Chempendium, HSDB and RTECs). (2013)
4. Material Safety Data Sheet from manufacturer.
5. US EPA Title III List of Lists (October 2012)
6. California Proposition 65 List (26 July 2013)

Preparation Date (mm/dd/yyyy) : 08/15/2013

Other special considerations for handling : Provide adequate information, instruction and training for operators.

Prepared for: Borden & Remington Corp 63 Water Street PO Box 2573 Fall River, MA, USA 02722 (508) 675-0096 Direct all enquiries to: Borden & Remington Corp	
Prepared by: ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.): (888) 977-4834 (Canada) http://www.thecompliancecenter.com	

DISCLAIMER

This Safety Data Sheet was prepared by ICC The Compliance Center Inc. using information provided by Borden & Remington Corp and CCOHS' Web Information Service. The information in the Safety Data Sheet is offered for your consideration and guidance when exposed to this product. ICC The Compliance Center Inc and Borden & Remington

SAFETY DATA SHEET

Corp expressly disclaim all expressed or implied warranties and assume no responsibilities for the accuracy or completeness of the data contained herein. The data in this SDS does not apply to use with any other product or in any other process.

This Safety Data Sheet may not be changed, or altered in any way without the expressed knowledge and permission of ICC The Compliance Center Inc. and Borden & Remington Corp.

END OF DOCUMENT

Ascorbic Acid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 01/28/2014 Revision date: 12/06/2016 Supersedes: 01/28/2014 Version: 1.1

SECTION 1: Identification

1.1. Identification

Product form	:	Substance
Substance name	:	Ascorbic Acid
CAS No	:	50-81-7
Product code	:	LC11530
Formula	:	C6H8O6
Synonyms	:	L-ascorbic acid

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	:	For laboratory and manufacturing use only.
Restrictions on use	:	Not for food, drug or household use

1.3. Details of the supplier of the safety data sheet

LabChem Inc
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
Zelienople, PA 16063 - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number	:	CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. Label elements

No labeling obligation.

2.3. Other hazards

Other hazards not contributing to the classification	:	None under normal conditions.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substance

Substance type : Mono-constituent

Name	Product identifier	%	GHS-US classification
Ascorbic Acid (Main constituent)	(CAS No) 50-81-7	100	Not classified

Full text of hazard classes and H-statements : see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	:	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	:	Allow victim to breathe fresh air. Allow the victim to rest.
First-aid measures after skin contact	:	Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
First-aid measures after eye contact	:	Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
First-aid measures after ingestion	:	Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Not expected to present a significant hazard under anticipated conditions of normal use.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Safety glasses.

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : On land, sweep or shovel into suitable containers. Minimize generation of dust. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Light sensitive. Keep container closed when not in use.

Incompatible products : Strong bases. Strong oxidizers.

Incompatible materials : Sources of ignition. Direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation.

Personal protective equipment	:	Avoid all unnecessary exposure. Gloves. Safety glasses.

Hand protection	:	Wear protective gloves.
Eye protection	:	Chemical goggles or safety glasses.
Respiratory protection	:	Wear appropriate mask.
Other information	:	Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Color	:	Colorless
Odor	:	characteristic
Odor threshold	:	No data available
pH	:	2.1 - 2.6 5% solution
Melting point	:	190 °C
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	Non flammable.
Vapor pressure	:	No data available
Relative vapor density at 20 °C	:	No data available
Relative density	:	No data available
Specific gravity / density	:	1.65 g/cm³
Molecular mass	:	176.13 g/mol
Solubility	:	Soluble in water.
Log Pow	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong oxidizers. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Skin and eye contact; Inhalation

Acute toxicity : Not classified

Ascorbic Acid (50-81-7)	
LD50 oral rat	11900 mg/kg
ATE US (oral)	11900.000 mg/kg body weight

Skin corrosion/irritation : Not classified
pH: 2.1 - 2.6 5% solution

Serious eye damage/irritation : Not classified
pH: 2.1 - 2.6 5% solution

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

Ascorbic Acid (50-81-7)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Ascorbic Acid (50-81-7)	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

Ascorbic Acid (50-81-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Ascorbic Acid (50-81-7)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

EU-Regulations

No additional information available

National regulations

Ascorbic Acid (50-81-7)
Not listed on the Canadian IDL (Ingredient Disclosure List)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

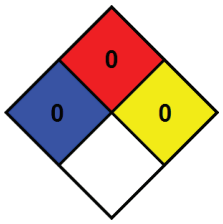
Revision date : 12/06/2016

Other information : None.

NFPA health hazard : 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection : A

A - Safety glasses

SDS US LabChem

Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.

ATTACHMENT G

LETTERS FROM US FISH & WILDLIFE SERVICE

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: November 07, 2017
Consultation Code: 05E1NE00-2018-SLI-0343
Event Code: 05E1NE00-2018-E-00778
Project Name: Aberjona River Outfall (JB-02, JB-03)

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: 05E1NE00-2018-SLI-0343

Event Code: 05E1NE00-2018-E-00778

Project Name: Aberjona River Outfall (JB-02, JB-03)

Project Type: TRANSMISSION LINE

Project Description: Indirect discharge via municipal storm sewer to Aberjona RIver associated with contaminated site dewatering from underground transmission cable project. April 2018 to April 2020.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.467281574971175N71.13069512397905W

Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 1 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. 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.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

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

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: November 13, 2017
Consultation Code: 05E1NE00-2018-SLI-0377
Event Code: 05E1NE00-2018-E-00848
Project Name: Aberjona River Outfall (JB-04)

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:

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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.

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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.

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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.

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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: 05E1NE00-2018-SLI-0377

Event Code: 05E1NE00-2018-E-00848

Project Name: Aberjona River Outfall (JB-04)

Project Type: TRANSMISSION LINE

Project Description: Indirect discharge via municipal storm sewer to Aberjona River associated with contaminated site dewatering from underground transmission cable project. April 2018 to April 2020.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.46944053478569N71.12517463395113W

Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 1 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. 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.

Mammals

NAME	STATUS
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No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

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

United States Department of the Interior

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In Reply Refer To: November 13, 2017
Consultation Code: 05E1NE00-2018-SLI-0379
Event Code: 05E1NE00-2018-E-00852
Project Name: Aberjona River (JB-05)

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

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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: 05E1NE00-2018-SLI-0379

Event Code: 05E1NE00-2018-E-00852

Project Name: Aberjona River (JB-05)

Project Type: TRANSMISSION LINE

Project Description: Indirect discharge via municipal storm sewer to Aberjona River associated with contaminated site dewatering from underground transmission cable project. April 2018 to April 2020.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.47953629347833N71.1181688605273W

Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 1 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. 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.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

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

ATTACHMENT H

MASSACHUSETTS CULTURAL RESOURCES DATABASE SEARCH RESULTS

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Winchester; Street Name: Cross ST; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
WNT.905	Boston and Lowell Railroad Bridge	Cross St	Winchester	1939
WNT.906	Boston and Lowell Railroad Signal Bridge	Cross St	Winchester	1930
WNT.496	Washington School House	12 Cross St	Winchester	c 1851
WNT.497	Smalley, Henry House	49 Cross St	Winchester	c 1876
WNT.498	Middlesex Japanning Company Building	50 Cross St	Winchester	1915
WNT.499	Warren, William House	87-89 Cross St	Winchester	c 1865
WNT.500	Maxwell, John Tannery	134 Cross St	Winchester	c 1890
WNT.501	Fletcher, Stillman House	161 Cross St	Winchester	c 1854
WNT.502	McCarlon House	174 Cross St	Winchester	c 1854
WNT.503	Holton, Lemuel House	312 Cross St	Winchester	c 1854

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Winchester; Street Name: Washington ST; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
WNT.802	Chevra Kadusha of Boston Cemetery	Washington St	Winchester	c 1903
WNT.803	Pride of Boston Cemetery A	Washington St	Winchester	c 1897
WNT.916	Wadleigh Park	Washington St	Winchester	
WNT.920	Mill Pond Park	Washington St	Winchester	
WNT.940	Chevra Kadusha of Boston Cemetery Gate and Fence	Washington St	Winchester	1925
WNT.941	Pride of Boston Cemetery Gate and Wall	Washington St	Winchester	c 1930
WNT.260	Stanton, Jacob House	21 Washington St	Winchester	c 1840
WNT.259	Johnson, Warren House	35 Washington St	Winchester	r 1845
WNT.258	Johnson, Francis - Bishop - Weatherbee House	43 Washington St	Winchester	c 1846
WNT.257	Brown, George P. House	49-51 Washington St	Winchester	1873
WNT.256	Parker, George F. House	63 Washington St	Winchester	1887
WNT.151	Winchester Public Library	80 Washington St	Winchester	1931
WNT.255	Joy, Albion K. P. - Cushing, Samuel T. A. House	83 Washington St	Winchester	c 1854
WNT.580	Cutting, Alexis and Frank House	84 Washington St	Winchester	1849
WNT.152	Stillings, E. B. Barn - Davidson House	125 Washington St	Winchester	1865
WNT.153	Davidson, Thomas Double House	129-131 Washington St	Winchester	c 1898
WNT.156	Brown, George P. House	135 Washington St	Winchester	c 1865
WNT.157	Grammar, Nancy - Stone, Henry House	136 Washington St	Winchester	c 1835
WNT.158	MacDonald, Alexander House	139-141 Washington St	Winchester	c 1896
WNT.159	Dupee, Charles H. House	145 Washington St	Winchester	c 1865
WNT.160	Richardson, Calvin Jr. Barn - Young, C. House	149 Washington St	Winchester	
WNT.161	Richardson, Calvin Jr. House	151 Washington St	Winchester	r 1825
WNT.162	Kendall, Samuel House	153 Washington St	Winchester	c 1875
WNT.163	Saint Mary's Roman Catholic Church Rectory	158 Washington St	Winchester	c 1912
WNT.154	Saint Mary's Roman Catholic Church	159 Washington St	Winchester	1876
WNT.155	Saint Mary's Roman Catholic Parochial School	162 Washington St	Winchester	1913

Inv. No.	Property Name	Street	Town	Year
WNT.164	Judkins, Jerome B. House	162 Washington St	Winchester	c 1845
WNT.165	Stone, William A. - Eldridge, J. L. House	165 Washington St	Winchester	c 1854
WNT.166	Wilson, John T. House	189 Washington St	Winchester	c 1875
WNT.468	Saint Mary's Roman Catholic Church Rectory Barn	203 Washington St	Winchester	1889
WNT.467	Payne, Caroline A. - Kilcoyne, Thomas J. House	205 Washington St	Winchester	c 1896
WNT.466	Colbert, John D. House	206-208 Washington St	Winchester	c 1889
WNT.465	Payne, Caroline A. Tenant House	207-209 Washington St	Winchester	1895
WNT.464	Payne, Caroline A. Tenant House	211 Washington St	Winchester	1896
WNT.463	Colbert, John T. House	214 Washington St	Winchester	c 1896
WNT.462	Brine, George R. House	219 Washington St	Winchester	c 1865
WNT.470	Black Horse Tavern Barn	250R Washington St	Winchester	c 1840
WNT.461	Stone, H. P. - Winn, Albert House	296 Washington St	Winchester	c 1854
WNT.460	Holton, Samuel S. House	423 Washington St	Winchester	c 1850
WNT.459	Richardson, Caleb - Parker, Calvin House	465-467 Washington St	Winchester	c 1831
WNT.458	Richardson, Samuel House	569 Washington St	Winchester	c 1831
WNT.457	Richardson, Zachariah House	597 Washington St	Winchester	c 1794
WNT.455	Winn, James H. Watch Hand Factory	620 Washington St	Winchester	c 1900

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Woburn; Street Name: Washington ST;

Inv. No.	Property Name	Street	Town	Year
WOB.628	Anshei Poland Cemetery Chapel	Washington St	Woburn	1922
WOB.629	Congregation Ohel Jacob Cemetery Chapel	Washington St	Woburn	
WOB.630	Chevra Kadusha of Boston Cemetery Chapel	Washington St	Woburn	c 1903
WOB.631	Pride of Boston Cemetery Chapel	Washington St	Woburn	c 1980
WOB.632	Shari Jerusalem Chevra Thilim Cemetery Chapel	Washington St	Woburn	
WOB.633	Anshe Libavitz Cemetery Chapel	Washington St	Woburn	
WOB.634	Knights of Liberty Cemetery Chapel	Washington St	Woburn	1941
WOB.801	Anshei Poland Cemetery	Washington St	Woburn	c 1900
WOB.802	Beth Joseph #1 Cemetery	Washington St	Woburn	c 1908
WOB.803	Meretz Cemetery	Washington St	Woburn	1893
WOB.804	Beth David Cemetery	Washington St	Woburn	c 1906
WOB.805	Beth David #2 Cemetery	Washington St	Woburn	c 1906
WOB.806	Montefiore Cemetery	Washington St	Woburn	c 1906
WOB.807	Chebra Kadisha of Chelsea Cemetery	Washington St	Woburn	c 1899
WOB.808	Congregation Ohel Jacob and East Boston Cemetery	Washington St	Woburn	c 1906
WOB.809	South Boston Lodge Cemetery	Washington St	Woburn	c 1906
WOB.810	Roxbury Mutual Cemetery	Washington St	Woburn	c 1898
WOB.811	Kenesseth Israel Cemetery	Washington St	Woburn	c 1899
WOB.812	Chevra Kadusha of Boston Cemetery	Washington St	Woburn	c 1903
WOB.813	United Congregation Beth Jacob Cemetery	Washington St	Woburn	c 1902
WOB.814	Puritan - Mount Sinai Cemetery	Washington St	Woburn	c 1906
WOB.815	Pride of Boston Cemetery A	Washington St	Woburn	c 1897
WOB.816	Pride of Boston Cemetery B	Washington St	Woburn	c 1897
WOB.817	Pride of Boston Cemetery C	Washington St	Woburn	c 1897
WOB.818	Pride of Boston Cemetery D	Washington St	Woburn	c 1897
WOB.819	Agudath Achim Cemetery	Washington St	Woburn	c 1906

Inv. No.	Property Name	Street	Town	Year
WOB.820	Shari Jerusalem Chevra Thilim Cemetery	Washington St	Woburn	c 1906
WOB.821	Anshe Libavitz Cemetery	Washington St	Woburn	c 1899
WOB.822	Woburn Hebrew Center Cemetery	Washington St	Woburn	c 1945
WOB.823	Beth Joseph #3 Cemetery	Washington St	Woburn	c 1906
WOB.824	Knights of Liberty Cemetery	Washington St	Woburn	c 1903
WOB.825	Independent Pride of Boston Cemetery	Washington St	Woburn	c 1900
WOB.826	Independent Golden Crown Cemetery	Washington St	Woburn	c 1906
WOB.827	American Austrian - City of Boston Lodge Cemetery	Washington St	Woburn	c 1906
WOB.828	Chevra Mishnias Cemetery	Washington St	Woburn	c 1906
WOB.946	Anshei Poland Cemetery Gate and Fence	Washington St	Woburn	
WOB.947	Meretz Cemetery Gate and Fence	Washington St	Woburn	c 1914
WOB.948	Beth David #2 Cemetery Gate and Fence	Washington St	Woburn	
WOB.949	Beth Joseph Cemetery #2 - Wolkon, Rose Tablet	Washington St	Woburn	c 1974
WOB.950	Montefiore Cemetery Gate - Fence - Tablets	Washington St	Woburn	1924
WOB.951	Chebra Kadisha of Chelsea Cemetery Gate	Washington St	Woburn	
WOB.952	Chebra Kadisha of Chelsea Cemetery Fence	Washington St	Woburn	
WOB.953	Congregation Ohel Jacob Cemetery Gate and Fence	Washington St	Woburn	
WOB.954	South Boston Lodge Cemetery Gate and Fence	Washington St	Woburn	
WOB.955	Roxbury Mutual Cemetery Gate and Fence	Washington St	Woburn	1930
WOB.956	Kenesseth Israel Cemetery Gate and Fence	Washington St	Woburn	
WOB.957	Kenesseth Israel Cemetery Tablets	Washington St	Woburn	1899
WOB.958	Kenesseth Israel Cemetery Tablet	Washington St	Woburn	1899
WOB.959	Kenesseth Israel Cemetery Tablet	Washington St	Woburn	1899
WOB.960	Chevra Kadusha of Boston Cemetery Gate and Fence	Washington St	Woburn	1925
WOB.961	United Congregation Beth Jacob Cemetery Gate	Washington St	Woburn	c 1970
WOB.962	Puritan - Mount Sinai Cemetery Gate and Fence	Washington St	Woburn	
WOB.963	Pride of Boston Cemetery Gate and Wall	Washington St	Woburn	c 1930
WOB.964	Pride of Boston Cemetery Gate and Fence	Washington St	Woburn	
WOB.965	Agudath Achim Cemetery Gate and Fence	Washington St	Woburn	
WOB.966	Shari Jerusalem Chevra Thilim Cemetery Gate	Washington St	Woburn	
WOB.967	Anshe Libavitz Cemetery Gate	Washington St	Woburn	
WOB.968	Anshe Libavitz Cemetery Fence	Washington St	Woburn	
WOB.969	Woburn Hebrew Center Cemetery Gate and Plaque	Washington St	Woburn	1945
WOB.970	Beth Joseph #3 Cemetery Gates	Washington St	Woburn	
WOB.971	Beth Joseph #3 Cemetery Marker	Washington St	Woburn	

Inv. No.	Property Name	Street	Town	Year
WOB.972	Knights of Liberty Cemetery Fence	Washington St	Woburn	
WOB.973	Independent Pride of Boston Cemetery Tablet	Washington St	Woburn	1900
WOB.974	Independent Pride of Boston Cemetery Tablet	Washington St	Woburn	1931
WOB.975	Independent Golden Crown Cemetery Gate	Washington St	Woburn	
WOB.976	American Austrian Cemetery Gate	Washington St	Woburn	1922
WOB.977	City of Boston Lodge Cemetery Gate and Fence	Washington St	Woburn	
WOB.978	Chevra Mishnias Cemetery Gate and Fence	Washington St	Woburn	
WOB.616	Hayward, Nathaniel - Macfarlane, Duncan House	72 Washington St	Woburn	c 1840
WOB.25	Saint Joseph's Roman Catholic Church	100 Washington St	Woburn	1877
WOB.937	Immaculate Conception Statue	100 Washington St	Woburn	1926
WOB.938	Saint Jude Statue	100 Washington St	Woburn	
WOB.939	Gillis, Shawn - Carroll, Paul Monument	100 Washington St	Woburn	

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Woburn; Street Name: Montvale Ave; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
WOB.900	Montvale Avenue Bridge over B & M Railroad	Montvale Ave	Woburn	1917
WOB.131	Woburn Company G 5th Regiment Armory	29 Montvale Ave	Woburn	1891
WOB.132	Woburn Swedish Evangelical Lutheran Church	29A Montvale Ave	Woburn	1898
WOB.133	Bean, Gilman A. House	47 Montvale Ave	Woburn	1874
WOB.134	Gage, Gawin Riddle House	51 Montvale Ave	Woburn	c 1870
WOB.491	Leighton, F. M. - Johnson, Charles House	65 Montvale Ave	Woburn	c 1870
WOB.135	Skinner, James House	79 Montvale Ave	Woburn	1875
WOB.576	Stabile, Pasquale - Donahue, Mary House	81 Montvale Ave	Woburn	c 1930
WOB.577	Bezatti, Edward House	83 Montvale Ave	Woburn	c 1930
WOB.578	Begley, John House	85 Montvale Ave	Woburn	c 1930
WOB.579	Spencer, Julia - McDonough, Harold House	87 Montvale Ave	Woburn	c 1929
WOB.492	Fowle, J. House	91-93 Montvale Ave	Woburn	c 1850
WOB.580	Hastings, Oliver - Hill, Jotham House	97 Montvale Ave	Woburn	r 1820
WOB.581	Swallow, Rev. J. E. - Taylor, Edward E. House	99 Montvale Ave	Woburn	c 1860
WOB.582	Hall, Capt. George W. M. House	101 Montvale Ave	Woburn	c 1860
WOB.583	Converse, John - Floyd, William House	110 Montvale Ave	Woburn	c 1800
WOB.584	Trull, Dr. Samuel - Yates, James House	111 Montvale Ave	Woburn	c 1856
WOB.585	Maquire, John G. House	113 Montvale Ave	Woburn	c 1887
WOB.136	Pollard, F. - True, John S. House	120 Montvale Ave	Woburn	1871
WOB.586	Moore, Charles - Ford, Howard M. House	129 Montvale Ave	Woburn	c 1850
WOB.587	Barber, Joseph F. - Linnell, Joseph House	133 Montvale Ave	Woburn	c 1870
WOB.588	Stevens, Frank - Brown, Charles A. House	135 Montvale Ave	Woburn	c 1860
WOB.697	Boutelle, Theodore House	138 Montvale Ave	Woburn	c 1890
WOB.698	Bishop, Harry S. - Elson, Alfred House	142 Montvale Ave	Woburn	c 1890
WOB.700	Waisnor, William Double House	144-146 Montvale Ave	Woburn	c 1890
WOB.701	Anderson, Peter House	147 Montvale Ave	Woburn	c 1900
WOB.702	Donovan, James P. House	160 Montvale Ave	Woburn	c 1890

Inv. No.	Property Name	Street	Town	Year
WOB.703	Corry, Robert J. House	162 Montvale Ave	Woburn	c 1916
WOB.704	Johnson, John G. House	166 Montvale Ave	Woburn	c 1890
WOB.589	Tucker, Hannah - Prentice, Daniel House	192 Montvale Ave	Woburn	c 1850
WOB.705	Mahoney, Timothy House	197 Montvale Ave	Woburn	c 1860
WOB.706	Jones, Charles S. House	239 Montvale Ave	Woburn	1889
WOB.707	Pettingill, William House	251 Montvale Ave	Woburn	c 1850
WOB.708	McDonald, Patrick House	269 Montvale Ave	Woburn	1909
WOB.709	Ramsdell, Henry - Cogan, Patrick Double House	284 Montvale Ave	Woburn	c 1860
WOB.590	Woburn Agricultural Manufacturing Boarding House	286 Montvale Ave	Woburn	1837
WOB.591	Woburn Agricultural Manufacturing Boarding House	288 Montvale Ave	Woburn	1837
WOB.592	Woburn Agricultural Manufacturing Boarding House	290 Montvale Ave	Woburn	1837
WOB.593	Woburn Agricultural Manufacturing Boarding House	292 Montvale Ave	Woburn	1837