VERTEX®

October 30, 2019

United States Environmental Protection Agency – Region 1
National Pollutant Discharge Elimination System (NPDES)
5 Post Office Square
Boston, MA 02109

Subject: Massachusetts Notice of Intent (NOI) – Remediation General Permit (RGP)
Construction Site Dewatering Discharge Permit Application
Parcel I
Cambridge Crossing Development
Cambridge, Massachusetts

To Whom it May Concern,

The Vertex Companies, Inc., is submitting this National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) Notice of Intent (NOI) on behalf of Parcel I owner DW NP Property, LLC for construction Site dewatering associated with the Parcel I redevelopment at the Cambridge Crossing (CX) project, located in Cambridge and Boston, Massachusetts.

The table below lists the Parcel I Operator and Owner as well as the Vertex Companies, Inc. as the consultant for the Owner. Please copy the parties listed below on correspondence regarding the NPDES RGP.

Operator	Owner	Consultant
John Moriarty and Associates, Inc. (JMa) Mr. Kyle Weber 3 Church Street Winchester, MA 01890 kweber@jm-a.com (781) 729-3900	DW NP Property, LLC Mr. Mark Johnson, Director of Development 200 State Street, 12th Floor Boston, MA, 02109 MJohnson@divcowest.com (617) 914-8640	The Vertex Companies, Inc. Mr. Jesse M. Freeman, PE 100 North Washington Street, Suite 302 Boston, MA 02114 jfreeman@vertexeng.com (617) 275-5407

The following provide additional supporting information related to the specific sections of the attached NOI and/or the NPDES RGP regulatory requirements.

- **Section D.1 of the NOI.** Utilities located within the Cambridge Crossing property are owned by DW NP Property, LLC. A portion of the discharge will travel through the on-site utilities

and afterward will flow through a stormwater utility managed and permitted by the City of Cambridge department of Public Works.

Please do not hesitate to contact us should you have any questions or require additional information.

Sincerely,

The Vertex Companies, Inc.

Jesse M. Freeman, PE
Senior Project Manager

Frank Calandra, PE, LSP
Regional Vice President

Attachments:

NPDES RGP NOI
NOI Supplemental Text
Figure 1: Site Locus Map
Figure 2: Site Plan with Parcel I RAM Area and NPDES Sampling Location
Figure 3: Outfall Location
Table 1: Groundwater Analytical Data
Laboratory Analytical Reports
Other Supporting Documentation

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:
Cambridge Crossing (CX) Development Site
Parcel I</td><td colspan="3">Site address: 151 North First Street</td></tr>
<tr><td colspan="3">Street:</td></tr>
<tr><td>City: Cambridge</td><td>State: MA</td><td>Zip: 02114</td></tr>
<tr><td rowspan="4">2. Site owner
DW NP Property, LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Mark Johnson, Director of Development</td></tr>
<tr><td colspan="2">Telephone: 617 914-8600</td><td>Email: mjohnson@divcowest.com</td></tr>
<tr><td colspan="3">Mailing address: 200 State Street, 12th Floor
Street:</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02109</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
John Moriarty and Associates, Inc. (JMa)
Mr. Kyle Weber
3 Church Street
Winchester, MA 01890
kweber@jm-a.com
(781) 729-3900</td><td colspan="3">Contact Person: Jesse Freeman</td></tr>
<tr><td colspan="2">Telephone: 617 830-1447</td><td>Email: jfreeman@vertexeng.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 100 NORTH WASHINGTON STREET, SUITE 302</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02114</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
NA

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):
3-11533
☐ 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):
Lechmere Canal	MA72-38	Class B Surface Water

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. Please see attached.

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.	NA
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.	NA

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: May 12, 2017. Correspondence attached.

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: PAHs, VOCs, Ammonia, Chloride, Arsenic, Lead, Nickel, Iron	
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): Lechmere Canal	Outfall location(s): (Latitude, Longitude) 42.22'09.93" N 71.04'32.89" W
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Discharge will enter onsite drainage structure that will discharge to Lechmere Canal. ☐ A private storm sewer system ■ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ■ Yes ☐ No, if so, explain, with an estimated timeframe for obtaining permission: Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ■ No	
Provide the expected start and end dates of discharge(s) (month/year): November 2019 to December 2020 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="4">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
■ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

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

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

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia		✔	1	4500NH3-	75	3950	3950	Report mg/L	---
Chloride		✔	1	300.0	50,000	1,280,000	1,280,000	Report µg/l	---
Total Residual Chlorine	✔		1	4500CL-D	20	<20	<20	0.2 mg/L	0.011 mg/L
Total Suspended Solids		✔	1	2540D	5,000	14,000	14,000	30 mg/L	---
Antimony	✔		1	200.7	4.0	<4.0	<4.0	206 µg/L	---
Arsenic		✔	1	200.7	1.0	6.31	6.31	104 µg/L	---
Cadmium	✔		1	200.7	0.1	<0.20	<0.20	10.2 µg/L	---
Chromium III	✔		1	200.7	10	<10	<10	323 µg/L	---
Chromium VI	✔		1	200.7	10	<10	<10	323 µg/L	---
Copper	✔		1	200.7	1.0	<1.00	<1.00	242 µg/L	---
Iron		✔	1	200.7	50	3,710	3,710	5,000 µg/L	1,000 ug/L
Lead		✔	1	200.8	0.50	11.35	11.35	160 µg/L	---
Mercury	✔		1	245.1	0.20	<0.20	<0.20	0.739 µg/L	---
Nickel		✔	1	200.7	2.00	2.71	2.71	1,450 µg/L	---
Selenium	✔		1	200.7	5.00	<5.00	<5.00	235.8 µg/L	---
Silver	✔		1	200.7	1.00	<1.00	<1.00	35.1 µg/L	---
Zinc	✔		1	200.7	10.00	<10.00	<10.00	420 µg/L	---
Cyanide	✔		1	4500CN-C	20	<20	<20	178 mg/L	---
B. Non-Halogenated VOCs									
Total BTEX	✔		1	624	3.75	<3.75	<3.75	100 µg/L	---
Benzene	✔		1	624	0.50	<0.50	<0.50	5.0 µg/L	---
1,4 Dioxane	✔		1	624.1-SIM	3.0	<3.0	<3.0	200 µg/L	---
Acetone		✔	1	624	5.0	12	12	7.97 mg/L	---
Phenol	✔		1	625	5.0	<5.0	<5.0	1,080 µg/L	---

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✔		1	624	0.50	<0.50	<0.50	4.4 µg/L	---
1,2 Dichlorobenzene	✔		1	624	2.5	<2.5	<2.5	600 µg/L	---
1,3 Dichlorobenzene	✔		1	624	2.5	<2.5	<2.5	320 µg/L	---
1,4 Dichlorobenzene	✔		1	624	2.5	<2.5	<2.5	5.0 µg/L	---
Total dichlorobenzene	✔		-	-	-	-	-	763 µg/L in NH	---
1,1 Dichloroethane	✔		1	624	0.75	<0.75	<0.75	70 µg/L	---
1,2 Dichloroethane	✔		1	624	0.50	<0.50	<0.50	5.0 µg/L	---
1,1 Dichloroethylene	✔		1	624	0.50	<0.50	<0.50	3.2 µg/L	---
Ethylene Dibromide	✔		1	504.1	2.0	<2.0	<2.0	0.05 µg/L	---
Methylene Chloride	✔		1	624	3.0	<3.0	<3.0	4.6 µg/L	---
1,1,1 Trichloroethane	✔		1	624	0.50	<0.50	<0.50	200 µg/L	---
1,1,2 Trichloroethane	✔		1	624	0.75	<0.75	<0.75	5.0 µg/L	---
Trichloroethylene	✔		1	624	0.50	<0.50	<0.50	5.0 µg/L	---
Tetrachloroethylene	✔		1	624	0.50	<0.50	<0.50	5.0 µg/L	---
cis-1,2 Dichloroethylene	✔		1	624	0.50	<0.50	<0.50	70 µg/L	---
Vinyl Chloride	✔		1	624	1.0	<1.0	<1.0	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		1	625	28.0	<28.0	<28.0	190 µg/L	---
Diethylhexyl phthalate	✔		1	625	3.0	<3.0	<3.0	101 µg/L	---
Total Group I PAHs		✔	1	625.1-SIM	1.40 J	0.46	0.46	1.0 µg/L	---
Benzo(a)anthracene		✔	1	625.1-SIM	0.20 J	0.06	0.06	As Total PAHs	0.0038
Benzo(a)pyrene		✔	1	625.1-SIM	0.20 J	0.07	0.07		0.0038
Benzo(b)fluoranthene		✔	1	625.1-SIM	0.20 J	0.08	0.08		0.0038
Benzo(k)fluoranthene		✔	1	625.1-SIM	0.20 J	0.07	0.07		0.0038
Chrysene		✔	1	625.1-SIM	0.20 J	0.05	0.05		0.0038
Dibenzo(a,h)anthracene		✔	1	625.1-SIM	0.20 J	0.06	0.06		0.0038
Indeno(1,2,3-cd)pyrene		✔	1	625.1-SIM	0.20 J	0.07	0.07		0.0038

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs		✔	1	625	1.70	3.51	3.51	100 µg/L	---
Naphthalene		✔	1	625	0.20 J	0.11	0.11	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs		✔	1	608	0.250	<0.250	<0.250	0.000064 µg/L	---
Pentachlorophenol	✔		1	625.1-SIM	0.80	<0.80	<0.80	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		✔	1	1664A	4,000	<4,000	<4,000	5.0 mg/L	---
Ethanol	✔		1	1671A	2,000	<2,000	<2,000	Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	8260C	1.0	<1.0	<1.0	70 µg/L	---
tert-Butyl Alcohol	✔		1	8260C	10	<10	<10	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		1	8260C	2.0	<2.0	<2.0	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		✔	1	field	-	6.83	6.83		
Phosphorus, Soluble		✔	1	4500P-E	20	40	40		
Phosphorus, Total		✔	1	4500P-E	611	10	10		

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:

GAC and Ion exchange will be added if needed.

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

The treatment system will consist of a construction dewatering pump that will pump water to a settling tank. Aeration may be provided within the settling tank if needed. The water will then be pumped through at least one set of three in-line canister bag filters. Due to the presence of localized petroleum releases at the CX project, where encountered and if needed, water will be pumped through an oil/water separator, and/or GAC. Depending on the presence of liquid phase petroleum and the potential for metals to be present over the discharge limits, water may be treated using ion-exchange, pH adjustment, coagulation, or flocculation as needed. A Notice of change will be submitted before adding these treatment options.

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: In-line settling tank and bag filters. If needed, aeration, additional holding tanks GAC, oil-water separation, will be added Ion exchange pH adjustment, flocculation, as needed (Notice of Change will be submitted before use of these activities).

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: Bag Filters Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	200
Provide the proposed maximum effluent flow in gpm.	200
Provide the average effluent flow in gpm.	30
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	NA

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:
Will provide in a Notice of Change if additives are needed.

2. Provide the following information for each chemical/additive, using attachments, if necessary:
Will provide in a Notice of Change and applicable Material Safety Data Sheets (MSDS) and Safety Data Sheets (SDS) if additives are needed.
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.

Please refer to cover letter which includes: Site schematic, treatment system diagram, data table summarizing influent concentrations with supporting laboratory reports, and correspondence with the Massachusetts Department of Environmental Protection (MassDEP) and United States Wildlife Service.

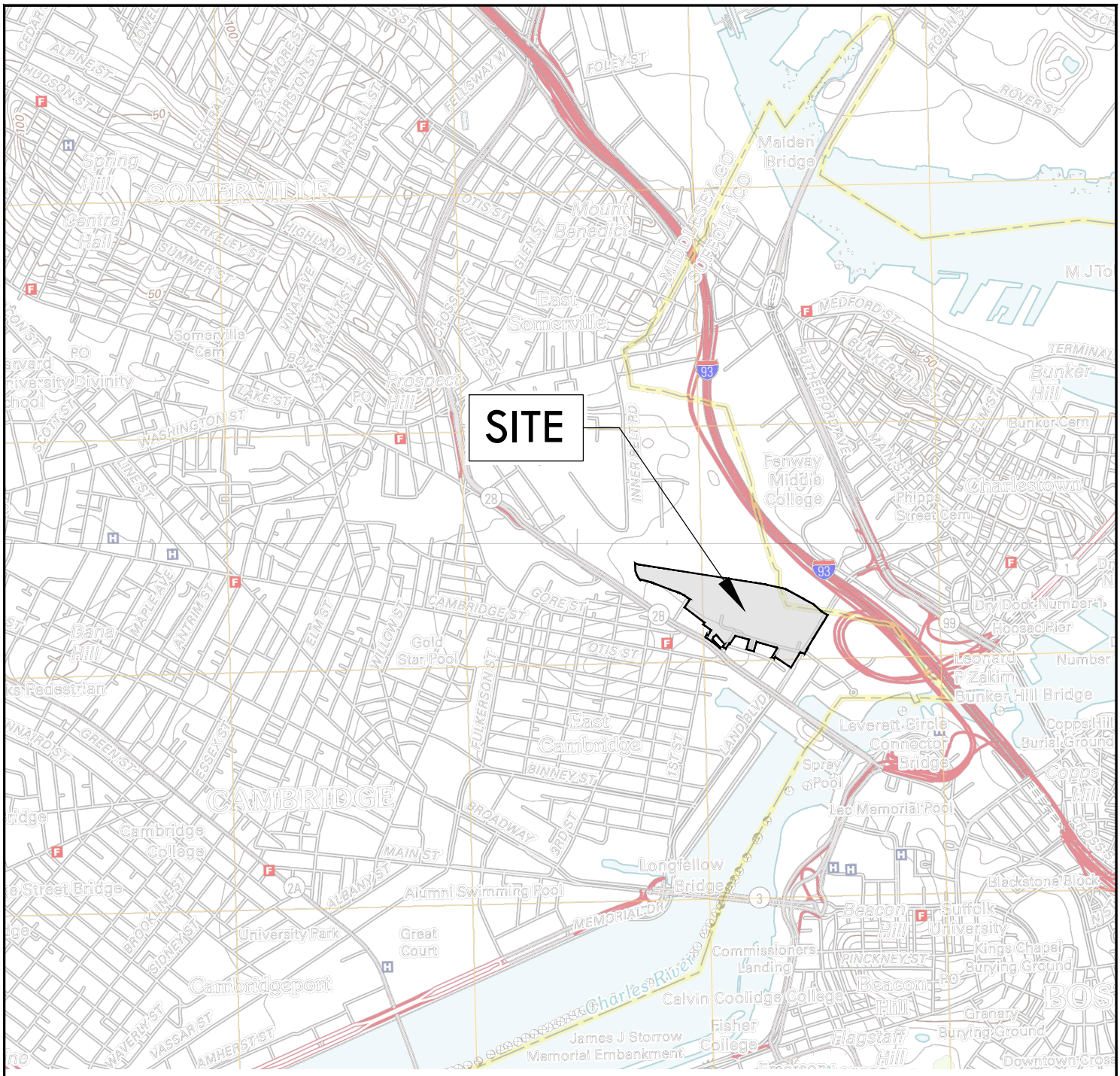
Has the operator attached data, including any laboratory case narrative and chain of custody used to support the application? (check one): ■ Yes ☐ No

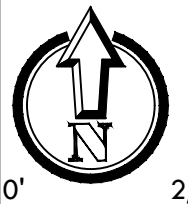
Has the operator attached the certification requirement for the Best Management Practices Plan (BMPP)? (check one): ■ Yes ☐ No

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 Remediation General Permit will be developed, maintained at the site, implemented upon initiation of discharge and modified as needed to meet discharge limits.
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:	Date: 10/27/18
Print Name and Title:	Mark Johnson, Director of Development on behalf of LLC





0' 2,000' 4,000' 6,000'

SCALE: 1" = 2,000'

SOURCE:
U.S.G.S. BOSTON SOUTH QUADRANGLE, 7.5 MINUTE (2012)
U.S.G.S. BOSTON NORTH QUADRANGLE, 7.5 MINUTE (2012)

SITE LOCUS MAP

CAMBRIDGE CROSSING
Cambridge, Somerville, and Boston, Massachusetts

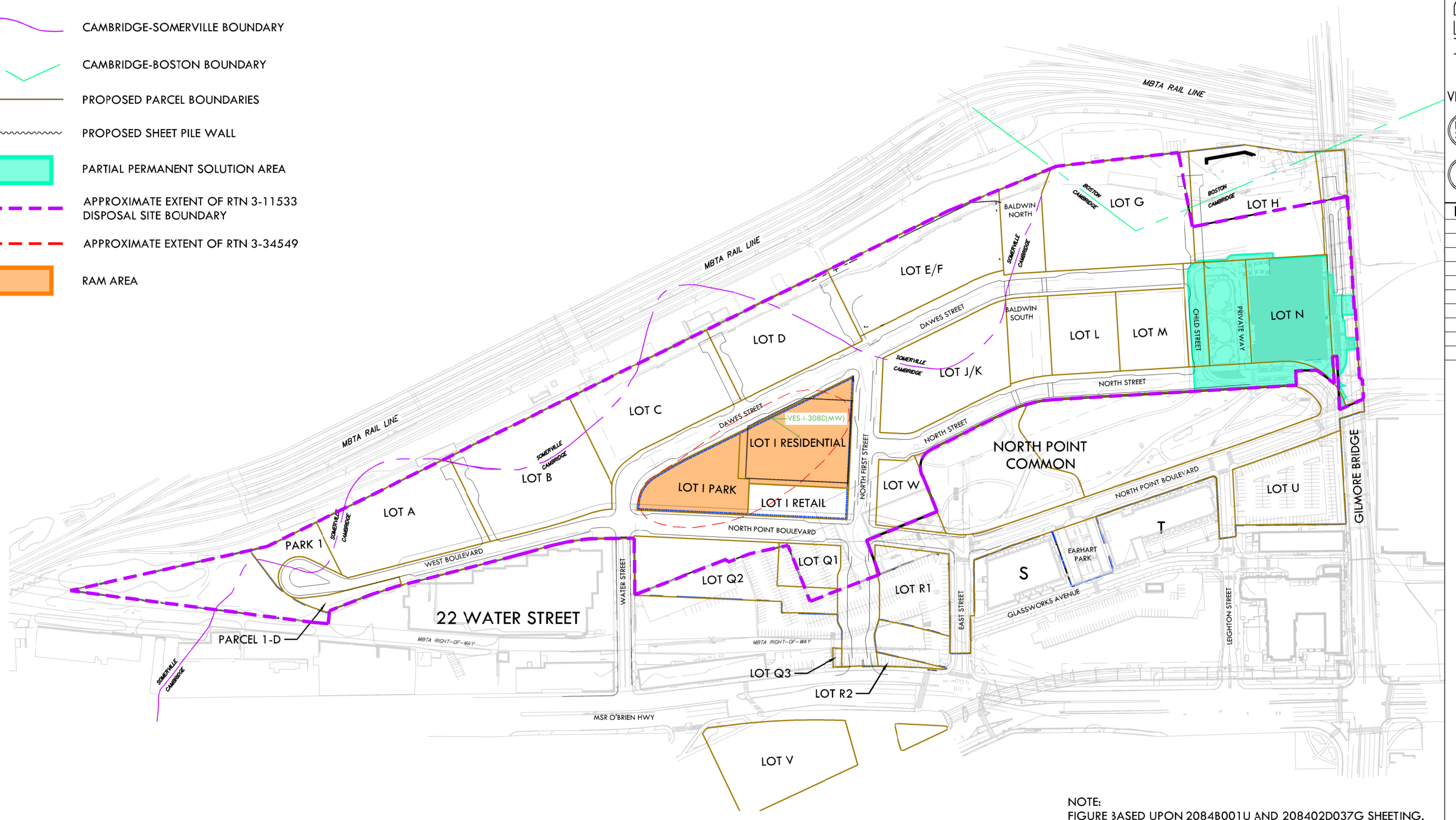
File No.:	35663
Date:	OCTOBER 2018
Drawn:	LPV
Checked:	JMF
Job No.:	35663

FIGURE 1

VERTEX®
100 NORTH WASHINGTON STREET
BOSTON, MA 02114
(T): 617.275.5407
VERTEXENG.COM

LEGEND

- CAMBRIDGE CROSSING BOUNDARY (FORMERLY THE NORTHPOINT DEVELOPMENT SITE)
- FORMER PROPERTY BOUNDARY
- CAMBRIDGE-SOMERVILLE BOUNDARY
- CAMBRIDGE-BOSTON BOUNDARY
- PROPOSED PARCEL BOUNDARIES
- PROPOSED SHEET PILE WALL
- PARTIAL PERMANENT SOLUTION AREA
- APPROXIMATE EXTENT OF RTN 3-11533 DISPOSAL SITE BOUNDARY
- APPROXIMATE EXTENT OF RTN 3-34549
- RAM AREA



NOTE:
FIGURE BASED UPON 2084B001U AND 208402D037G SHEETING, DATED OCTOBER 26, 2018 FROM BEALS & THOMAS, INC.

0' 250' 500' 750'

SCALE: 1" = 250'

VERTEX®
100 NORTH WASHINGTON STREET
BOSTON, MA 02114
(T): 781.952.6000
VERTEXENG.COM

REVISIONS

Figure 2

File No.:	35663
Date:	10.11.2019
Drawn:	MWL
Checked:	JMF
Job No.:	35663

SITE PLAN
CAMBRIDGE CROSSING
COMBRIDGE, SOMERVILLE, & BOSTON, MASSACHUSETTS

Figure 3. Potential On-Site Discharge Locations

Potential Points of Discharge to on-site storm water system

N

LOT EF

LOT G

LOT H

LOT I-1

BOSTON
SOMERVILLE

SOMERVILLE
CAMBRIDGE

BOSTON
CAMBRIDGE

DAWES STREET

CHILD STREET

AUSTIN ST

CHARLESTOWN AVENUE

NORTH STREET

NORTH POINT BOULEVARD

NORTH FIRST STREET

LEIGHTON STREET

EARHART STREET

GLASSWORKS AVENUE

To the Lechmere Canal

METERS 0 5 10 25
FEET 0 20 40 80 120

DEWATERING LOCATIONS

DRAWN BY: FDW	DATE: 11/26/2018
CHECKED BY: PAT	FILE NO.: 208402D040G
JOB NO.: 2084.02	SCALE: 1" = 40'

Enter number values in green boxes below

Enter values in the units specified

↓

0	Q_R = Enter upstream flow in **MGD**
0.36	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

↓

0

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

Leave 0 if no entry

Enter values in the units specified

↓

1310	C_d = Enter influent hardness in **mg/L** $CaCO_3$
86.2	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

Freshwater only

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

↓

8.24	pH in **Standard Units**
13.6	Temperature in **°C**
0.136	Ammonia in **mg/L**
86.2	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
0	Copper in **µg/L**
0	Iron in **µg/L**
0	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	TRC in **µg/L**
3.95	Ammonia in **mg/L**
0	Antimony in **µg/L**
6.31	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
0	Copper in **µg/L**
3,710.00	Iron in **µg/L**
11.35	Lead in **µg/L**
0	Mercury in **µg/L**
2.71	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
0	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0.06	Benzo(a)anthracene in **µg/L**
0.07	Benzo(a)pyrene in **µg/L**
0.08	Benzo(b)fluoranthene in **µg/L**
0.07	Benzo(k)fluoranthene in **µg/L**
0.05	Chrysene in **µg/L**
0.06	Dibenzo(a,h)anthracene in **µg/L**
0.07	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

I. Dilution Factor Calculation Method

A. 7Q10

Refer to Appendix V for determining critical low flow; must be approved by State before use in calculations.

B. Dilution Factor

Calculated as follows:

$$Df = \frac{Q_R + Q_P}{Q_P}$$

Q_R = 7Q10 in MGD

Q_P = Discharge flow, in MGD

II. Effluent Limitation Calculation Method

A. Calculate Water Quality Criterion:

Step 1. Downstream hardness, calculated as follows:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

C_r = Downstream hardness in mg/L

Q_d = Discharge flow in MGD

C_d = Discharge hardness in mg/L

Q_s = Upstream flow (7Q10) in MGD

C_s = Upstream (receiving water) hardness in mg/L

Q_r = Downstream receiving water flow in MGD

Step 2. Total recoverable water quality criteria for hardness-dependent metals, calculated as follows:

Total Recoverable Criteria = $\exp\{m_c [\ln(h)] + b_c\}$

m_c = Pollutant-specific coefficient (m_a for silver)

b_c = Pollutant-specific coefficient (b_a for silver)

ln = Natural logarithm

h = Hardness calculated in Step 1

Step 3. Total recoverable water quality criteria for non-hardness-dependent metals, calculated as follows:

$$\text{WQC in µg/L} = \frac{\text{dissolved WQC in µg/L}}{\text{dissolved to total recoverable factor}}$$

B. Calculate WQBEL:

Step 1. WQBEL calculated as follows for parameter sampled in and detected in the receiving water:

$$C_d = \frac{Q_r C_r - Q_s C_s}{Q_d}$$

C_r = Water quality criterion in µg/L

Q_d = Discharge flow in MGD

C_d = WQBEL in µg/L

Q_s = Upstream flow (7Q10) in MGD

C_s = Ustream (receiving water) concentration in µg/L

Q_r = Downstream receiving water flow in MGD

Step 2. WQBEL calculated as follows for parameter not sampled in or not detected in receiving water:

$$C_d = (Q_r/Q_d) \times C_r$$

C_r = Water quality criterion in µg/L

Q_d = Discharge flow in MGD

Q_r = Downstream receiving water flow in MGD

C. Determine if a WQBEL applies:

Step 1. For parameter sampled in and detected in receiving water, downstream concentrations calculated as follows:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

C_r = Downstream concentration in µg/L

Q_d = Discharge flow in MGD

C_d = Influent concentration in µg/L

Q_s = Upstream flow (7Q10) in MGD

C_s = Upstream (receiving water) concentration in µg/L

Q_r = Downstream receiving water flow in MGD

The WQBEL applies if:

1) the projected downstream concentration calculated in accordance with Step 1, above, and the discharge concentration of a parameter are greater than the WQC calculated for that parameter in accordance with II.A, above

AND

2) the WQBEL determined for that parameter in accordance with II.B, above, is less than the TBEL in Part 2.1.1 of the RGP for that parameter. Otherwise, the TBEL in Part 2.1.1 of the RGP for that parameter applies.

Step 2. For a parameter not sampled in or not detected in receiving water, the WQBEL applies if:

1) the discharge concentration of a parameter is greater than the WQBEL determined for that parameter in accordance with II.A or II.B, above;

AND

2) the WQBEL determined for that parameter in accordance with II.A or II.B, above is less than the TBEL in Part 2.1.1 of the RGP for that parameter. Otherwise, the TBEL in Part 2.1.1 of the RGP for that parameter applies.

Dilution Factor	1.0					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**11**	µg/L	50	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	640	µg/L		
Arsenic	**104**	µg/L	10	µg/L		
Cadmium	**10.2**	µg/L	1.8203	µg/L		
Chromium III	**323**	µg/L	708.7	µg/L		
Chromium VI	**323**	µg/L	11.4	µg/L		
Copper	**242**	µg/L	84.1	µg/L		
Iron	5000	µg/L	**1000**	µg/L		
Lead	**160**	µg/L	84.13	µg/L		
Mercury	**0.739**	µg/L	0.91	µg/L		
Nickel	**1450**	µg/L	459.8	µg/L		
Selenium	**235.8**	µg/L	5.0	µg/L		
Silver	**35.1**	µg/L	316.0	µg/L		
Zinc	**420**	µg/L	1059.7	µg/L		
Cyanide	**178**	mg/L	5.2	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	300	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	1.6	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	3.3	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			

D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	2.2	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Benzo(a)pyrene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Benzo(b)fluoranthene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Benzo(k)fluoranthene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Chrysene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Dibenzo(a,h)anthracene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Indeno(1,2,3-cd)pyrene	1.0	µg/L	**0.0038**	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	20	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

Table 1
Summary of Parcel I Groundwater Analytical Results
Cambridge Crossing Development Site
Cambridge, Massachusetts
VERTEX Project No. 35663
Release Tracking Number (RTN) 3-11533

LOCATION			VES-I-308D(MW)	Lechmere Canal
SAMPLING DATE			5/3/2017	-
LABORATORY SAMPLE ID			L1714130-01 L1714130-01 R1	-
PARCEL			I	-
SAMPLE TYPE			Groundwater & NPDES	Receiving Water
ANALYTE	CAS No.	Units		
Total Petroleum Hydrocarbons (TPH)				
TPH	NONE	µg/L	ND(4000)	-
Volatile Organic Compounds (VOCs)				
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	ND(0.5)	-
1,1,1-Trichloroethane	71-55-6	µg/L	ND(0.5)	-
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	ND(0.5)	-
1,1,2-Trichloroethane	79-00-5	µg/L	ND(0.75)	-
1,1-Dichloroethane	75-34-3	µg/L	ND(0.75)	-
1,1-Dichloroethene	75-35-4	µg/L	ND(0.5)	-
1,1-Dichloropropene	563-58-6	µg/L	ND(2.5)	-
1,2,3-Trichlorobenzene	87-61-6	µg/L	ND(2.5)	-
1,2,3-Trichloropropane	96-18-4	µg/L	ND(5)	-
1,2,4-Trichlorobenzene	120-82-1	µg/L	ND(2.5)	-
1,2,4-Trimethylbenzene	95-63-6	µg/L	ND(2.5)	-
1,2-Dibromo-3-chloropropane	96-12-8	µg/L	ND(0.01)	-
1,2-Dibromoethane	106-93-4	µg/L	ND(0.01)	-
1,2-Dichlorobenzene	95-50-1	µg/L	ND(2.5)	-
1,2-Dichloroethane	107-06-2	µg/L	ND(0.5)	-
1,2-Dichloropropane	78-87-5	µg/L	ND(1.8)	-
1,3,5-Trimethylbenzene	108-67-8	µg/L	ND(2.5)	-
1,3-Dichlorobenzene	541-73-1	µg/L	ND(2.5)	-
1,3-Dichloropropane	142-28-9	µg/L	ND(2.5)	-
1,4-Dichlorobenzene	106-46-7	µg/L	ND(2.5)	-
1,4-Dioxane	123-91-1	µg/L	ND(3)	-
2,2-Dichloropropane	594-20-7	µg/L	ND(2.5)	-
2-Hexanone	591-78-6	µg/L	ND(5)	-
Acetone	67-64-1	µg/L	12	-
Acrylonitrile	107-13-1	µg/L	ND(5)	-
Benzene	71-43-2	µg/L	ND(0.5)	-
Bromobenzene	108-86-1	µg/L	ND(2.5)	-
Bromochloromethane	74-97-5	µg/L	ND(2.5)	-
Bromodichloromethane	75-27-4	µg/L	ND(0.5)	-
Bromoform	75-25-2	µg/L	ND(2)	-
Bromomethane	74-83-9	µg/L	ND(1)	-
Carbon disulfide	75-15-0	µg/L	ND(5)	-
Carbon tetrachloride	56-23-5	µg/L	ND(0.5)	-
Chlorobenzene	108-90-7	µg/L	ND(0.5)	-
Chloroethane	75-00-3	µg/L	ND(1)	-
Chloroform	67-66-3	µg/L	ND(0.75)	-
Chloromethane	74-87-3	µg/L	ND(2.5)	-
cis-1,2-Dichloroethene	156-59-2	µg/L	ND(0.5)	-
cis-1,3-Dichloropropene	10061-01-5	µg/L	ND(0.5)	-
Dibromochloromethane	124-48-1	µg/L	ND(0.5)	-
Dibromomethane	74-95-3	µg/L	ND(5)	-
Dichlorodifluoromethane	75-71-8	µg/L	ND(5)	-
Diethyl ether (Ethyl ether)	60-29-7	µg/L	ND(2.5)	-
Ethylbenzene	100-41-4	µg/L	ND(0.5)	-
Hexachlorobutadiene	87-68-3	µg/L	ND(0.5)	-
Isopropylbenzene	98-82-8	µg/L	ND(0.5)	-
Methyl ethyl ketone (2-Butanone)	78-93-3	µg/L	ND(5)	-
Methyl isobutyl ketone (4-Methyl-2-pentanone)	108-10-1	µg/L	ND(5)	-
Methyl tert butyl ether	1634-04-4	µg/L	ND(1)	-
Methylene chloride	75-09-2	µg/L	ND(3)	-
n-Butylbenzene	104-51-8	µg/L	ND(0.5)	-
n-Propylbenzene	103-65-1	µg/L	ND(0.5)	-
Naphthalene	91-20-3	µg/L	ND(2.5)	-
o-Chlorotoluene	95-49-8	µg/L	ND(2.5)	-
o-Xylene	95-47-6	µg/L	ND(1)	-
p-Chlorotoluene	106-43-4	µg/L	ND(2.5)	-
p-Isopropyltoluene	99-87-6	µg/L	ND(0.5)	-
p/m-Xylene	179601-23-1	µg/L	ND(1)	-
sec-Butylbenzene	135-98-8	µg/L	ND(0.5)	-
Styrene	100-42-5	µg/L	ND(1)	-
Tert-Butyl Alcohol	75-65-0	µg/L	ND(10)	-
tert-Butylbenzene	98-06-6	µg/L	0.23	-
Tertiary-Amyl Methyl Ether	994-05-8	µg/L	ND(2)	-
Tetrachloroethene	127-18-4	µg/L	ND(0.5)	-
Tetrahydrofuran	109-99-9	µg/L	ND(5)	-
Toluene	108-88-3	µg/L	ND(0.75)	-
trans-1,2-Dichloroethene	156-60-5	µg/L	ND(0.75)	-
trans-1,3-Dichloropropene	10061-02-6	µg/L	ND(0.5)	-
Trichloroethene	79-01-6	µg/L	ND(0.5)	-
Trichlorofluoromethane	75-69-4	µg/L	ND(2.5)	-
Vinyl chloride	75-01-4	µg/L	ND(1)	-
Total Xylenes	1330-20-7	µg/L	ND(1)	-
1,4-Dichlorobutane	110-56-5	µg/L	ND(5)	-
Ethyl methacrylate	97-63-2	µg/L	ND(5)	-
trans-1,4-Dichloro-2-butene	110-57-6	µg/L	ND(2.5)	-
Vinyl acetate	108-05-4	µg/L	ND(5)	-
Ethanol	64-17-5	µg/L	ND(250)	
Total VOCs	Multiple	µg/L	12.23	-

Table 1
Summary of Parcel I Groundwater Analytical Results
Cambridge Crossing Development Site
Cambridge, Massachusetts
VERTEX Project No. 35663
Release Tracking Number (RTN) 3-11533

LOCATION			VES-I-308D(MW)	Lechmere Canal
SAMPLING DATE			5/3/2017	-
LABORATORY SAMPLE ID			L1714130-01 L1714130-01 R1	-
PARCEL			I	-
SAMPLE TYPE			Groundwater & NPDES	Receiving Water
ANALYTE	CAS No.	Units		
Semivolatile Organic Compounds (SVOCs)				
1,2,4-Trichlorobenzene	120-82-1	µg/L	ND(5)	-
1,2-Dichlorobenzene	95-50-1	µg/L	ND(2)	-
1,3-Dichlorobenzene	541-73-1	µg/L	ND(2)	-
1,4-Dichlorobenzene	106-46-7	µg/L	ND(2)	-
2,4,5-Trichlorophenol	95-95-4	µg/L	ND(5)	-
2,4,6-Trichlorophenol	88-06-2	µg/L	ND(5)	-
2,4-Dichlorophenol	120-83-2	µg/L	ND(5)	-
2,4-Dimethylphenol	105-67-9	µg/L	ND(5)	-
2,4-Dinitrophenol	51-28-5	µg/L	ND(20)	-
2,4-Dinitrotoluene	121-14-2	µg/L	ND(5)	-
2,6-Dinitrotoluene	606-20-2	µg/L	ND(5)	-
2-Chlorophenol	95-57-8	µg/L	ND(2)	-
2-Methylphenol	95-48-7	µg/L	ND(5)	-
2-Nitroaniline	88-74-4	µg/L	ND(5)	-
2-Nitrophenol	88-75-5	µg/L	ND(10)	-
3,3'-Dichlorobenzidine	91-94-1	µg/L	ND(5)	-
3-Methylphenol/4-Methylphenol	108-39-4	µg/L	ND(5)	-
3-Nitroaniline	99-09-2	µg/L	ND(5)	-
4,6-Dinitro-o-cresol	534-52-1	µg/L	ND(10)	-
4-Bromophenyl phenyl ether	101-55-3	µg/L	ND(2)	-
4-Chloroaniline	106-47-8	µg/L	ND(5)	-
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	ND(2)	-
4-Nitroaniline	100-01-6	µg/L	ND(5)	-
4-Nitrophenol	100-02-7	µg/L	ND(10)	-
Aniline	62-53-3	µg/L	ND(2)	-
Azobenzene	103-33-3	µg/L	ND(2)	-
Benzidine	92-87-5	µg/L	ND(20)	-
Benzoic Acid	65-85-0	µg/L	ND(50)	-
Benzyl Alcohol	100-51-6	µg/L	ND(2)	-
Biphenyl	92-52-4	µg/L	ND(2)	-
Bis(2-chloroethoxy)methane	111-91-1	µg/L	ND(5)	-
Bis(2-chloroethyl)ether	111-44-4	µg/L	ND(2)	-
Bis(2-chloroisopropyl)ether	108-60-1	µg/L	ND(2)	-
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	ND(3)	-
Butyl benzyl phthalate	85-68-7	µg/L	ND(5)	-
Carbazole	86-74-8	µg/L	ND(2)	-
Di-n-butylphthalate	84-74-2	µg/L	ND(5)	-
Di-n-octylphthalate	117-84-0	µg/L	ND(5)	-
Dibenzofuran	132-64-9	µg/L	ND(2)	-
Diethyl phthalate	84-66-2	µg/L	ND(5)	-
Dimethyl phthalate	131-11-3	µg/L	ND(5)	-
Hexachlorocyclopentadiene	77-47-4	µg/L	ND(20)	-
Isophorone	78-59-1	µg/L	ND(5)	-
n-Nitrosodi-n-propylamine	621-64-7	µg/L	ND(5)	-
n-Nitrosodimethylamine	62-75-9	µg/L	ND(2)	-
NDPA/DPA	86-30-6	µg/L	ND(2)	-
Nitrobenzene	98-95-3	µg/L	ND(2)	-
p-Chloro-m-cresol	59-50-7	µg/L	ND(2)	-
Phenol	108-95-2	µg/L	ND(5)	-
Pyridine	110-86-1	µg/L	ND(3.5)	-
1-Methylnaphthalene	90-12-0	µg/L	0.12	-
2-Chloronaphthalene	91-58-7	µg/L	0.13	-
2-Methylnaphthalene	91-57-6	µg/L	ND(0.2)	-
Acenaphthene	83-32-9	µg/L	2	-
Acenaphthylene	208-96-8	µg/L	0.26	-
Anthracene	120-12-7	µg/L	0.12	-
Benzo(a)anthracene	56-55-3	µg/L	0.06	-
Benzo(a)pyrene	50-32-8	µg/L	0.07	-
Benzo(b)fluoranthene	205-99-2	µg/L	0.08	-
Benzo(ghi)perylene	191-24-2	µg/L	0.09	-
Benzo(k)fluoranthene	207-08-9	µg/L	0.07	-
Chrysene	218-01-9	µg/L	0.05	-
Dibenzo(a,h)anthracene	53-70-3	µg/L	0.06	-
Fluoranthene	206-44-0	µg/L	0.07	-
Fluorene	86-73-7	µg/L	0.66	-
Hexachlorobenzene	118-74-1	µg/L	ND(0.8)	-
Hexachlorobutadiene	87-68-3	µg/L	ND(0.5)	-
Hexachloroethane	67-72-1	µg/L	ND(0.8)	-
Indeno(1,2,3-cd)Pyrene	193-39-5	µg/L	0.07	-
Naphthalene	91-20-3	µg/L	0.11	-
Pentachlorophenol	87-86-5	µg/L	ND(0.8)	-
Phenanthrene	85-01-8	µg/L	0.14	-
Pyrene	129-00-0	µg/L	0.06	-
Total SVOCs	Multiple	µg/L	4.22	
Dissolved Metals				
Antimony, Dissolved	7440-36-0	µg/L	3.7	-
Arsenic, Dissolved	7440-38-2	µg/L	6.4	-
Cadmium, Dissolved	7440-43-9	µg/L	ND(1)	-
Copper, Dissolved	7440-50-8	µg/L	ND(1)	
Lead, Dissolved	7439-92-1	µg/L	3.7	-
Mercury, Dissolved	7439-97-6	µg/L	ND(0.2)	-
Nickel, Dissolved	7440-02-0	µg/L	0.9	-
Selenium, Dissolved	7782-49-2	µg/L	ND(5)	-
Silver, Dissolved	7440-22-4	µg/L	ND(1)	-
Zinc, Dissolved	7440-66-6	µg/L	ND(10)	-
Iron, Dissolved	7439-89-6	µg/L	3500	-

Table 1
Summary of Parcel I Groundwater Analytical Results
Cambridge Crossing Development Site
Cambridge, Massachusetts
VERTEX Project No. 35663
Release Tracking Number (RTN) 3-11533

LOCATION			VES-I-308D(MW)	Lechmere Canal
SAMPLING DATE			5/3/2017	-
LABORATORY SAMPLE ID			L1714130-01 L1714130-01 R1	-
PARCEL			I	-
SAMPLE TYPE			Groundwater & NPDES	Receiving Water
ANALYTE	CAS No.	Units		
Total Metals				
Antimony, Total	7440-36-0	µg/L	ND(4)	-
Arsenic, Total	7440-38-2	µg/L	6.31	-
Cadmium, Total	7440-43-9	µg/L	ND(0.2)	-
Chromium, Total	7440-47-3	µg/L	ND(10)	-
Copper, Total	7440-50-8	µg/L	ND(1)	-
Iron, Total	7439-89-6	µg/L	3710	-
Lead, Total	7439-92-1	µg/L	11.35	-
Mercury, Total	7439-97-6	µg/L	ND(0.2)	-
Nickel, Total	7440-02-0	µg/L	2.71	-
Selenium, Total	7782-49-2	µg/L	ND(5)	-
Silver, Total	7440-22-4	µg/L	ND(1)	-
Zinc, Total	7440-66-6	µg/L	ND(10)	-
Chromium, Trivalent	16065-83-1	µg/L	ND(10)	
Chromium, Hexavalent	18540-29-9	µg/L	ND(10)	-
Polychlorinated Biphenyls (PCBs)				
Aroclor 1016	12674-11-2	µg/L	ND(0.25)	-
Aroclor 1221	11104-28-2	µg/L	ND(0.25)	-
Aroclor 1232	11141-16-5	µg/L	ND(0.25)	-
Aroclor 1242	53469-21-9	µg/L	ND(0.25)	-
Aroclor 1248	12672-29-6	µg/L	ND(0.25)	-
Aroclor 1254	11097-69-1	µg/L	ND(0.25)	-
Aroclor 1260	11096-82-5	µg/L	ND(0.25)	-
Cyanide				
Cyanide, Total	57-12-5	µg/L	ND(20)	-
General Chemistry				
Chlorine, Total Residual	NONE	µg/L	ND(20)	-
Nitrogen, Ammonia	7664-41-7	µg/L	3950	136
pH	12408-02-5	SU	6.83	8.24†
Phenolics, Total	NONE	µg/L	ND(30)	-
Phosphorus, Soluble	7723-14-0	µg/L	40	-
Phosphorus, Total	7723-14-0	µg/L	611	-
Solids, Total Suspended	NONE	µg/L	14,000	-
Temperature (field measured in °C)	NONE	°C	14.15	13.6†
Anions by Ion Chromatography				
Chloride	16887-00-6	µg/L	1,280,000	-
Hardness				
Hardness	NONE	µg/L	1,310,000**	86,200

Notes

1. CAS No. = Chemical Abstract Service Number.
2. Regulatory criteria are established under the Massachusetts Contingency Plan (MCP).
3. UCL = Upper Concentration Limit.
4. - = MCP Standard not currently established or sample was not analyzed for specific analyte.
5. ND = Not Detected above the laboratory reporting limit shown in parenthesis.
6. µg/L = micrograms per liter.
7. mg CaCO3/L = milligrams of calcium carbonate per liter.
8. SU = Standard Units.
9. µmhos/cm = micromhos per centimeter.
10. For analytes without published UCL values, the default UCL of 10,000 µg/L was used in accordance with 310 Code of Massachusetts Regulat
11. † = Field Measured.
12. TBEL = Technology-Based Effluent Limitation
13. WQBEL - Water Quality-based Effluent Limitation
14. * = Calculated WQBEL value
15. ** = Influent Hardness value from well VES-J/K-215 (MW)

add blower for aeration as needed to first compartment of sed tank for TSS control

312319.1.4.2.a,e

Additional settlement tanks may be added to increase storage capacity as directed if site logistics allow. The flow from one weir tank to the other will be by gravity with the outlet from the first tank at a higher invert elevation than the inlet to the second tank

SETTLEMENT TANK CALCLULATIONS

- SETTLEMENT TANK MINIMUM DEPTH 4' BELOW OUTLET
- TANK SURFACE ARE (LXW) SHOULD EQUAL FLOW RATE (GPM) X 0.8(SF/GPM) FOR EFFECTIVE SETTLEMENT
- USIING AND 8'X20' TANK, THE MAX ALLOWABLE FLOW RATE= (8X20)/0.8=200 GPM

Will be included initially

May be added without a Notice of Change

May be added with a Notice of Change

MISCELLANEOUS HOSES & FITTINGS

SAMPLING PORT (3/8" DIAMETER)

SAMPLING PORT (3/8" DIAMETER)

SEDIMENTATION TANK
25cy 8'x20'x5'

BAG FILTERS

INFLUENT

SAMPLING PORT (3/8" DIAMETER)

chemical aid settling system components added to influent prior to first sed tank if necessary

pH ADJUSTMENT ADDITIVE

carbon filter

or ion exchange vessels

oil/water separator -

DISCHARGE LOCATION

WATER METER W/ TOTALIZER

SAMPLING PORTS (3/8" DIAMETER)

pH ADJUSTMENT

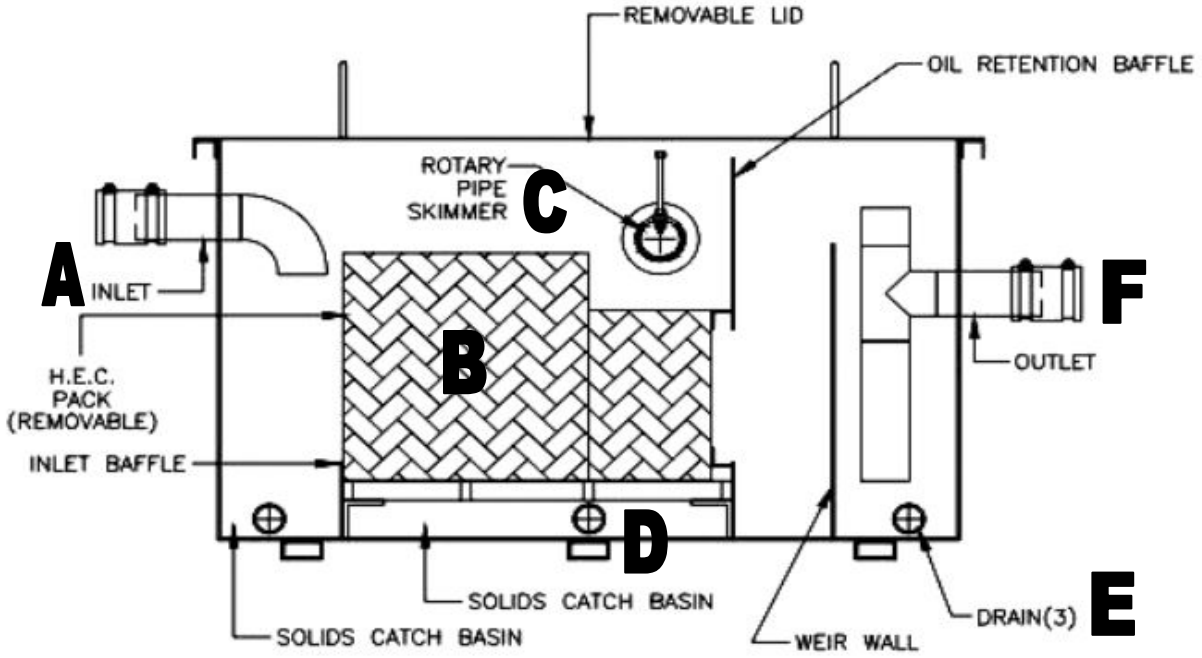
as needed

IF REQUIRED TO MEET DISCHARGE REQUIRMENTS

CAMBRIDGE CROSSING PARCEL I DEWATERING TREATMENT SYSTEM	A.A. WILL CORPORATION 145 ISLAND STREET STOUGHTON, MA	DATE: 9/26/19 DRAWN: SRB SCALE: NTS	SKETCH 1

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

Environmental
Oil Water Separator



Specifications:

- Rated for 50 gpm
- Manual drain line for NAPL
- Coalescing Media

A: Inlet
B: Separation Chamber with Coalescing Media
C: Drain Line for Oil/NAPL
D: Clarifier with Sludge Drain Line
E: Clean Water Chamber

pH Adjustment System Components
pH Adjustment Reagent MSDS Sheets
(Hydrochloric Acid, Caustic Soda, Carbon Dioxide)

BL 7916 • BL 7917

pH & ORP Measuring & Dosing System

Black Stone

- Accurate and affordable
- Controller and dosing pump in one compact unit
- Proportional dosing
- Corrosion resistant housing
- Easy to install

This series of instruments will mount easily in your plant using a minimal amount of wall space. The controls and pumphead are located in the front to allow easy access. They offer accurate measurements with unbeatable performance in one compact, affordable unit.

ISO 9001 Certified

1 Stop Shopping for All Your Water Treatment Needs

HANNA® instruments
Water Analysis & Control Division

High Performance pH & ORP Controller & Dosing Pump to Maximize Efficiency

2 Advanced Instruments in 1

MEADOS pumps combine the powerful BlackStone dosing pumps with the state-of-the-art controllers that Hanna is famous for. These unique products were developed by HANNA for measuring and controlling pH or ORP and regulated dosing of various chemicals. This latest innovation eliminates the need for multiple instruments by combining two instruments into one. No more complicated installations, wiring, or compatibility problems. This compact unit features accurate regulation, proportional dosing, alarm and recorder signals and much more all in one meter.

Easy Installation

Designed with mounting holes in the rugged base, BlackStone pump/controllers are simple to install. There is no need for any additional hardware. All the controls and pump assemblies are conveniently located on the front of the unit. If the operator must access the pump head or control panel for any reason, there is no need to uninstall the unit.

Rugged Construction

BlackStone pump/controllers are housed in rugged, fiber-reinforced, polypropylene casings. They are IP55 rated, preventing the intrusion of liquids. The material used for the housing resists corrosion caused by most chemicals, protecting the unit from hazardous spills and splashes.

Superior Materials

BlackStone pumps use PVDF, FPM/FKMand PTFE materials for all components in contact with the chemicals being dosed. These materials have properties which enable them to resist even the most corrosive chemicals in the industry. BlackStone's choice of material makes the pump more versatile, allowing it to handle a wider variety of chemicals.

Simple Pump Action

A positive displacement solenoid with few moving parts make BlackStone pumps more reliable than motor driven pumps. With no rotating parts, gears or cams, part wear and oiling associated with motor driven pumps is eliminated, drastically reducing any chance of mechanical failure.

BL 7916
pH Controller & Pump

- pH controller and dosing pump in one compact unit.
- ±0.01 pH accuracy with unbeatable performance.
- Isolated 4 to 20 mA recorder output.
- Proportional dosing slows the pump down when the measured pH level approaches the setpoint which ensures precise dosage and avoids costly waste of chemicals due to overdosage.
- Alarm contact is activated whenever the pH value varies by more than 2 pH units from the setpoint.
- Auxiliary contacts allow the user to attach a mixer or priming pump that is activated only when the pump is dosing.
- PVDF, FPM/FKM & PTFE materials are used for all parts that come into contact with liquid.

Specifications	BL 7916U
Range	0.00 to 14.00 pH
Resolution	0.01 pH
Accuracy (20°C/68°F)	±0.01 pH
Typical EMC Deviation	±0.1 pH
Flow Rate	See table on next page
Input	High impedance 10^{12} Ohm
Calibration	Offset: ±1 pH by offset printer; Slope: 85 to 115% by slope trimmer
Dosage	Proportional: acid or base. User-selectable
Recorder Output	4 to 20 mA, isolated
Dosing Contact	Isolated, 2 A, Max. 240V, resistive load, 1,000,000 strokes
Alarm Relay	Isolated, 2 A, Max. 240V, resistive load, 1,000,000 strokes
Power Supply	115V ±15% (40W)
Environment	0 to 50°C (32 to 122°F); RH 85% non-condensing
Dimensions	7.1 x 8.7 x 5.6" (181 x 221 x 142 mm)
Weight	11 lb. (5 Kg)

Accessories and Replacement Parts for BL 7916

HI 1001 ..... Plastic in-line pH electrode
HI 721101 ..... Pumphead, O-ring & 6 screws
HI 721102 ..... Discharge valve assembly
HI 721103 ..... Suction valve assembly
HI 721004 ..... Injection valve assembly
HI 721005 ..... Foot valve assembly
HI 721008 ..... 4 x ceramic weight
HI 7020L ..... ORP testing solution, 16.9 oz. (500 mL)
HI 7091L ..... Reducing solution, 16.9 oz. (500 mL)
HI 7092L ..... Oxidizing solution, 16.9 oz. (500 mL)
HI 7004L ..... pH 4.01 buffer solution, 16.9 oz. (500 mL)
HI 7007L ..... pH 7.01 buffer solution, 16.9 oz. (500 mL)
HI 7010L ..... pH 10.01 buffer solution, 16.9 oz. (500 mL)
HI 767/P ..... Power plug (5 pcs)
HI 7671/P ..... Outlet plug (5 pcs)
HI 8427 ..... pH & ORP electrode simulator
HI 931001 ..... pH & ORP electrode simulator

BL 7917
ORP Controller & Pump

- ORP controller and dosing pump in one compact unit.
- ±5 mV accuracy with unbeatable performance.
- Isolated 4 to 20 mA recorder output.
- Proportional dosing slows the pump down when the measured ORP level approaches the set value which avoids overdosage of oxidizing or reducing agents.
- Alarm contact is activated whenever the ORP value varies by more than 200 mV from the set point.
- Auxiliary contacts allow the user to attach a mixer or priming pump that is activated only when the pump is dosing.
- PVDF, FPM/FKM & PTFE materials are used for all parts that come into contact with liquid.

Specifications	BL 7917U
Range	±999 mV
Resolution	1 mV
Accuracy (20°C/68°F)	±5 mV
Typical EMC Deviation	±6 mV
Flow Rate	See table below
Input	High impedance 10^{12} Ohm
Calibration	Offset: ±2 pH by offset printer; Slope: 85 to 115% by slope trimmer
Dosage	Proportional: oxidizing or reducing. User-selectable
Recorder Output	4 to 20 mA, isolated
Dosing Contact	Isolated, 2 A, Max. 240V, resistive load, 1,000,000 strokes
Alarm Relay	Isolated, 2 A, Max. 240V, resistive load, 1,000,000 strokes
Power Supply	115V ±15% (40W)
Environment	32 to 122°F (0 to 50°C); RH 85% non-condensing
Dimensions	7.1 x 8.7 x 5.6" (181 x 221 x 142 mm)
Weight	11 lb. (5 Kg)

Accessories and Replacement Parts for BL 7917

HI 2001 .....Plastic in-line ORP electrode
HI 721101 .....Pumphead, O-ring & 6 screws
HI 721102 .....Discharge valve assembly
HI 721103 .....Suction valve assembly
HI 721004 .....Injection valve assembly
HI 721005 .....Foot valve assembly
HI 721008 .....4 x ceramic weights
HI 7020L .....ORP testing solution, 16.9 oz. (500 mL)
HI 7091L .....Reducing solution, 16.9 oz. (500 mL)
HI 7092L .....Oxidizing solution, 16.9 oz. (500 mL)

BL 7916 & BL 7917 FLOW/PRESSURE	
PSI	GPH
7.4	3.5
14.7	3.0
29.4	2.6
44.1	2.3
58.8	2.0

Proportional Dosing

The BlackStone controller/pump strokes at full capacity when the measured value deviates by more than 1.5 pH or 150 mV from the set value. A proportional control slows down the stroke rate as the measured value approaches the user-selectable value, avoiding overdosage of chemicals. This feature makes the pump's dosing more accurate, saves chemicals and eliminates unnecessary and costly corrections of your processes, especially with slow reacting chemicals.

Isolated Recorder Output

To enhance troubleshooting and provide the user with the ability to record data while monitoring, BlackStone's controller/pumps provide a recorder output. By simply attaching a recorder to the instrument's 4 to 20 mA output contacts conveniently located on the front panel, you can obtain a hard copy of the results on demand.

Alarm Output

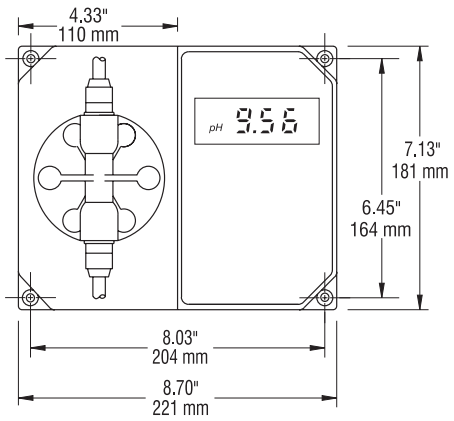
When monitoring and controlling pH and ORP levels in a process, it is very important that any potential problem does not go unattended. The Hanna MEADOS units incorporate an alarm system that will alert the user if the reaction is not within certain guidelines. The alarm of the BL 7916 will be activated if the measured pH value is 2 pH units lower than the setpoint (If dosing acid, this indicates overdosage, a common symptom of siphoning). The alarm will also activate if the value is 2 pH higher than the setpoint (If dosing acid, this is an indication of insufficient dosage, a common symptom of the lack of chemicals). The BL 7917's alarm will activate if the mV value is 200 mV lower than the setpoint (if dosing reducing chemicals, this indicates overdosage). The alarm will also activate if the value is 200 mV higher than the setpoint (if dosing reducing chemicals, this is an indication of lack of chemicals).

Auxiliary Dosing Contacts

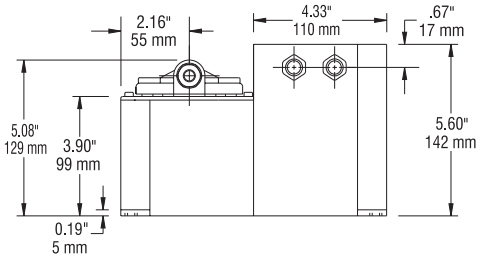
The auxiliary dosing contacts of the MEADOS units are closed whenever the pump is dosing. This solution offers considerable advantages, especially for small plants where these pumps need to be the only equipment left running. This will spare other equipment such as mixers, priming pumps etc. With this feature activated, a mixer can be automatically started when the pump is dosing.

Mechanical Dimensions for the Meados pH & ORP measuring & dosing systems

Front View



Bottom View



Accessories

HI 721101
This kit contains the PVDF pumphead, PTFE coated O-ring, 6 screws and washers.

HI 721102
This kit contains all the necessary replacement parts for your discharge valve assembly. Complete with a FPM/FKM O-ring, glass valve ball, valve spacer and seat, head nipple and tube nut to secure the assembled parts.

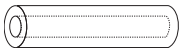
HI 721103
HI 721103 is the suction valve assembly. Complete with a FPM/FKM O-ring, glass valve ball, valve spacer and seat, head nipple, and tube nut to secure the assembled parts.

HI 721004
The HI 721004 comes complete with an injection nipple, PTFE coated spring, glass valve ball, and a valve assembly.

HI 721005
This kit contains a filter with a filter holder and a valve assembly.

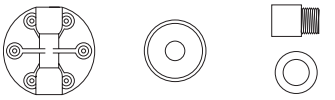
HI 721008
This kit contains 4 ceramic weights.

HI 721008



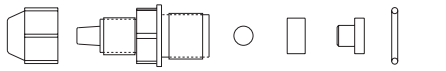
CERAMIC WEIGHT

HI 721101



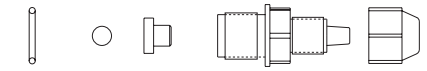
PUMPHEAD | TEFLON® COATED O-RING | 6 SCREWS & WASHERS

HI 721102



TUBE NUT | HEAD NIPPLE | CHECK BALL | SPACER | VALVE SEAT | VITON® O-RING

HI 721103

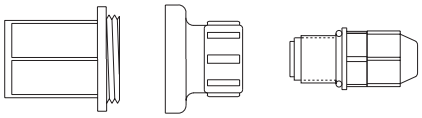


VITON® O-RING | CHECK BALL | VALVE SEAT | HEAD NIPPLE | TUBE NUT

HI 721004

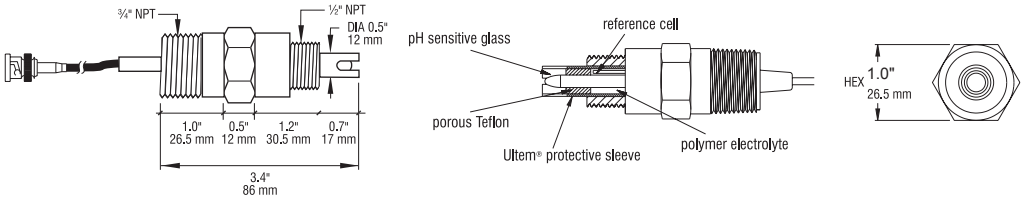
INJECTION NIPPLE | KYNAR® SPRING | CHECK BALL | VALVE ASSEMBLY

HI 721005



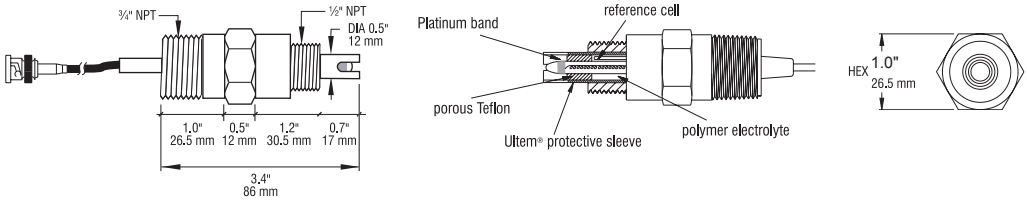
FILTER | FILTER HOLDER | VALVE ASSEMBLY

HI 1001
Combination pH Electrode



Specifications	HI 1001
Reference System	
Junction	Double
Type	PTFE
Electrolyte	Polymer
Temperature	23 to 176°F (-5 to 80°C)
Max Pressure	87 psi (6 bar)
Lead	
Connector	BNC
Cable	10' (3 m)

HI 2001
Combination ORP Platinum Electrode



Specifications	HI 2001
Reference System	
Junction	Double
Type	PTFE
Electrolyte	Polymer
Temperature	23 to 176°F (-5 to 80°C)
Max Pressure	87 psi (6 bar)
Lead	
Connector	BNC
Cable	10' (3 m)

Authorized Distributor:

HANNA® instruments
Water Analysis & Control Division

ISO 9001 Certified

P/L WACDBL7916BL 7917 07/03 PRINTED IN USA

Material Safety Data Sheet

Carbon Dioxide

Section 1. Chemical product and company identification

Product Name : Carbon Dioxide

Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use : Synthetic/Analytical chemistry.

MSDS# : 001013

Date of Preparation/Revision : **4/11/2005.**

In case of emergency : 1-800-949-7937

Section 2. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Carbon Dioxide	124-38-9	100	**ACGIH TLV (United States, 9/2004).** STEL: 54000 mg/m^3 15 minute(s). Form: All forms STEL: 30000 ppm 15 minute(s). Form: All forms TWA: 9000 mg/m^3 8 hour(s). Form: All forms TWA: 5000 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** STEL: 54000 mg/m^3 15 minute(s). Form: All forms STEL: 30000 ppm 15 minute(s). Form: All forms TWA: 9000 mg/m^3 10 hour(s). Form: All forms TWA: 5000 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 9000 mg/m^3 8 hour(s). Form: All forms TWA: 5000 ppm 8 hour(s). Form: All forms

Section 3. Hazards identification

Physical state : Gas.

Emergency overview : Warning!

CONTENTS UNDER PRESSURE.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, CARDIOVASCULAR SYSTEM, SKIN, EYES, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Avoid contact with skin and clothing. Avoid breathing gas. Do not puncture or incinerate container. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Contact with rapidly expanding gas, liquid, or solid can cause frostbite.

Routes of entry : Inhalation,Dermal,Eyes

Potential acute health effects

Eyes : Moderately irritating to the eyes.

Skin : Moderately irritating to the skin.

Inhalation : Moderately irritating to the respiratory system.

Ingestion : Ingestion is not a normal route of exposure for gases

Carbon Dioxide

Potential chronic health effects : **CARCINOGENIC EFFECTS** Not available.
MUTAGENIC EFFECTS Not available.
TERATOGENIC EFFECTS: Not available.

Medical conditions aggravated by overexposure : Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

See toxicological Information (section 11)

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Section 5. Fire fighting measures

Flammability of the product : Non-flammable.

Fire fighting media and instructions : Use an extinguishing agent suitable for surrounding fires.

If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area.

No specific hazard.

Special protective equipment for fire-fighters : Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 7. Handling and storage

Handling : Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Do not puncture or incinerate container. Wash thoroughly after handling. High pressure gas. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cryogenic liquids. Prevent entrapment of liquid in closed systems or piping without pressure relief devices. Some materials may become brittle at low temperatures and will easily fracture.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure Controls, Personal Protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

When working with cryogenic liquids, wear a full face shield.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Insulated gloves suitable for low temperatures

Personal protection in case of a large spill : A self-contained breathing apparatus should be used to avoid inhalation of the product.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : 44.01 g/mole

Molecular formula : CO_2

Boiling/condensation point : -78.55°C (-109.4°F)

Melting/freezing point : Sublimation temperature: -78.5°C (-109.3°F)

Critical temperature : 30.9°C (87.6°F)

Vapor pressure : 830 psig

Vapor density : 1.53 (Air = 1)

Specific Volume (ft^3/lb) : 8.77193

Gas Density (lb/ft^3) : 0.114

Physical chemical comments : Not available.

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Section 11. Toxicological information

Toxicity data

IDLH : 40000 ppm

Chronic effects on humans : Causes damage to the following organs: lungs, cardiovascular system, skin, eyes, central nervous system (CNS), eye, lens or cornea.

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material for humans.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Products of degradation : These products are carbon oxides (CO, CO_2).

Toxicity of the products of biodegradation : The product itself and its products of degradation are not toxic.

Environmental fate : Not available.

Environmental hazards : No known significant effects or critical hazards.

Toxicity to the environment : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1013 UN2187	CARBON DIOXIDE Carbon dioxide, refrigerated liquid	2.2	Not applicable (gas).		**Limited quantity** Yes. **Packaging instruction** **Passenger Aircraft** Quantity limitation: 75 kg **Cargo Aircraft** Quantity limitation: 150 kg
TDG Classification	UN1013 UN2187	CARBON DIOXIDE Carbon dioxide, refrigerated liquid	2.2	Not applicable (gas).		**Explosive Limit and Limited Quantity Index** 0.125 **Passenger Carrying Road or Rail Index** 75
Mexico Classification	UN1013 UN2187	CARBON DIOXIDE Carbon dioxide, refrigerated liquid	2.2	Not applicable (gas).		-

Section 15. Regulatory information

United States

U.S. Federal regulations : TSCA 8(b) inventory: Carbon Dioxide

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Carbon Dioxide
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Carbon Dioxide: Sudden Release of Pressure, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean air act (CAA) 112 accidental release prevention: No products were found.

Clean air act (CAA) 112 regulated flammable substances: No products were found.

Clean air act (CAA) 112 regulated toxic substances: No products were found.

State regulations : Pennsylvania RTK: Carbon Dioxide: (generic environmental hazard)
Massachusetts RTK: Carbon Dioxide
New Jersey: Carbon Dioxide

Canada

WHMIS (Canada) : Class A: Compressed gas.

CEPA DSL: Carbon Dioxide

Section 16. Other information

United States

Label Requirements : CONTENTS UNDER PRESSURE.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, CARDIOVASCULAR SYSTEM, SKIN, EYES, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Canada

Label Requirements : Class A: Compressed gas.

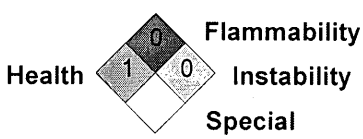
Hazardous Material Information System (U.S.A.) :

Health *	1
Fire hazard	0
Reactivity	0
Personal protection	C

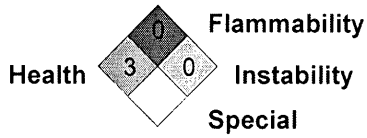
liquid:

Health	3
Fire hazard	0
Reactivity	0
Personal protection	

National Fire Protection Association (U.S.A.) :



liquid:



Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Material Safety Data Sheet (MSDS): HYDROCHLORIC ACID

Company Headquarters
Cooper Natural Resources Chemical Division, Inc.
2407 E. Skelly Drive
Tulsa, OK 74105

24 Hour Emergency Telephone: 505-390-7115

1. Product Identification

Synonyms: Muriatic acid; hydrogen chloride, aqueous
CAS No.: 7647-01-0
Molecular Weight (Hydrogen Chloride): 36.46
Chemical Formula: HCl

2. Composition/Information on Ingredients

Ingredient	CAS No.	Percent	Hazardous
Hydrogen Chloride	7647-01-0	31.5 -35.2%	Yes
Water	7732-18-5	64.8-68.5%	No

3. Hazards Identification

Emergency Overview

Poison! Danger! Corrosive! Liquid and mist cause severe burns to all body tissue. May be fatal if swallowed or inhaled. Inhalation may cause lung damage.

Potential Health Effects

Eye:
Corrosive! Vapor or mist may cause irritation and severe burns and permanent eye damage. May cause painful sensitization to light. May cause conjunctivitis.

Skin:
Corrosive! May be absorbed through the skin in harmful amounts. Contact with liquid is corrosive and causes severe burns and ulceration. May cause photosensitization in certain individuals.

Ingestion:
Corrosive! May cause circulatory system failure. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death. May cause permanent tissue destruction of the esophagus and digestive tract.

Inhalation:
Corrosive! Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma. May cause pulmonary edema and severe respiratory disturbances.

Chronic:
Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause erosion of teeth. May cause conjunctivitis and photosensitization.

4. First Aid Measures

Eyes:
Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.

Skin:
Get medical attention immediately. Rinse area with large amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

Ingestion:
DO NOT INDUCE VOMITING. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical attention immediately.

Inhalation:
Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

5. Fire Fighting Measures

General Information:
In the event of a fire, wear full protective clothing and NIOSH (approved or equivalent), and full protective gear. Not flammable, but reacts with most metals to form flammable hydrogen gas. Cool tanks with water spray until well after fire is out.

Fire and Explosion Hazards: May release toxic gases

Extinguishing Media: Use extinguishing agents appropriate for surrounding fires.

Fire Fighting: Keep unnecessary people away, isolate hazard area and deny entry. Wear NIOSH approved positive-pressure self-contained breathing apparatus. Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products, Stay upwind and keep out of low areas. Cool containers with water.

Hazardous Combustion Products:

Thermal decomposition products or combustion: hydrogen chloride

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in section 8. Isolate hazard area. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e.g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer. US regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities.
If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA)

7. Handling and Storage

Handling:
Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get on skin or in eyes. Do not ingest or inhale.

Storage:
Keep away from heat and flame. Keep out of direct sunlight. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
OSHA Permissible Exposure Limit (PEL): 5 ppm Ceiling
ACGIH Threshold Limit Value (TLV): 5 ppm Ceiling

Ventilation System:
Use closed systems when possible. Provide local exhaust ventilation where vapor or mist may be generated. Ensure compliance with applicable exposure limits.

Personal Protective Equipment

Skin Protection:
Wear impervious protective clothing, including boots, gloves, suitable chemical splash protection (i.e., rubber overalls and jacket buttoned to the collar), as appropriate to prevent skin contact.

Eye Protection:
Use chemical safety goggles and full face shield where splashing is possible. Maintain eye wash fountain and quick drench facilities (safety shower) in immediate work area.

Personal Respirators: (NIOSH Approved):
For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air supplied respirator. **WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.**

9. Physical and Chemical Properties (Hydrochloric Acid)

Physical State: liquid
Appearance: clear
Color: colorless
Odor: pungent odor
Molecular Weight: 36.46
Molecular Formula: HCl
Boiling Point: 140-221 F (60.0-105 C)
Freezing Point: -29 to 5 F (-34 to -15 C)
Vapor Pressure: 14.6-80 mmHg @ 20 C
Vapor Density: (air=1): 1.3 @ 20 C
Specific Gravity (water=1): 1.05-1.18
Bulk Density: 8.75-9.83 lbs/gal
Water Solubility: 100%
PH: 2 (.02% solution)
Volatility: 9-36% by volume
Odor Threshold: 0.3 ppm (causes of factory fatigue)
Evaporation Rate: <1.00 (butyl acetate=1)
Coefficient of water/oil distribution: Not available

10. Stability and Reactivity

Chemical Stability:
Stable under normal temperatures and pressures. Containers may burst when heated.

Hazardous Decomposition Products:
When heated to decomposition emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

Hazardous Polymerization:
Will not occur.

Incompatibilities:
A strong mineral acid, concentrated hydrochloric acid is incompatible with many substances and highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites and formaldehyde.

Conditions to Avoid:
Avoid heat, flames, sparks and other sources of ignition. Contact with water may produce a strong exothermic reaction with spattering. Contact with metals may evolve flammable hydrogen gas. Hydrogen chloride may react with cyanide, forming lethal concentrations of hydrocyanic acid.

11. Toxicological Information

Inhalation rat LC50: 3124 ppm/1H; oral rabbit LD50: 900mg/kg (Hydrochloric acid concentrated); investigated as a tumorigen, mutagen, reproductive effector.

Cancer Lists

Ingredient	Known	-NTP Carcinogen- Anticipated	IARC	Category
Hydrogen Chloride (7647-01-0	No	No		3
Water	No	No		None

12. Ecological Information

Environmental Fate:
When released into the soil, this material is not expected to be biodegrade. When released into the soil, this material may leak into groundwater.

Environmental Toxicity:
This material is expected to be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Reuse or reprocess if possible. Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D002

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: Hydrochloric Acid
UN/NA: UN1789
Hazard Class: 8
Packing Group: II
Information reported for product/size: 475LB

International (Water, I.M.O.)

Proper Shipping name: Hydrochloric Acid
UN/NA: UN1789
Hazard Class: 8
Packing Group: II
Information reported for product/size: 475LB

15. Regulatory Information

U.S. Regulations:

CERCLA sections 102a/103 hazardous substances (40 CFR 302.4):
Hydrogen Chloride (Hydrochloric Acid): 5000 LBS RQ (liquid)
Chlorine: 10 LBS RQ
Sara Title III Section 302 extremely hazardous substances (40 CFR 355.30):
Hydrogen Chloride (Hydrochloric Acid): 500LBS TPQ (gas)

Sara Title III section 311/312 hazardous categories (40 CFR 370.21):
Acute: Yes
Chronic: No
Fire: No
Reactive: No
Sudden Release: No

Sara Title III section 313 (40 CFR 372.65):
Hydrogen Chloride (Hydrochloric Acid): aerosol form only

This product contains a toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. Refer to Section 3.

OSHA Process safety (29CFR1910.1190:
Hydrogen Chloride (Hydrochloric Acid): 5000 LBS TQ (gas)
Chlorine: 1500 LBS TQ

FDA: This material has Generally Recognized as Safe (GRAS) status under specific FDA regulations. Additional information is available from the Code of Federal Register (CFR) which is accessible on the FDA's website.

State Regulations:
California Proposition 65: This product may contain contaminants known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact Customer Service.

16. Other Information

NFPA Ratings:
Health: 3 Flammability: 0 Reactivity: 0

Label Hazard Warning:

POISON! DANGER! CORROSIVE LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED, INHALATION MAY CAUSE LUNG DAMAGE.

Label Precautions:

Do not get in eyes, on skin, or on clothing.
Do not breathe vapor or mist.
Use only with adequate ventilation.
Wash thoroughly after handling.
Store in a tightly closed container.
Remove and wash contaminated clothing promptly.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, **DO NOT INDUCE VOMITING** Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

Product Use:

Chemical intermediate; oil & gas well acidizing; pH control; water treatment; steel pickling and metal cleaning; ore reduction; food processing.

Disclaimer:

****

Cooper Natural Resources Chemical Division, Inc. ("CNR") provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.

CNR makes no representations or warranties, either expressed or implied, including without limitation any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. Accordingly, CNR will not be responsible for damages resulting from use of or reliance upon this information.

****

SAFETY DATA SHEET

OxyChem®

Responsible Care® Good Chemistry at Work

CAUSTIC SODA LIQUID (ALL GRADES)

MSDS No.: M32415 **Rev. Date:** 05/29/2009 **Rev. Num.:** 08

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 5005 LBJ Freeway P.O. Box 809050 Dallas, Tx 75380-9050
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (U.S.); 32.3.575.55.55 (Europe); 1800-033-111 (Australia)
To Request an MSDS: **Customer Service:**	MSDS@oxy.com or 1-972-404-3245 1-800-752-5151 or 1-972-404-3700
Trade Name:	Caustic Soda Diaphragm Grade 10%, 15%, 18%, 20%, 25%, 30%, 35%, 40%, 50%, Caustic Soda Rayon Grade 18%, 20%, 25%, 30%, 50%, 50% Caustic Soda Rayon Grade OS, Caustic Soda Membrane 6%, 18%, 20%, 25%, 30%, 48%, 50%, 50% Caustic Soda Membrane OS, 50% Caustic Soda Diaphragm OS, Caustic Soda Low Salt 50%, 25% Caustic Soda Purified, 50% Caustic Soda Purified, 50% Caustic Soda Purified OS, Caustic Soda Liquid 70/30, Membrane Blended, 50% Caustic Soda Membrane (Northeast), 50% Caustic Soda Diaphragm (West Coast), 50% Blended Rayon Grade Blended, Membrane Cell Liquor
Synonyms:	Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye
Product Use:	Metal finishing, Cleaner, Process chemical, Petroleum industry

2. HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW:

Color:	Colorless to slightly colored
Physical State:	Liquid
Odor:	Odorless
Signal Word:	Danger

MAJOR HEALTH HAZARDS: CORROSIVE. CAUSES BURNS TO THE RESPIRATORY TRACT, SKIN, EYES AND GASTROINTESTINAL TRACT. CAUSES PERMANENT EYE DAMAGE.
PHYSICAL HAZARDS: CORROSIVE. Mixing with water, acid or incompatible materials may cause splattering and release of heat.
ECOLOGICAL HAZARDS: Keep out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters. This material has exhibited moderate toxicity to aquatic organisms.
PRECAUTIONARY STATEMENTS: Avoid breathing vapors or mist. Avoid contact with skin, eyes and clothing. Keep container tightly closed. Wash thoroughly after handling. Use only with adequate ventilation.
****

POTENTIAL HEALTH EFFECTS:

Inhalation: May cause irritation (possibly severe), chemical burns, and pulmonary edema.

Skin contact: May cause irritation (possibly severe) and chemical burns.

Eye contact: May cause irritation (possibly severe), chemical burns, eye damage, and blindness.

Ingestion: May cause irritation (possibly severe), chemical burns, nausea, and vomiting.

Target Organs Effected: Respiratory System, Skin, Eye

Medical Conditions Aggravated by Exposure: Asthma, Respiratory disorders

See Section 11: TOXICOLOGICAL INFORMATION

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component	Concentration (by weight %)	CAS - No.
Water	48.5 - 94.5	7732-18-5
Sodium hydroxide	5.5 - 51.5	1310-73-2
Sodium chloride (NaCl)	1 - 5	7647-14-5

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer basic life support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

Skin Contact: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods. GET MEDICAL ATTENTION IMMEDIATELY.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

Ingestion: Never give anything by mouth to an unconscious or convulsive person. If swallowed, do not induce vomiting. Give large amounts of water. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops. GET MEDICAL ATTENTION IMMEDIATELY.

Notes to Physician: The absence of visible signs or symptoms of burns does NOT reliably exclude the presence of actual tissue damage. Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE-FIGHTING MEASURES

Fire Hazard: Negligible fire hazard.

Extinguishing Media: Use media appropriate for surrounding fire

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water. Avoid contact with skin.

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Flash point: Not flammable

6. ACCIDENTAL RELEASE MEASURES

Occupational Release:
Wear appropriate personal protective equipment recommended in Section 8 of the MSDS. Completely contain spilled material with dikes, sandbags, etc. Shovel dry material into suitable container. Liquid material may be removed with a vacuum truck. Remaining material may be diluted with water and neutralized with dilute acid, then absorbed and collected. Flush spill area with water, if appropriate. Keep product and flush water out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies.

7. HANDLING AND STORAGE

Storage Conditions: Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated. Keep separated from incompatible substances.

7. HANDLING AND STORAGE

Handling Procedures: Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. When mixing, slowly add to water to minimize heat generation and spattering.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA Regulatory Exposure limit(s):

Hazardous Component	CAS - No.	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PEL Ceiling
Sodium hydroxide	1310-73-2	2 mg/m^3	-----	-----

Non-Regulatory Exposure Limit(s):
The Non-Regulatory OSHA limits shown in the table are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).

Hazardous Component	CAS - No.	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Sodium hydroxide	1310-73-2	-----	-----	2 mg/m^3	-----	-----	2 mg/m^3

ENGINEERING CONTROLS: Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear chemical safety goggles with a faceshield to protect against eye and skin contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Contaminated clothing should be removed, then discarded or laundered.

Hand Protection: Wear appropriate chemical resistant gloves

Protective Material Types: Natural rubber, Neoprene, Nitrile

Hazardous Component	Immediately Dangerous to Life/ Health (IDLH)
Sodium hydroxide	10 mg/m^3 IDLH

Respiratory Protection: A NIOSH approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure. If eye irritation occurs, a full face style mask should be used. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Clear to opaque
Color:	Colorless to slightly colored
Odor:	Odorless
Boiling Point/Range:	230 – 291 F (110 – 144 C)

9. PHYSICAL AND CHEMICAL PROPERTIES

Freezing Point/Range:	-26 to 59 F (-32 to 15 C)
Vapor Pressure:	13 - 135 mmHg @ 60 C
Vapor Density (air=1):	No data available
Specific Gravity (water=1):	1.11 – 1.53 @ 15.6 C
Water Solubility:	100%
pH:	14.0 (7.5% solution)
Volatility:	No data available
Evaporation Rate (ether=1):	No data available
Partition Coefficient (n-octanol/water):	No data available

10. STABILITY AND REACTIVITY

Reactivity/ Stability: Stable at normal temperatures and pressures.

Conditions to Avoid: Mixing with water, acid or incompatible materials may cause splattering and release of large amounts of heat. Will react with some metals forming flammable hydrogen gas. Carbon monoxide gas may form upon contact with reducing sugars, food and beverage products in enclosed spaces.

Incompatibilities/ Materials to Avoid: Acids, Halogenated compounds, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys

Hazardous Decomposition Products: Toxic fumes of sodium oxide

Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

Hazardous Component	LD50 Oral	LC50 Inhalation	LD50 Dermal
Sodium hydroxide	Not listed	Not listed	1350 mg/kg (Rabbit)
Sodium chloride (NaCl)	3 g/kg (Rat)	42 g/m^3 (1 hr-Rat)	10 g/kg (Rabbit)

TOXICITY:
The severity of the tissue damage is a function of its concentration, the length of tissue contact time, and local tissue conditions. After exposure there may be a time delay before irritation and other effects occur. This material is a strong irritant and is corrosive to the skin, eyes, and mucous membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact. Inhalation will cause severe irritation, possible burns with pulmonary edema, which may lead to pneumonitis. Skin contact with this material may cause severe irritation and corrosion of tissue. Repeated exposure may cause dermatitis. Eye contact can cause severe irritation, corrosion with possible corneal damage and blindness. Ingestion may cause irritation, corrosion/ulceration, nausea, and vomiting.

CARCINOGENICITY: This product is not classified as a carcinogen by NTP, IARC or OSHA.

12. ECOLOGICAL INFORMATION

AQUATIC TOXICITY: This material has exhibited moderate toxicity to aquatic organisms. Data provided are for sodium hydroxide.

Freshwater Fish Data:
LC50 brook trout: 25 ppm/24 hr
LC50 king salmon: 48 ppm
Invertebrate Toxicity Data:
EC50 daphnia magna: 100 ppm
EC50 shrimp: 33 – 100 ppm/48 hr
EC50 cockle: 330 – 1000 ppm/48 hr

BIODEGRADATION: This material is inorganic and not subject to biodegradation.

PERSISTENCE: This material is alkaline and may raise the pH of surface waters with low buffering capacity. This material is believed to exist in the disassociated state in the environment.

BIOCONCENTRATION: This material is not expected to bioconcentrate in organisms.

ADDITIONAL ECOLOGICAL INFORMATION: This material has exhibited slight toxicity to terrestrial organisms.

13. DISPOSAL CONSIDERATIONS

Reuse or reprocess, if possible. Dispose in accordance with all applicable regulations. May be subject to disposal regulations: U.S. EPA 40 CFR 261. Hazardous Waste Number(s): D002

14. TRANSPORT INFORMATION

U.S.DOT 49 CFR 172.101:

PROPER SHIPPING NAME:	Sodium Hydroxide Solution
DOT UN NUMBER:	UN1824
HAZARD CLASS/ DIVISION:	8
PACKING GROUP:	II
LABELING REQUIREMENTS:	8
DOT RQ (lbs):	RQ 1000 lbs. (Sodium Hydroxide)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME:	Sodium hydroxide solution
UN NUMBER:	UN1824
CLASS:	8
PACKING/RISK GROUP:	II

Water Meter w/Totalizer
Manufacturer's Information

312319.1.4.A.2.f

Recordall® Cold Water Top Load Bronze Disc Meter	Size 2" (DN 50mm)	Technical Brief

DESCRIPTION

Badger Meter offers the Recordall Disc meter in Cast Bronze and a Low Lead Alloy. The Low Lead Alloy (Trade Designation: M170 LL) version complies with NSF/ANSI Standard 61 and carries the NSF-61 Mark on the housing. All components of the Low Lead Alloy meter, i.e., disc, chamber, housing, seals, etc., comprise the certified system.

APPLICATIONS: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

OPERATION: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently-sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register dial face.

OPERATING PERFORMANCE: The Badger Recordall Disc meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated by AWWA Standard C700.

CONSTRUCTION: Badger Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: bronze meter housing, measuring chamber, and permanently, sealed register. A corrosion-resistant thermoplastic material is used for the measuring chamber.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters also minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

MAGNETIC DRIVE: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

SEALED REGISTER: The standard register consists of a straight-reading, odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating thermoplastic gears to minimize friction and provides long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading. Generator-type remote reading and automatic meter reading systems are available for all Recordall Disc meters. All reading options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES: Customer removal of the register to obtain free water can be prevented when the optional tamper detection seal wire screw/or Torx® tamper seal resistant screw is added to the meter. Both can be installed at the meter site or at the factory.

MAINTENANCE: Badger Recordall Disc meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger offers various maintenance and meter component exchange programs to fit the needs of the utility.

CONNECTIONS: Tailpieces/Flanges for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.

Model 170 shown with optional 1" Test Plug

SPECIFICATIONS

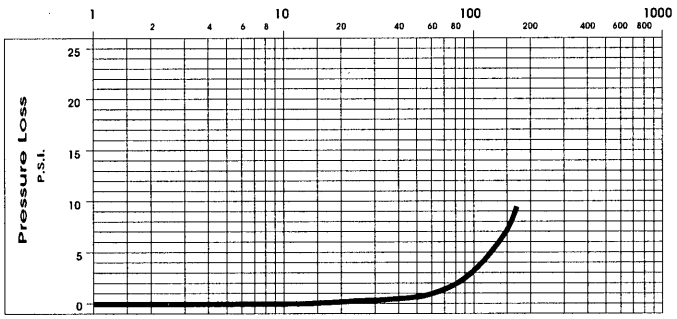
Typical Operating Range (100% ± 1.5%)	2 1/2 -170 GPM (.57 to 39 m^3/hr)
Low Flow (Min. 95%)	1 1/2 GPM (.34 m^3/hr)
Maximum Continuous Operation	100 GPM (23 m^3/hr)
Pressure Loss at Maximum Continuous Operation	3.3 PSI at 100 GPM (.23 bar at 23 m^3/hr)
Maximum Operating Temperature	80°F (26°C)
Maximum Operating Pressure	150 PSI (10 bar)
Measuring Element	Nutating disc, positive displacement
Register Type	Straight reading, permanently sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.
Registration	100 Gallons, 10 Cubic Feet, 1 m^3
Register Capacity	100,000,000 Gallons, 10,000,000 Cubic Feet, 1,000,000 m^3. 6 odometer wheels.
Meter Connections	2" AWWA two bolt elliptical flange, drilled, or 2" - 11 1/2 NPT internal pipe threads.
Optional Test Plug	1" NPT test plug (TP) available on elliptical long and short versions.

MATERIALS

Meter Housing	Cast Bronze, Low Lead Alloy
Housing Top Plates	Bronze, Low Lead Alloy
Measuring Chamber	Thermoplastic
Disc	Thermoplastic
Trim	Stainless Steel/Bronze
Strainer	Thermoplastic
Disc Spindle	Stainless Steel
Magnet	Ceramic
Magnet Spindle	Stainless Steel
Register Lid and Box	Thermoplastic or Bronze
Generator Housing	Thermoplastic

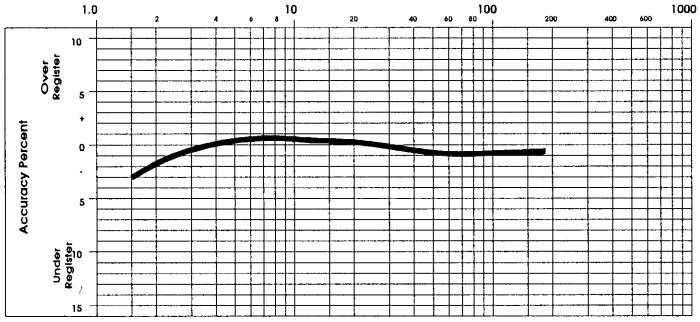
PRESSURE LOSS CHART

Rate of Flow, in Gallons per Minute



ACCURACY CHART

Rate of Flow, in Gallons per Minute

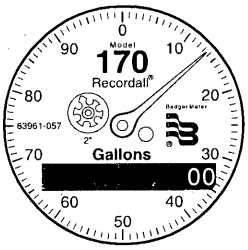


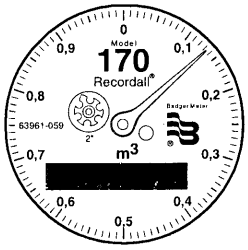
METER SIZE	METER MODEL	A LAYING LENGTH	B HEIGHT REG./RTR	C HEIGHT GEN.	D CENTERLINE BASE	WIDTH	APPROX. SHIPPING WEIGHT
2" (50mm)	170 EL, Hex. 170 EL, TP	15 1/4" (387mm)	8" (203mm)	9 3/8" (238mm)	2 7/8" (73mm)	9 1/2" (241mm)	30 lb. (13.6kg)
2" (50mm)	170 ELL, 170 ELL, TP	17" (432mm)	8" (203mm)	9 3/8" (238mm)	2 7/8" (73mm)	9 1/2" (241mm)	30 lb. (13.6kg)

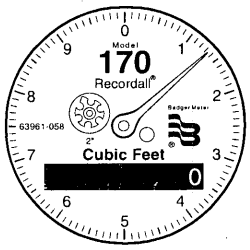
EL = Elliptical ELL = Elliptical Long Hex = Hexagon, 2" - 11 1/2 NPT Thread TP=Test Plug 1"

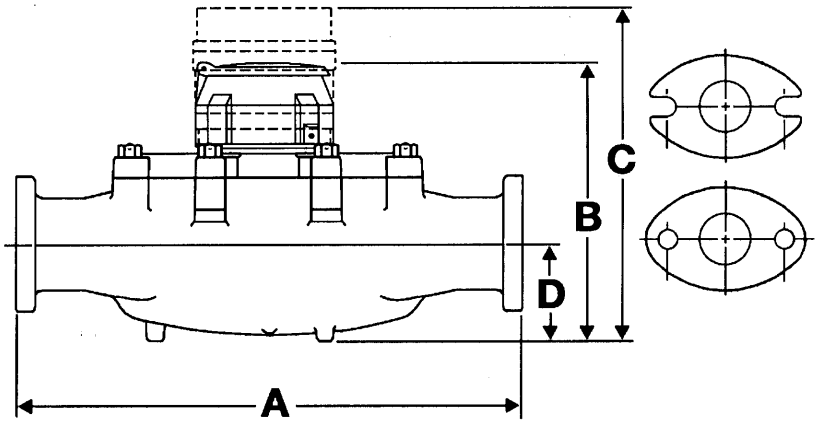
Sweep Hand Registration

MODEL	GALLON	CU.FT.	CU. METER
M170	100	10	1









RTR® and Recordall® are registered trademarks of Badger Meter, Inc.
TORX® is a registered trademark of Camcar, Division of Textron, Inc.

TÜV MANAGEMENT SERVICE ISO 9001

Please see our website at
www.badgermeter.com
for specific contacts.

Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.

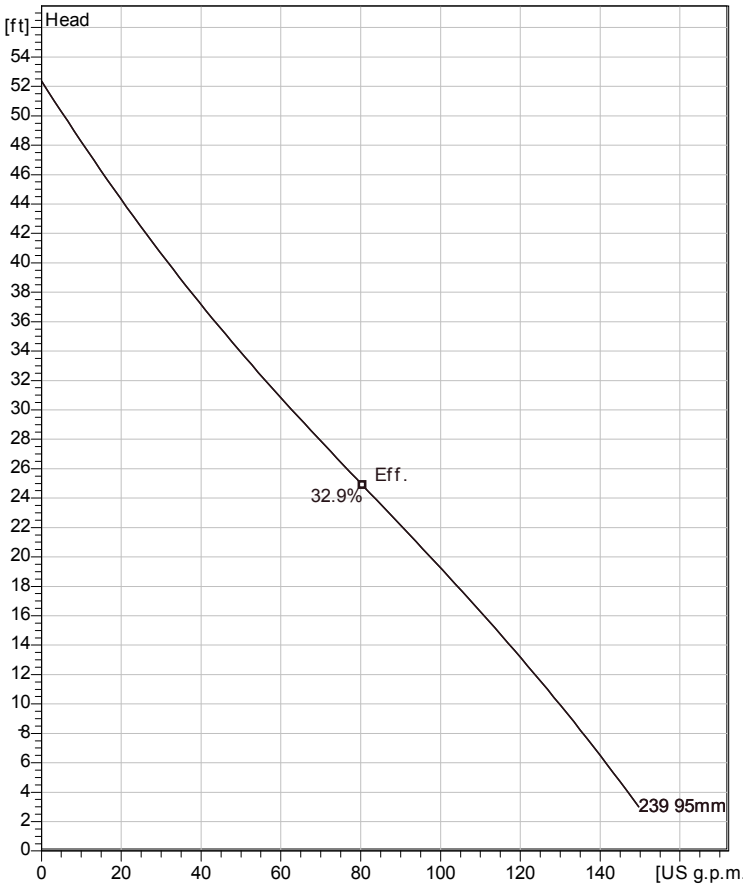
BadgerMeter, Inc.
P.O. Box 245036, Milwaukee, WI 53224-9536
(800) 876-3837 / Fax: (888) 371-5982
www.badgermeter.com

Dewatering Pumps
Manufacturer's Information

312319.1.4.A.2.a

KS 2610 MT 1~ 239

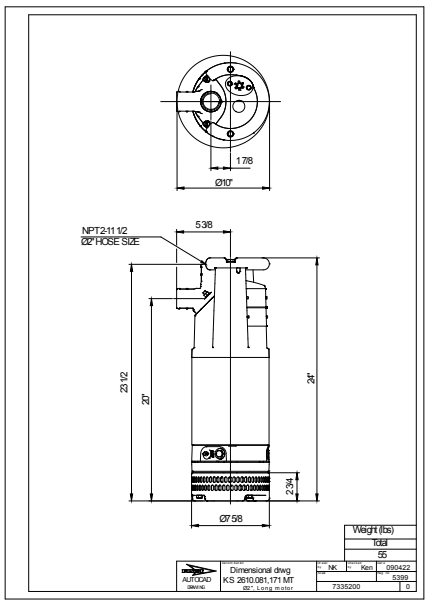
Technical specification



Curve according to: ISO 9906 grade 2 annex 1 or 2

Note: Picture might not correspond to the current configuration.

Installation: S - Portable Semi permanent, Wet



General

Portable pumps ideal for applications in which the water or liquid contains concentrations of abrasives when clogging problems can occur

Impeller

Impeller material	Hard-Iron ™
Outlet width	1 15/16 inch
Inlet diameter	72 mm
Impeller diameter	95 mm
Number of blades	2
	0 inch

Motor

Motor #	K2610.171 13-10-2BB-W 1.8hp
Stator variant	7
Frequency	60 Hz
Rated voltage	220 V
Number of poles	2
Phases	1~
Rated power	1.8 hp
Rated current	7.5 A
Starting current	35 A
Rated speed	3465 rpm
Power factor	
1/1 Load	0.98
3/4 Load	0.98
1/2 Load	0.98
Efficiency	
1/1 Load	82.0 %
3/4 Load	80.5 %
1/2 Load	75.5 %

Configuration

Project	Project ID	Created by	Created on	Last update
			2013-04-24	

KS 2610 MT 1~ 239

Performance curve

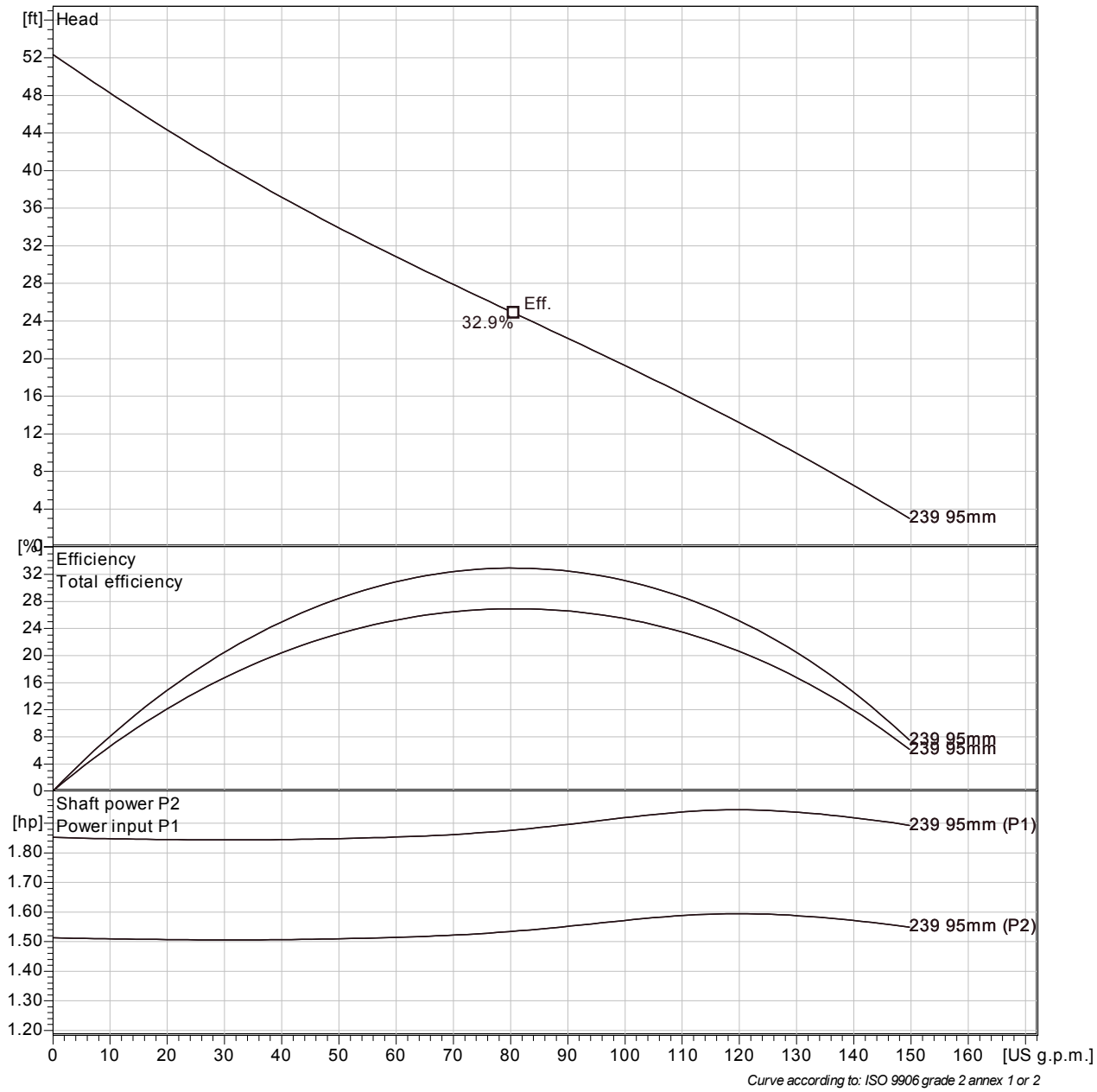
Pump

Outlet width	1 15/16 inch
Inlet diameter	72 mm
Impeller diameter	3 3/4"
Number of blades	2
	0 inch

Motor

Motor #	K2610.171 13-10-2BB-W 1.8hp
Stator variant	7
Frequency	60 Hz
Rated voltage	220 V
Number of poles	2
Phases	1~
Rated power	1.8 hp
Rated current	7.5 A
Starting current	35 A
Rated speed	3465 rpm

Power factor	
1/1 Load	0.98
3/4 Load	0.98
1/2 Load	0.98
Efficiency	
1/1 Load	82.0 %
3/4 Load	80.5 %
1/2 Load	75.5 %

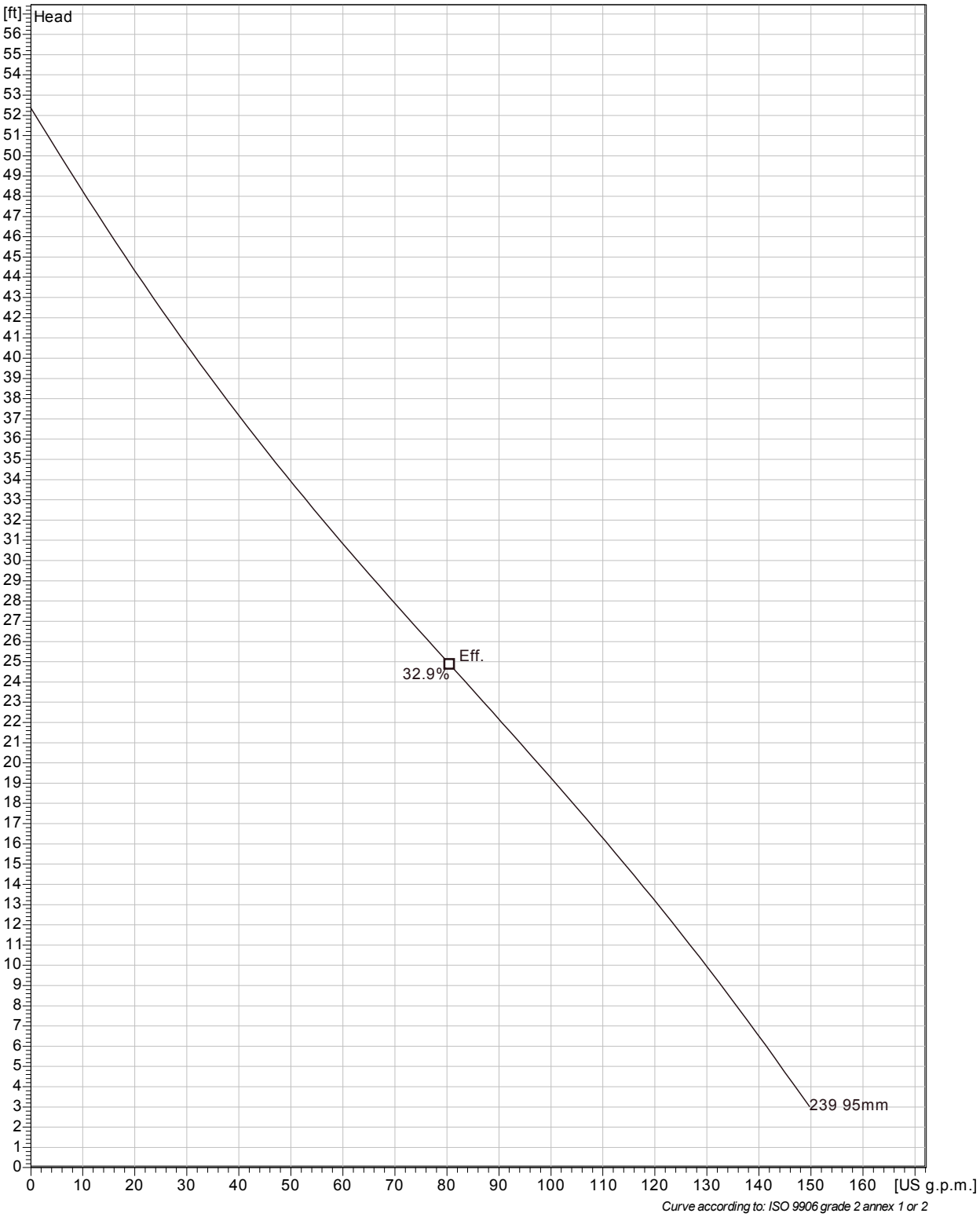


Curve according to: ISO 9906 grade 2 annex 1 or 2

Project	Project ID	Created by	Created on	Last update
			2013-04-24	

KS 2610 MT 1~ 239

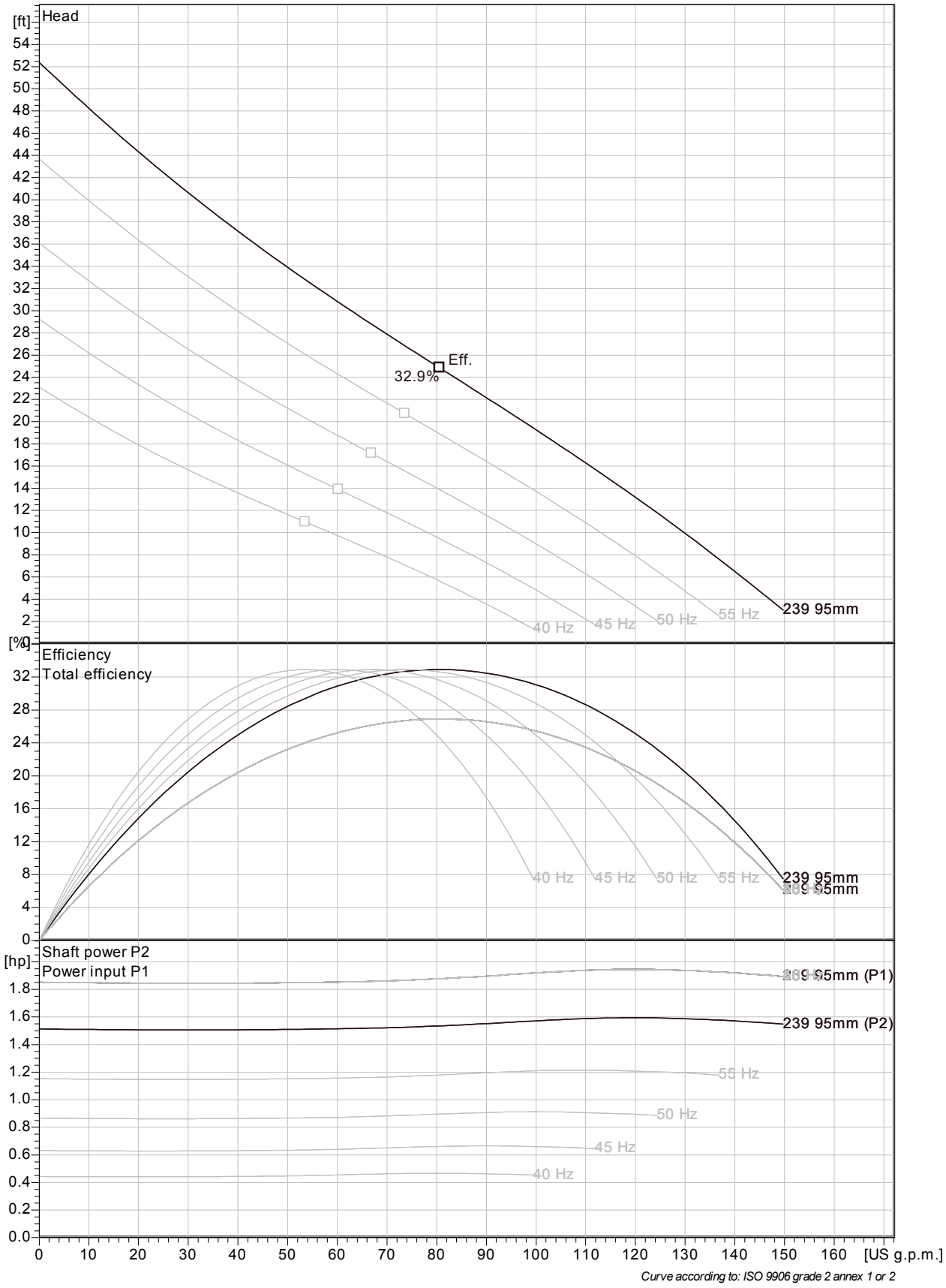
Duty Analysis



Project	Project ID	Created by	Created on	Last update
			2013-04-24	

KS 2610 MT 1~ 239

VFD Curve

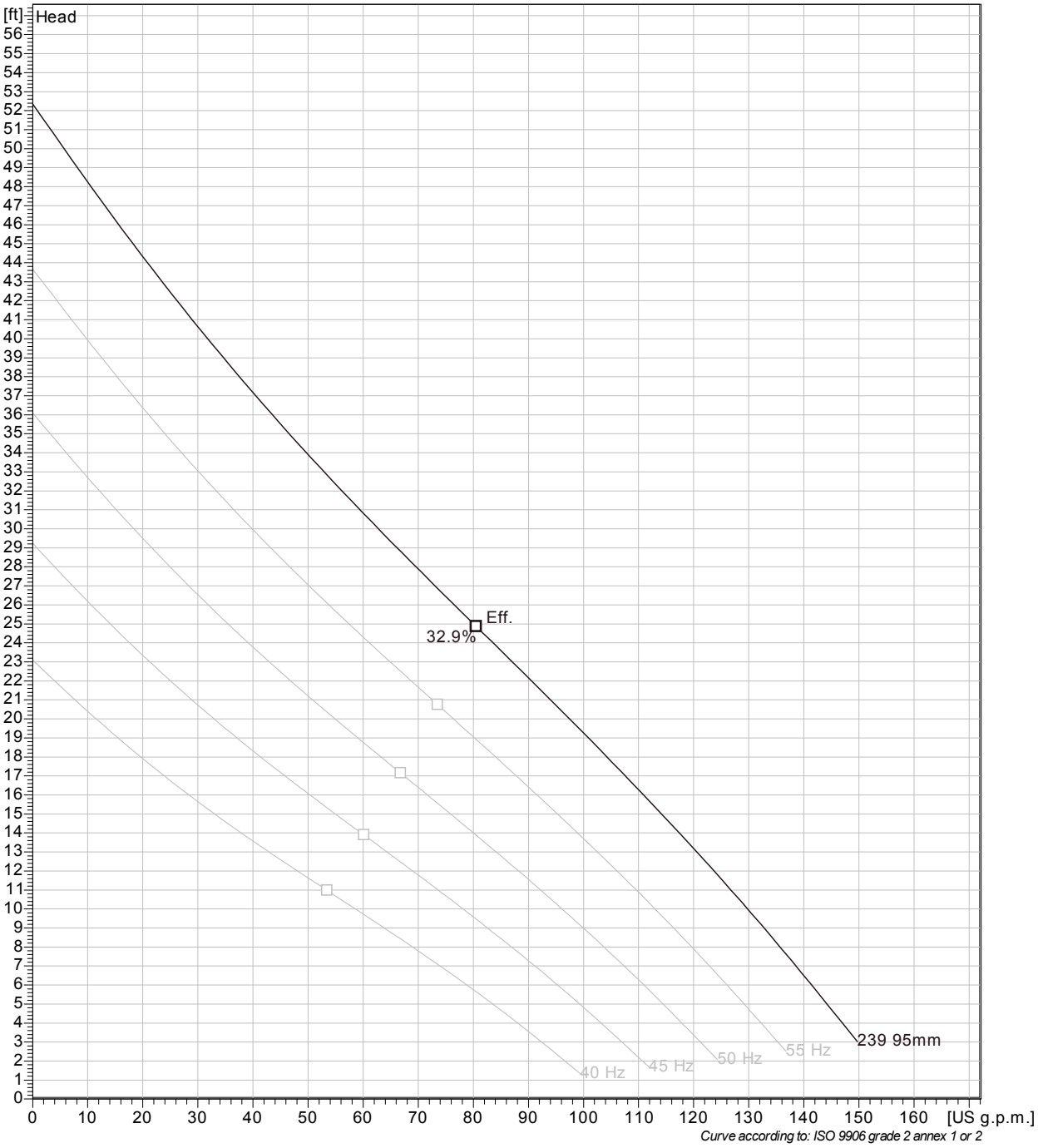


Curve according to: ISO 9906 grade 2 annex 1 or 2

Project	Project ID	Created by	Created on	Last update
			2013-04-24	

KS 2610 MT 1~ 239

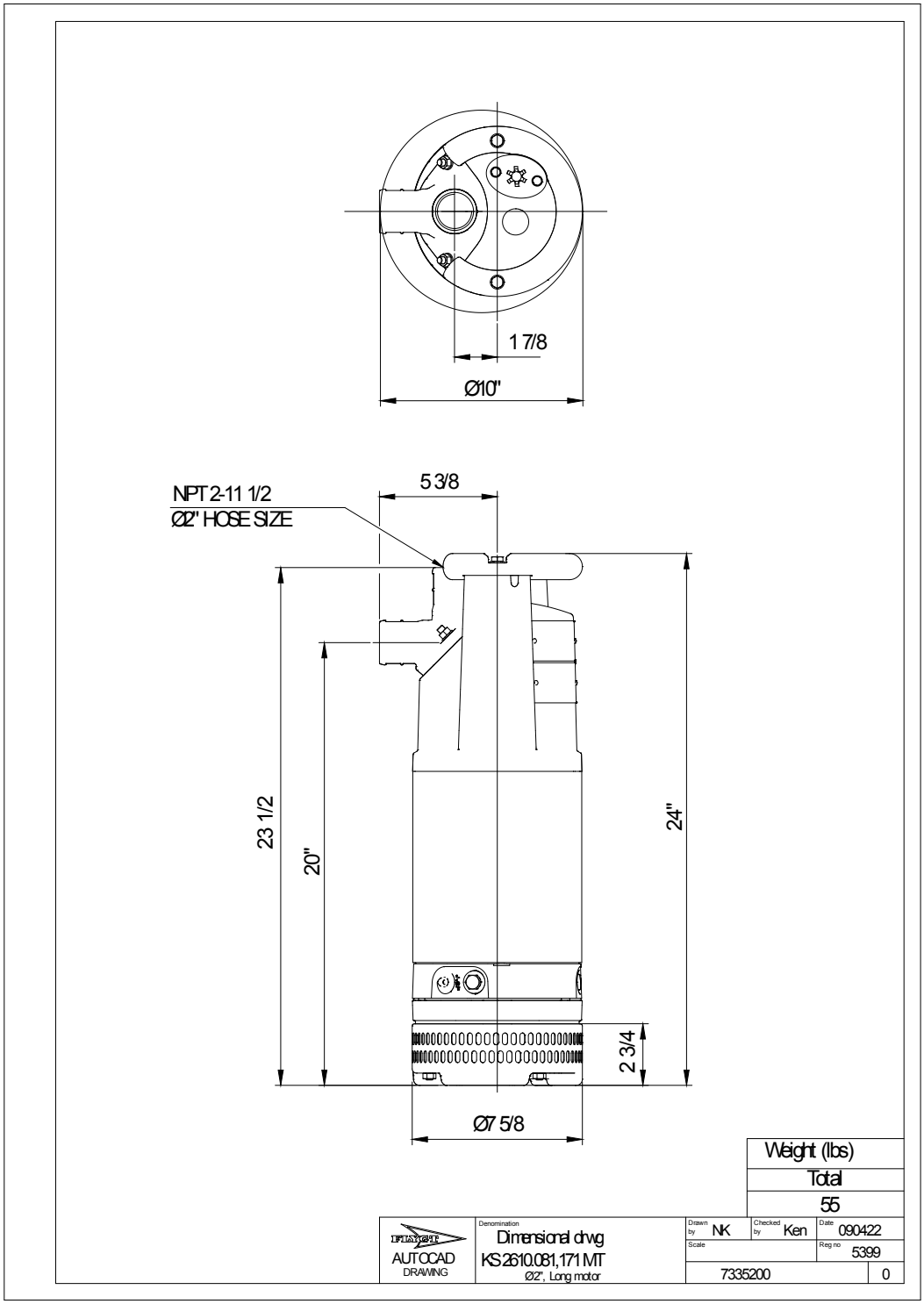
VFD Analysis



Project	Project ID	Created by	Created on	Last update
			2013-04-24	

KS 2610 MT 1~ 239

Dimensional drawing



Project	Project ID	Created by	Created on	Last update
			2013-04-24	

TSURUMI PUMP

LB-800/LBT-800
SEMI-VORTEX - DEWATERING PUMP

SPECIFICATIONS

FEATURES

1. Semi-vortex, urethane rubber impeller, urethane front & rear ware plates and ethylene propylene rubber casing increases wear resistance when pumpage contains abrasive particles.

2. Double inside mechanical seals with silicon carbide faces, (both top and bottom) running in an oil filled chamber and further protected by a lip seal running against a replaceable, 304 stainless steel shaft sleeve, provides for the most durable seal design available.

3. Highly efficient, continuous duty air filled, copper wound motor with class B, insulation minimizes the cost of operation.

4. Built in thermal protector prevents motor failure due to- overloading or accidental run -dry conditions.

5. Double shielded, permanently lubricated, high temperature C3 ball bearings, extend operational life.

6. Top discharge, flow-thru design enables operation at low water levels for extended periods.

APPLICATIONS

1. Residential, commercial, industrial wastewater and construction site drainage.

2. Effluent transfer.

3. Decorative waterfalls and fountains.

4. Raw water supply from rivers or lakes..

EQUIPPED

SPECIFICATIONS

Discharge Size	2" Npt (50 mm)
Horsepower Range	1 Hp. (.75 Kw)
Performance Range Capacity	10 ~ 82 Gpm. (.037 ~ .31 m^3/min)
Head	7 ~ 59 Ft. (2.1 ~ 17.9 m)
Maximum water temperature	104° F. (40° C.)
Materials of Construction	
Casing	Ethylene Propylene Rubber
Impeller	Urethane Rubber
Shaft	403 Stainless Steel
Motor Frame	Aluminum alloy
Fasteners	304 Stainless Steel
Mechanical Seal	Silicon Carbide/Silicon Carbide
Elastomers	NBR (Nitril Buna Rubber)
Impeller Type	Semi-vortex, solids handling.
Solids Handling Capability	Screen opening
Bearings	Pre-lubricated, Double Shielded C3
Motor Nomenclature	
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz.
Voltage, Phase	115/230 V., 1 Phase
	230/460/575 V. 3 Phase (LBT-800)
Insulation	Class E
Accessories	Submersible Power Cable 50' (9.75 m)
Operational Mode	Manual

STANDARD

OPTIONS

Length as Required, (97' Max)

*See Technical Data section for details.

TSURUMI PUMP

LB SERIES
SEMI-VORTEX - DEWATERING PUMP

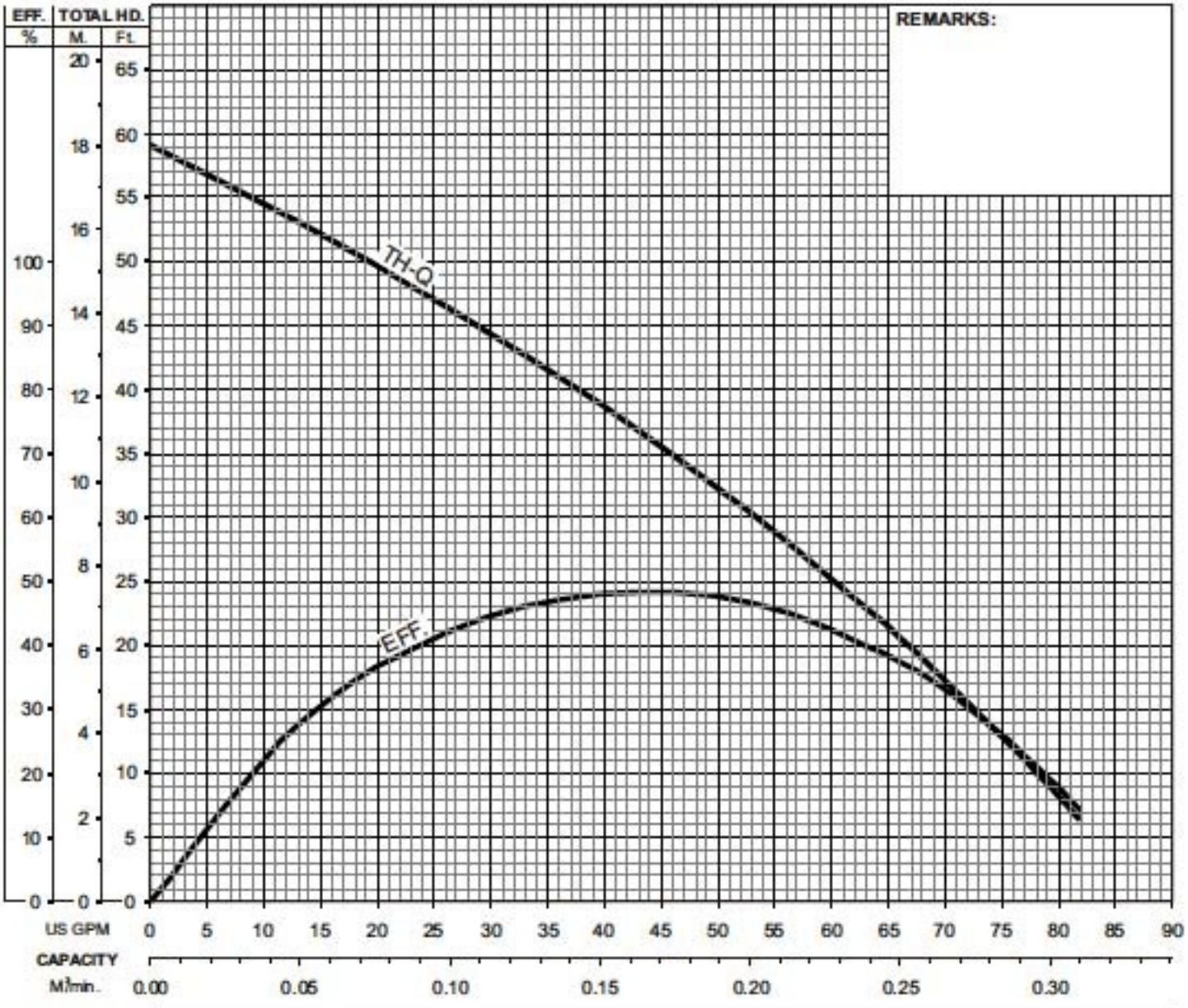
PERFORMANCE CURVE

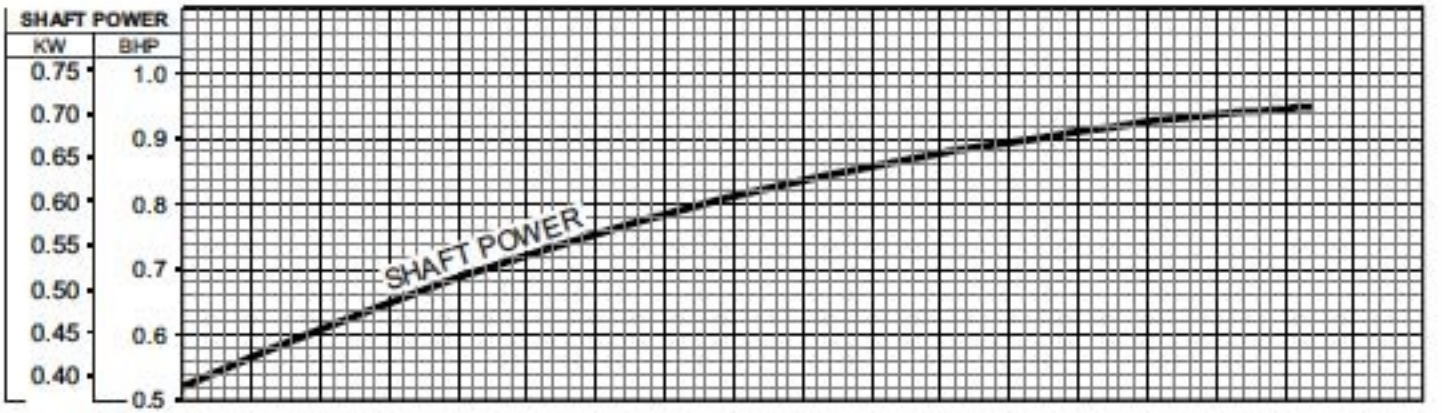
MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
LB-800-60	2"/50mm	1	0.75	3330	0.236"/6mm	Water	1.0	1.81 CST	60F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Dewatering Pump	Single	110/115/220/230	10.8/10.3 / 5.7/5.5	60	Capacitor Start	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-

REMARKS:





JOHN BRIGGS IS AN EMPLOYEE OF LOCKWOOD REMEDIATION TECHNOLOGIES (LRT).
AA WILL MAY RENT SOME DEWATERING EQUIPMENT FROM LRT TO MANAGE THE DEWATERING DISCHARGE DURING THE PROJECT. JOHN BRIGGS WOULD BE BROUGHT IN ON AN INTERMITTANT BASIS TO REVIEW THE COMPONENTS OF THE DEWATERING SYSTEM.

THE COMMONWEALTH OF MASSACHUSETTS
BOARD OF CERTIFICATION
OF OPERATORS OF
WASTEWATER TREATMENT FACILITIES

BE IT KNOWN THAT

John Briggs

HAS SATISFIED THE BOARD'S QUALIFICATIONS
AS REQUIRED AND IS HEREBY AUTHORIZED TO USE THE TITLE

CERTIFIED OPERATOR GRADE 2-I

AS PROVIDED IN SECTION 66A OF CHAPTER 13 OF THE GENERAL LAWS

ISSUED AND ATTESTED BY SEAL OF THE BOARD OF CERTIFICATION
OF OPERATORS OF WASTEWATER TREATMENT FACILITIES

THIS 31st DAY OF October, 2017

SECRETARY

CERTIFICATE NO. **18300**

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:
Consultation Code: 05E1NE00-2019-SLI-0293
Event Code: 05E1NE00-2019-E-00652
Project Name: Cambridge Crossing

November 08, 2018

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2019-SLI-0293

Event Code: 05E1NE00-2019-E-00652

Project Name: Cambridge Crossing

Project Type: DEVELOPMENT

Project Description: Development

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.3728393098731N71.07446861411378W

Counties: Middlesex, MA | Suffolk, MA

Endangered Species Act Species

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

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

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

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

---

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

Critical habitats

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

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Cambridge; Place: East Cambridge; Resource Type(s): Building, Area, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
CAM.B	Lockhart, William L. and Company Coffin Factory		Cambridge	
CAM.C	Blake and Knowles Steam Pump Company		Cambridge	
CAM.E	East Cambridge Historic District		Cambridge	
CAM.F	Winter Street Historic District		Cambridge	
CAM.G	Cambridge Multiple Resource Area		Cambridge	
CAM.H	Lechmere Point Corporation Houses		Cambridge	
CAM.I	Sacred Heart Church, Rectory, School and Convent		Cambridge	
CAM.AJ	Charles River Basin Historic District		Cambridge	
CAM.AO	East Cambridge		Cambridge	
CAM.AV	Blake and Knowles Steam Pump Company		Cambridge	
CAM.352	Blake and Knowles Main Foundry	180 Bent St	Cambridge	c 1895
CAM.357	Blake and Knowles Machine Shop #2	195 Binney St	Cambridge	1917
CAM.358	Blake and Knowles Machine Shop #3	199 Binney St	Cambridge	1918
CAM.356	Blake and Knowles Erecting and Assembling Building	201 Binney St	Cambridge	1903
CAM.906	Cambridge Parkway Bridge over Broad Canal	Cambridge Pkwy	Cambridge	1957
CAM.931	Cambridge Parkway	Cambridge Pkwy	Cambridge	1900
CAM.379	Middlesex County Registry of Deeds Building	Cambridge St	Cambridge	1896
CAM.380	Middlesex County Clerk of Courts Building	Cambridge St	Cambridge	1889
CAM.912	Longfellow Bridge - West Boston Bridge	Cambridge St	Cambridge	c 1907
CAM.914	Lechmere Square Streetcar Station	Cambridge St	Cambridge	1922
CAM.372		82-84 Cambridge St	Cambridge	1937
CAM.373	Davenport, A. H. - Irving and Casson Company	88-134 Cambridge St	Cambridge	1866
CAM.378		160 Cambridge St	Cambridge	1965
CAM.93	East Cambridge Savings Bank	292 Cambridge St	Cambridge	1931
CAM.94	Union Railway Car Barn	613-621 Cambridge St	Cambridge	1869

Inv. No.	Property Name	Street	Town	Year
CAM.99	Boston and Maine Railroad Signal Tower A	Charles River	Cambridge	1931
CAM.911	Charles River Railroad Draw Bridge #1	Charles River	Cambridge	1931
CAM.920	Charles River Dam	Charles River	Cambridge	r 1905
CAM.928	Lechmere Canal	Charles River	Cambridge	1909
CAM.929	Broad Canal	Charles River	Cambridge	1805
CAM.932	Charles River Basin Granite Seawall and Iron Fence	Charles River	Cambridge	
CAM.908	Commercial Avenue Bridge over Lechmere Canal	Commercial Ave	Cambridge	1907
CAM.1318	Metropolitan District Commission Stables	Commercial Ave	Cambridge	
CAM.123		42 Edward J. Lopez Ave	Cambridge	c 1830
CAM.430	Cambridge Public Library - O'Connell Branch	Fifth St	Cambridge	1938
CAM.441		69-71 Fifth St	Cambridge	
CAM.452	Hall, Jesse House	75 Fifth St	Cambridge	1837
CAM.428		82 Fifth St	Cambridge	
CAM.429		83 Fifth St	Cambridge	
CAM.907	First Street Bridge over Broad Canal	First St	Cambridge	1924
CAM.147	Athenaeum Press Building	215 First St	Cambridge	1895
CAM.502	Lechmere Point Corporation Row House	47 Gore St	Cambridge	c 1821
CAM.503	Lechmere Point Corporation Row House	49 Gore St	Cambridge	c 1821
CAM.504	Lechmere Point Corporation Row House	51 Gore St	Cambridge	c 1821
CAM.1317	Metropolitan District Commission Boat House	Lechmere Canal	Cambridge	1910
CAM.913	East Cambridge Viaduct - Lechmere Viaduct	O'Brien Hwy	Cambridge	1910
CAM.9020	Boston and Lowell Railroad Retaining Wall	O'Brien Hwy	Cambridge	c 1857
CAM.349	Lockhart, William L. Coffin Factory Warehouse	195-199 O'Brien Hwy	Cambridge	1873
CAM.271	Barnes, James B. House	200 O'Brien Hwy	Cambridge	1824
CAM.348	Lockhart, William L. Coffin Factory Main Building	201 O'Brien Hwy	Cambridge	r 1870
CAM.272	Lockart, William L. Company Building	209 O'Brien Hwy	Cambridge	c 1859
CAM.1400	Morrell, John and Company Branch House	221 O'Brien Hwy	Cambridge	1929
CAM.1399	Whitehead Metal Products Company	225 O'Brien Hwy	Cambridge	1929
CAM.461	Putnam School	Otis St	Cambridge	1889
CAM.465	Saint Hedwig's Parish Church	Otis St	Cambridge	1939
CAM.468	Otis Hospital	Otis St	Cambridge	
CAM.371	Woodbury, James A. - Geldowsky, Ferdinand Building	2-28 Otis St	Cambridge	1869
CAM.374		31 Otis St	Cambridge	1900
CAM.473	Hall, Lewis and William A. Rowhouse	55 Otis St	Cambridge	1851
CAM.474	Hall, Lewis and William A. Rowhouse	57 Otis St	Cambridge	1851
CAM.475	Hall, Lewis and William A. Rowhouse	59 Otis St	Cambridge	1851

Inv. No.	Property Name	Street	Town	Year
CAM.485	Hazard, Samuel L. House	60 Otis St	Cambridge	1871
CAM.476	Hall, Lewis and William A. Rowhouse	61 Otis St	Cambridge	1851
CAM.484		62 Otis St	Cambridge	
CAM.472	Sortwell, Daniel R. Double House	63-65 Otis St	Cambridge	1871
CAM.483		64 Otis St	Cambridge	
CAM.471		65 1/2 Otis St	Cambridge	
CAM.482	Jones, Andrew - Hall, William A. Double House	66-68 Otis St	Cambridge	1846
CAM.470	Goss, Abiel Double House	67-69 Otis St	Cambridge	1839
CAM.481		70 Otis St	Cambridge	
CAM.469		73-75 Otis St	Cambridge	
CAM.480		74 Otis St	Cambridge	
CAM.479		78 Otis St	Cambridge	
CAM.477	Clark, Josias - Cummings, Daniel P. Rowhouse	80 Otis St	Cambridge	1861
CAM.478	Clark, Josias - Cummings, Daniel P. Rowhouse	82 Otis St	Cambridge	1861
CAM.467	Deshon, Royal P. House	93 Otis St	Cambridge	1842
CAM.460		94 Otis St	Cambridge	
CAM.466		95-97 Otis St	Cambridge	
CAM.459		96 Otis St	Cambridge	
CAM.458		98 Otis St	Cambridge	
CAM.457	Taylor, Oliver House	100 Otis St	Cambridge	1848
CAM.455	Adams, Jabez F. - Atwood, Samuel S. Rowhouse	102 Otis St	Cambridge	1848
CAM.464	Bridgeman, John L. Double House	103-105 Otis St	Cambridge	1843
CAM.456	Adams, Jabez F. - Atwood, Samuel S. Rowhouse	104 Otis St	Cambridge	1848
CAM.454		106-108 Otis St	Cambridge	
CAM.463		107-109 Otis St	Cambridge	
CAM.453		110 Otis St	Cambridge	
CAM.462		113 Otis St	Cambridge	
CAM.439		117 1/2 Otis St	Cambridge	
CAM.440		117-119 Otis St	Cambridge	
CAM.451		118 Otis St	Cambridge	
CAM.450		120 Otis St	Cambridge	
CAM.448	Dennison, James Double House	122-124 Otis St	Cambridge	1870
CAM.449		122 1/2-124 1/2 Otis St	Cambridge	
CAM.438		123 Otis St	Cambridge	
CAM.437		125-127 Otis St	Cambridge	
CAM.447		126-128 Otis St	Cambridge	
CAM.436		129-131 Otis St	Cambridge	
CAM.446		130 Otis St	Cambridge	

Inv. No.	Property Name	Street	Town	Year
CAM.445		132 Otis St	Cambridge	
CAM.435		133-135 Otis St	Cambridge	
CAM.275	Hoyt, Benjamin House	134 Otis St	Cambridge	1868
CAM.443		136-138 Otis St	Cambridge	
CAM.434	Warren, Moses - Smith, Benjamin G. Rowhouse	137 Otis St	Cambridge	1852
CAM.1339	Warren, Moses - Smith, Benjamin G. Rowhouse	139 Otis St	Cambridge	1852
CAM.442		140 Otis St	Cambridge	1895
CAM.1340	Warren, Moses - Smith, Benjamin G. Rowhouse	141 Otis St	Cambridge	1852
CAM.1341	Warren, Moses - Smith, Benjamin G. Rowhouse	143 Otis St	Cambridge	1852
CAM.1342	Warren, Moses - Smith, Benjamin G. Rowhouse	145 Otis St	Cambridge	1852
CAM.433	Fraser, John B. Double House	147-149 Otis St	Cambridge	1846
CAM.432		151 Otis St	Cambridge	
CAM.415	Hastings, Deborah House	72 Sciarappa St	Cambridge	1823
CAM.416		74 Sciarappa St	Cambridge	
CAM.401	Pendexter, Charles House	80-82 Sciarappa St	Cambridge	1847
CAM.1321	Boston Museum of Science	Science Park	Cambridge	1951
CAM.1322	Hayden Planetarium	Science Park	Cambridge	1958
CAM.375	Roby, Ebenezer Rowhouse	30 Second St	Cambridge	1836
CAM.376	Roby, Ebenezer Rowhouse	32 Second St	Cambridge	1836
CAM.377	Roby, Ebenezer Rowhouse	34 Second St	Cambridge	1836
CAM.364	Hall, Jesse Rowhouse	36 Second St	Cambridge	1842
CAM.365	Hall, Jesse Rowhouse	38 Second St	Cambridge	1842
CAM.366	Hall, Jesse Rowhouse	40 Second St	Cambridge	1842
CAM.367	Hall, Jesse Rowhouse	42 Second St	Cambridge	1842
CAM.368	Hall, Jesse Rowhouse	44 Second St	Cambridge	1842
CAM.369	Hall, Jesse Rowhouse	46 Second St	Cambridge	1842
CAM.370		50 Second St	Cambridge	
CAM.308	American Net and Twine Company Factory	155R Second St	Cambridge	1875
CAM.506	Sacred Heart Roman Catholic Church	39 Sixth St	Cambridge	1874
CAM.431		40 Sixth St	Cambridge	
CAM.508	Sacred Heart Roman Catholic Church Rectory	49 Sixth St	Cambridge	1885
CAM.325	Harugari Hall	154 Spring St	Cambridge	1873
CAM.353	Blake and Knowles Core Shop #1	Third St	Cambridge	c 1889
CAM.354	Blake and Knowles Core Shop #2	Third St	Cambridge	c 1890
CAM.505	Lechmere Point Corporation Row House	25 Third St	Cambridge	c 1821
CAM.381	Rollins, John W. Rowhouse	83 Third St	Cambridge	1860
CAM.382	Rollins, John W. Rowhouse	85 Third St	Cambridge	1860
CAM.383	Rollins, John W. Rowhouse	87 Third St	Cambridge	1860

Inv. No.	Property Name	Street	Town	Year
CAM.384	Rollins, John W. Rowhouse	89 Third St	Cambridge	1860
CAM.331	Old Middlesex County Superior Courthouse	90 Third St	Cambridge	1814
CAM.385	Rollins, John W. Rowhouse	91 Third St	Cambridge	1860
CAM.386	Rollins, John W. Rowhouse	93 Third St	Cambridge	1860
CAM.387	Rollins, John W. Rowhouse	95 Third St	Cambridge	1860
CAM.314	Holy Cross Polish National Catholic Church	99 Third St	Cambridge	1827
CAM.315	Bottle House Block	204-214 Third St	Cambridge	1826
CAM.350	Blake and Knowles Machine Shop #1	265 Third St	Cambridge	1889
CAM.351	Blake and Knowles Office Headhouse	265 Third St	Cambridge	1892
CAM.355	Blake and Knowles Smith Shop and Brass Foundry	275 Third St	Cambridge	c 1890
CAM.326	Cambridge Gas Light Company Purifying Plant	354 Third St	Cambridge	1908
CAM.388	Stevens, Atherton H. Rowhouse	59 Thorndike St	Cambridge	1827
CAM.395	Smallidge, Samuel House	66 Thorndike St	Cambridge	1827
CAM.389	Bates, Moses Jr. House	69 Thorndike St	Cambridge	1844
CAM.396	Buck, Silas B. House	70 Thorndike St	Cambridge	1845
CAM.390	Tufts, Sophia Kimball Double House	71-73 Thorndike St	Cambridge	1857
CAM.397	Wellington, Peter House	74 Thorndike St	Cambridge	1843
CAM.391		75 Thorndike St	Cambridge	
CAM.398		76 Thorndike St	Cambridge	
CAM.392		77 Thorndike St	Cambridge	
CAM.399		78 Thorndike St	Cambridge	
CAM.393		79-81 Thorndike St	Cambridge	
CAM.400		80 Thorndike St	Cambridge	
CAM.394		83 Thorndike St	Cambridge	
CAM.402	Stickney, Francis H. - Davies, Benjamin Rowhouse	84 Thorndike St	Cambridge	1867
CAM.417	Clark, Cornelius - Kneeland, W. W. House	85 Thorndike St	Cambridge	1822
CAM.403	Stickney, Francis H. - Davies, Benjamin Rowhouse	86 Thorndike St	Cambridge	1867
CAM.404	Stickney, Francis H. - Davies, Benjamin Rowhouse	88 Thorndike St	Cambridge	1867
CAM.418		89-91 Thorndike St	Cambridge	
CAM.405	Stickney, Francis H. - Davies, Benjamin Rowhouse	90 Thorndike St	Cambridge	1867
CAM.406	Stickney, Francis H. - Davies, Benjamin Rowhouse	92 Thorndike St	Cambridge	1867
CAM.419	Whitacre, Celeste I. Rowhouse	93 Thorndike St	Cambridge	1885
CAM.407	Stickney, Francis H. - Davies, Benjamin Rowhouse	94 Thorndike St	Cambridge	1867

Inv. No.	Property Name	Street	Town	Year
CAM.420	Whitacre, Celeste I. Rowhouse	95 Thorndike St	Cambridge	1885
CAM.408	Train, Isaac House	96 Thorndike St	Cambridge	1826
CAM.421	Whitacre, Celeste I. Rowhouse	97 Thorndike St	Cambridge	1885
CAM.422	Davies, Daniel House	97 1/2 Thorndike St	Cambridge	1843
CAM.409		98 Thorndike St	Cambridge	
CAM.423		99 Thorndike St	Cambridge	
CAM.424	Daniels, Granville W. House	101 Thorndike St	Cambridge	1868
CAM.410		102 Thorndike St	Cambridge	
CAM.411	Spare, Elijah Jr. Double House	104-106 Thorndike St	Cambridge	1846
CAM.425	Eaton, Charles House	109 Thorndike St	Cambridge	1857
CAM.412	Quimby, Amos House	110 Thorndike St	Cambridge	1857
CAM.426		111-113 Thorndike St	Cambridge	
CAM.413	Stickney, Francis H. Double House	112-114 Thorndike St	Cambridge	1863
CAM.427		113 1/2 Thorndike St	Cambridge	
CAM.414	Bacon, Henry A. House	116 Thorndike St	Cambridge	1865
CAM.507	Sacred Heart Roman Catholic School and Convent	163 Thorndike St	Cambridge	1902
CAM.500		19 Winter St	Cambridge	r 1855
CAM.492		21 Winter St	Cambridge	c 1854
CAM.486	Leighton, Thomas H. House	22 Winter St	Cambridge	1833
CAM.491		24 Winter St	Cambridge	c 1854
CAM.493		25 Winter St	Cambridge	c 1854
CAM.494		27 Winter St	Cambridge	c 1854
CAM.496		28-30 Winter St	Cambridge	c 1854
CAM.495		29 Winter St	Cambridge	c 1854
CAM.497		31-33 Winter St	Cambridge	c 1854
CAM.501		34-42 Winter St	Cambridge	r 1875
CAM.498		61 Winter St	Cambridge	c 1854
CAM.499		65 Winter St	Cambridge	c 1854
CAM.489	Stevens, Atherton Haugh House	67 Winter St	Cambridge	1843
CAM.490	Stevens, Atherton Haugh House	71 Winter St	Cambridge	1843
CAM.487	Stevens, Atherton Haugh House	74 Winter St	Cambridge	1838
CAM.1344		75 Winter St	Cambridge	
CAM.1345	Stevens, Atherton Haugh House	77 Winter St	Cambridge	1838
CAM.488	Stevens, Atherton Haugh House	79 Winter St	Cambridge	1838

ANALYTICAL REPORT

Lab Number:	L1714130
Client:	Vertex Environmental Services, Inc. One Congress Street 10th Floor Boston, MA 02114
ATTN:	Jesse Freeman
Phone:	(781) 952-6000
Project Name:	NORTHPOINT
Project Number:	35663
Report Date:	05/19/17

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1714130-01	VES-I-308D(MW)	WATER	CAMBRIDGE, MA	05/03/17 09:55	05/03/17
L1714130-02	TRIP BLANK	WATER	CAMBRIDGE, MA	05/03/17 00:00	05/03/17

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: NORTHPOINT **Lab Number:** L1714130
Project Number: 35663 **Report Date:** 05/19/17

Case Narrative (continued)

Report Submission

This report replaces the report issued May 17, 2017. The reporting limits and the MDL values for the 1,4-Dioxane WG1002059-5 Method Blank have been corrected.

A previously-issued final report replace the partial report issued May 12, 2017, and included the results of all requested analyses.

The analysis of ethanol was subcontracted. A copy of the laboratory report is included as an addendum. Please note: This data is only available in PDF format and is not available on Data Merger.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

A Trip Blank was received in the laboratory, but not listed on the Chain of Custody, and was not analyzed.

The sample was received above the appropriate pH for the Dissolved Metals analysis. The laboratory added additional HNO3 to a pH <2.

Semivolatile Organics

The WG1001752-2/-3 LCS/LCSD recoveries, associated with L1714130-01, are below the acceptance criteria for benzidine (1%/2%); however, it has been identified as a "difficult" analyte. The results of the associated sample are reported.

Dissolved Metals

The WG1000276-3 MS recovery, performed on L1714130-01, is outside the acceptance criteria for mercury (46%). A post digestion spike was performed and yielded an unacceptable recovery of 74%. This has been attributed to sample matrix.

Project Name:	NORTHPOINT	**Lab Number:**	L1714130
Project Number:	35663	**Report Date:**	05/19/17

Case Narrative (continued)

Cyanide, Total

L1714130-01: The sample has an elevated detection limit due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Lisa Westerlind

Title: Technical Director/Representative Date: 05/19/17

ORGANICS

VOLATILES

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)

Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/10/17 08:58
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.68	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	ND		ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.8	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.17	1
Bromoform	ND		ug/l	2.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
Chloromethane	ND		ug/l	2.5	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1

Project Name: NORTHPOINT **Lab Number:** L1714130

Project Number: 35663 **Report Date:** 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01 Date Collected: 05/03/17 09:55

Client ID: VES-I-308D(MW) Date Received: 05/03/17

Sample Location: CAMBRIDGE, MA Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	5.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Acetone	12		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Tetrahydrofuran	ND		ug/l	5.0	0.83	1
2,2-Dichloropropane	ND		ug/l	2.5	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
1,3-Dichloropropane	ND		ug/l	2.5	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	2.5	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	ND		ug/l	0.50	0.18	1
tert-Butylbenzene	0.23	J	ug/l	2.5	0.18	1
o-Chlorotoluene	ND		ug/l	2.5	0.17	1
p-Chlorotoluene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
p-Isopropyltoluene	ND		ug/l	0.50	0.19	1
Naphthalene	ND		ug/l	2.5	0.22	1
n-Propylbenzene	ND		ug/l	0.50	0.17	1

Project Name: NORTHPOINT
Lab Number: L1714130
Project Number: 35663
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA
Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18	1
Ethyl ether	ND		ug/l	2.5	0.16	1
Tert-Butyl Alcohol	ND		ug/l	10	1.4	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	112		70-130

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)

Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 05/12/17 15:56
Analyst: MAB

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Ethanol	ND		ug/l	250	14.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	101		70-130

Project Name: NORTHPOINT
Lab Number: L1714130
Project Number: 35663
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)

Matrix: Water
Analytical Method: 1,8260C-SIM(M)
Analytical Date: 05/10/17 07:18
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	3.0	0.76	1

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 05/09/17 20:32
Analyst: SL

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 504.1
Extraction Date: 05/09/17 15:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.004	1	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	0.005	1	A

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
Analytical Date: 05/09/17 19:47
Analyst: SL

Extraction Method: EPA 504.1
Extraction Date: 05/09/17 15:14

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG1001729-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.004	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	0.005	A

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C-SIM(M)
Analytical Date: 05/10/17 06:11
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1002059-5					
1,4-Dioxane	ND		ug/l	3.0	0.76

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/10/17 06:11
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1002093-5					
Methylene chloride	ND		ug/l	3.0	0.68
1,1-Dichloroethane	ND		ug/l	0.75	0.21
Chloroform	ND		ug/l	0.75	0.16
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.8	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	0.50	0.18
Trichlorofluoromethane	ND		ug/l	2.5	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.17
Bromoform	ND		ug/l	2.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
Chloromethane	ND		ug/l	2.5	0.18
Bromomethane	ND		ug/l	1.0	0.26
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	1.0	0.13
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/10/17 06:11
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1002093-5					
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19
Methyl tert butyl ether	ND		ug/l	1.0	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
Dibromomethane	ND		ug/l	5.0	0.36
1,4-Dichlorobutane	ND		ug/l	5.0	0.46
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18
Styrene	ND		ug/l	1.0	0.36
Dichlorodifluoromethane	ND		ug/l	5.0	0.24
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	0.30
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	0.31
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
2-Hexanone	ND		ug/l	5.0	0.52
Ethyl methacrylate	ND		ug/l	5.0	0.61
Acrylonitrile	ND		ug/l	5.0	0.43
Bromochloromethane	ND		ug/l	2.5	0.15
Tetrahydrofuran	ND		ug/l	5.0	0.83
2,2-Dichloropropane	ND		ug/l	2.5	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
1,3-Dichloropropane	ND		ug/l	2.5	0.21
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16
Bromobenzene	ND		ug/l	2.5	0.15
n-Butylbenzene	ND		ug/l	0.50	0.19
sec-Butylbenzene	ND		ug/l	0.50	0.18

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/10/17 06:11
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1002093-5					
tert-Butylbenzene	ND		ug/l	2.5	0.18
o-Chlorotoluene	ND		ug/l	2.5	0.17
p-Chlorotoluene	ND		ug/l	2.5	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35
Hexachlorobutadiene	ND		ug/l	0.50	0.22
Isopropylbenzene	ND		ug/l	0.50	0.19
p-Isopropyltoluene	ND		ug/l	0.50	0.19
Naphthalene	ND		ug/l	2.5	0.22
n-Propylbenzene	ND		ug/l	0.50	0.17
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18
Ethyl ether	ND		ug/l	2.5	0.16
Tert-Butyl Alcohol	ND		ug/l	10	1.4
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	107		70-130

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 05/12/17 13:36
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1003068-5					
Ethyl Alcohol	ND		ug/l	250	14.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 01		Batch: WG1001729-2						
1,2-Dibromoethane	104		-		70-130	-			A
1,2-Dibromo-3-chloropropane	93		-		70-130	-			A

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1002059-3 WG1002059-4								
1,4-Dioxane	120		120		70-130	0		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1002093-3 WG1002093-4								
Methylene chloride	110		100		70-130	10		20
1,1-Dichloroethane	100		97		70-130	3		20
Chloroform	120		110		70-130	9		20
Carbon tetrachloride	120		120		63-132	0		20
1,2-Dichloropropane	80		83		70-130	4		20
Dibromochloromethane	97		99		63-130	2		20
1,1,2-Trichloroethane	78		86		70-130	10		20
Tetrachloroethene	110		110		70-130	0		20
Chlorobenzene	97		98		75-130	1		25
Trichlorofluoromethane	120		120		62-150	0		20
1,2-Dichloroethane	110		110		70-130	0		20
1,1,1-Trichloroethane	120		110		67-130	9		20
Bromodichloromethane	100		100		67-130	0		20
trans-1,3-Dichloropropene	90		91		70-130	1		20
cis-1,3-Dichloropropene	97		99		70-130	2		20
1,1-Dichloropropene	110		100		70-130	10		20
Bromoform	87		89		54-136	2		20
1,1,2,2-Tetrachloroethane	73		69		67-130	6		20
Benzene	96		91		70-130	5		25
Toluene	91		95		70-130	4		25
Ethylbenzene	91		95		70-130	4		20
Chloromethane	70		70		64-130	0		20
Bromomethane	100		94		39-139	6		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1002093-3 WG1002093-4								
Vinyl chloride	82		79		55-140	4		20
Chloroethane	110		120		55-138	9		20
1,1-Dichloroethene	110		110		61-145	0		25
trans-1,2-Dichloroethene	110		120		70-130	9		20
Trichloroethene	100		100		70-130	0		25
1,2-Dichlorobenzene	91		99		70-130	8		20
1,3-Dichlorobenzene	91		92		70-130	1		20
1,4-Dichlorobenzene	91		92		70-130	1		20
Methyl tert butyl ether	100		110		63-130	10		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	90		95		70-130	5		20
cis-1,2-Dichloroethene	100		99		70-130	1		20
Dibromomethane	100		98		70-130	2		20
1,4-Dichlorobutane	70		**69**	Q	70-130	1		20
1,2,3-Trichloropropane	71		75		64-130	5		20
Styrene	90		95		70-130	5		20
Dichlorodifluoromethane	85		84		36-147	1		20
Acetone	110		110		58-148	0		20
Carbon disulfide	100		95		51-130	5		20
2-Butanone	75		78		63-138	4		20
Vinyl acetate	87		86		70-130	1		20
4-Methyl-2-pentanone	76		83		59-130	9		20
2-Hexanone	64		66		57-130	3		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1002093-3 WG1002093-4								
Ethyl methacrylate	84		91		70-130	8		20
Acrylonitrile	78		72		70-130	8		20
Bromochloromethane	110		110		70-130	0		20
Tetrahydrofuran	74		74		58-130	0		20
2,2-Dichloropropane	120		110		63-133	9		20
1,2-Dibromoethane	88		93		70-130	6		20
1,3-Dichloropropane	87		89		70-130	2		20
1,1,1,2-Tetrachloroethane	97		100		64-130	3		20
Bromobenzene	89		93		70-130	4		20
n-Butylbenzene	75		76		53-136	1		20
sec-Butylbenzene	81		78		70-130	4		20
tert-Butylbenzene	87		85		70-130	2		20
o-Chlorotoluene	80		83		70-130	4		20
p-Chlorotoluene	81		85		70-130	5		20
1,2-Dibromo-3-chloropropane	76		92		41-144	19		20
Hexachlorobutadiene	120		110		63-130	9		20
Isopropylbenzene	83		83		70-130	0		20
p-Isopropyltoluene	88		88		70-130	0		20
Naphthalene	78		82		70-130	5		20
n-Propylbenzene	82		78		69-130	5		20
1,2,3-Trichlorobenzene	88		94		70-130	7		20
1,2,4-Trichlorobenzene	90		90		70-130	0		20
1,3,5-Trimethylbenzene	85		86		64-130	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1002093-3 WG1002093-4								
1,2,4-Trimethylbenzene	90		87		70-130	3		20
trans-1,4-Dichloro-2-butene	83		95		70-130	13		20
Ethyl ether	110		100		59-134	10		20
Tert-Butyl Alcohol	108		104		70-130	4		20
Tertiary-Amyl Methyl Ether	97		97		66-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	108		107		70-130
Toluene-d8	96		98		70-130
4-Bromofluorobenzene	89		101		70-130
Dibromofluoromethane	111		107		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1003068-3 WG1003068-4								
Ethyl Alcohol	82		90		70-130	9		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	91		94		70-130
Toluene-d8	102		100		70-130
4-Bromofluorobenzene	101		101		70-130
Dibromofluoromethane	97		97		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*	*Column*
Microextractables by GC - Westborough Lab	Associated sample(s): 01		QC Batch ID: WG1001729-3			QC Sample: L1714130-01			Client ID: VES-I-308D(MW)				
1,2-Dibromoethane	ND	0.252	0.268	106		-	-		65-135	-		20	A
1,2-Dibromo-3-chloropropane	ND	0.252	0.232	92		-	-		65-135	-		20	A

SEMIVOLATILES

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 05/10/17 13:20
Analyst: CB

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 3510C
Extraction Date: 05/09/17 16:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	8.1	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.66	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.67	1
1,2-Dichlorobenzene	ND		ug/l	2.0	0.73	1
1,3-Dichlorobenzene	ND		ug/l	2.0	0.69	1
1,4-Dichlorobenzene	ND		ug/l	2.0	0.71	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.4	1
2,4-Dinitrotoluene	ND		ug/l	5.0	0.84	1
2,6-Dinitrotoluene	ND		ug/l	5.0	1.1	1
Azobenzene	ND		ug/l	2.0	0.75	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.62	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.73	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.70	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.63	1
Hexachlorocyclopentadiene	ND		ug/l	20	7.8	1
Isophorone	ND		ug/l	5.0	0.60	1
Nitrobenzene	ND		ug/l	2.0	0.75	1
NDPA/DPA	ND		ug/l	2.0	0.64	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.70	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.91	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.3	1
Di-n-butylphthalate	ND		ug/l	5.0	0.69	1
Di-n-octylphthalate	ND		ug/l	5.0	1.1	1
Diethyl phthalate	ND		ug/l	5.0	0.63	1
Dimethyl phthalate	ND		ug/l	5.0	0.65	1
Biphenyl	ND		ug/l	2.0	0.76	1
Aniline	ND		ug/l	2.0	0.65	1
4-Chloroaniline	ND		ug/l	5.0	0.63	1
2-Nitroaniline	ND		ug/l	5.0	1.1	1

Project Name: NORTHPOINT **Lab Number:** L1714130

Project Number: 35663 **Report Date:** 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01 Date Collected: 05/03/17 09:55

Client ID: VES-I-308D(MW) Date Received: 05/03/17

Sample Location: CAMBRIDGE, MA Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
3-Nitroaniline	ND		ug/l	5.0	1.2	1
4-Nitroaniline	ND		ug/l	5.0	1.3	1
Dibenzofuran	ND		ug/l	2.0	0.66	1
n-Nitrosodimethylamine	ND		ug/l	2.0	0.67	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.68	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.62	1
2-Chlorophenol	ND		ug/l	2.0	0.63	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.77	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.6	1
2-Nitrophenol	ND		ug/l	10	1.5	1
4-Nitrophenol	ND		ug/l	10	1.8	1
2,4-Dinitrophenol	ND		ug/l	20	5.5	1
4,6-Dinitro-o-cresol	ND		ug/l	10	2.1	1
Phenol	ND		ug/l	5.0	1.9	1
2-Methylphenol	ND		ug/l	5.0	1.0	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	1.1	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.72	1
Benzoic Acid	ND		ug/l	50	13.	1
Benzyl Alcohol	ND		ug/l	2.0	0.72	1
Carbazole	ND		ug/l	2.0	0.63	1
Pyridine	ND		ug/l	3.5	1.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	42		21-120
Phenol-d6	30		10-120
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	66		15-120
2,4,6-Tribromophenol	75		10-120
4-Terphenyl-d14	66		41-149

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 05/10/17 12:34
Analyst: KL

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 3510C
Extraction Date: 05/09/17 16:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	2.0		ug/l	0.10	0.04	1
2-Chloronaphthalene	0.13	J	ug/l	0.20	0.04	1
Fluoranthene	0.07	J	ug/l	0.20	0.04	1
Hexachlorobutadiene	ND		ug/l	0.50	0.04	1
Naphthalene	0.11	J	ug/l	0.20	0.04	1
Benzo(a)anthracene	0.06	J	ug/l	0.20	0.02	1
Benzo(a)pyrene	0.07	J	ug/l	0.20	0.04	1
Benzo(b)fluoranthene	0.08	J	ug/l	0.20	0.02	1
Benzo(k)fluoranthene	0.07	J	ug/l	0.20	0.04	1
Chrysene	0.05	J	ug/l	0.20	0.04	1
Acenaphthylene	0.26		ug/l	0.20	0.04	1
Anthracene	0.12	J	ug/l	0.20	0.04	1
Benzo(ghi)perylene	0.09	J	ug/l	0.20	0.04	1
Fluorene	0.66		ug/l	0.20	0.04	1
Phenanthrene	0.14	J	ug/l	0.20	0.02	1
Dibenzo(a,h)anthracene	0.06	J	ug/l	0.20	0.04	1
Indeno(1,2,3-cd)pyrene	0.07	J	ug/l	0.20	0.04	1
Pyrene	0.06	J	ug/l	0.20	0.04	1
1-Methylnaphthalene	0.12	J	ug/l	0.20	0.04	1
2-Methylnaphthalene	ND		ug/l	0.20	0.05	1
Pentachlorophenol	ND		ug/l	0.80	0.22	1
Hexachlorobenzene	ND		ug/l	0.80	0.03	1
Hexachloroethane	ND		ug/l	0.80	0.03	1

Project Name: NORTHPOINT
Lab Number: L1714130
Project Number: 35663
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	37		10-120
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	77		15-120
2,4,6-Tribromophenol	97		10-120
4-Terphenyl-d14	81		41-149

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 05/10/17 12:01
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 05/09/17 16:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1001752-1					
Acenaphthene	ND		ug/l	2.0	0.59
Benzidine	ND		ug/l	20	8.1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.66
Hexachlorobenzene	ND		ug/l	2.0	0.58
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.67
2-Chloronaphthalene	ND		ug/l	2.0	0.64
1,2-Dichlorobenzene	ND		ug/l	2.0	0.73
1,3-Dichlorobenzene	ND		ug/l	2.0	0.69
1,4-Dichlorobenzene	ND		ug/l	2.0	0.71
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.4
2,4-Dinitrotoluene	ND		ug/l	5.0	0.84
2,6-Dinitrotoluene	ND		ug/l	5.0	1.1
Azobenzene	ND		ug/l	2.0	0.75
Fluoranthene	ND		ug/l	2.0	0.57
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.62
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.73
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.70
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.63
Hexachlorobutadiene	ND		ug/l	2.0	0.72
Hexachlorocyclopentadiene	ND		ug/l	20	7.8
Hexachloroethane	ND		ug/l	2.0	0.68
Isophorone	ND		ug/l	5.0	0.60
Naphthalene	ND		ug/l	2.0	0.68
Nitrobenzene	ND		ug/l	2.0	0.75
NDPA/DPA	ND		ug/l	2.0	0.64
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.70
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.91
Butyl benzyl phthalate	ND		ug/l	5.0	1.3
Di-n-butylphthalate	ND		ug/l	5.0	0.69

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 05/10/17 12:01
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 05/09/17 16:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1001752-1					
Di-n-octylphthalate	ND		ug/l	5.0	1.1
Diethyl phthalate	ND		ug/l	5.0	0.63
Dimethyl phthalate	ND		ug/l	5.0	0.65
Benzo(a)anthracene	ND		ug/l	2.0	0.61
Benzo(a)pyrene	ND		ug/l	2.0	0.54
Benzo(b)fluoranthene	ND		ug/l	2.0	0.64
Benzo(k)fluoranthene	ND		ug/l	2.0	0.60
Chrysene	ND		ug/l	2.0	0.54
Acenaphthylene	ND		ug/l	2.0	0.66
Anthracene	ND		ug/l	2.0	0.64
Benzo(ghi)perylene	ND		ug/l	2.0	0.61
Fluorene	ND		ug/l	2.0	0.62
Phenanthrene	ND		ug/l	2.0	0.61
Dibenzo(a,h)anthracene	ND		ug/l	2.0	0.55
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	0.71
Pyrene	ND		ug/l	2.0	0.57
Biphenyl	ND		ug/l	2.0	0.76
Aniline	ND		ug/l	2.0	0.65
4-Chloroaniline	ND		ug/l	5.0	0.63
1-Methylnaphthalene	ND		ug/l	2.0	0.67
2-Nitroaniline	ND		ug/l	5.0	1.1
3-Nitroaniline	ND		ug/l	5.0	1.2
4-Nitroaniline	ND		ug/l	5.0	1.3
Dibenzofuran	ND		ug/l	2.0	0.66
2-Methylnaphthalene	ND		ug/l	2.0	0.72
n-Nitrosodimethylamine	ND		ug/l	2.0	0.67
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.68
p-Chloro-m-cresol	ND		ug/l	2.0	0.62
2-Chlorophenol	ND		ug/l	2.0	0.63

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 05/10/17 12:01
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 05/09/17 16:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1001752-1					
2,4-Dichlorophenol	ND		ug/l	5.0	0.77
2,4-Dimethylphenol	ND		ug/l	5.0	1.6
2-Nitrophenol	ND		ug/l	10	1.5
4-Nitrophenol	ND		ug/l	10	1.8
2,4-Dinitrophenol	ND		ug/l	20	5.5
4,6-Dinitro-o-cresol	ND		ug/l	10	2.1
Pentachlorophenol	ND		ug/l	10	3.4
Phenol	ND		ug/l	5.0	1.9
2-Methylphenol	ND		ug/l	5.0	1.0
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	1.1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.72
Benzoic Acid	ND		ug/l	50	13.
Benzyl Alcohol	ND		ug/l	2.0	0.72
Carbazole	ND		ug/l	2.0	0.63
Pyridine	ND		ug/l	3.5	1.9
Tentatively Identified Compounds					
No Tentatively Identified Compounds	ND		ug/l		

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 05/10/17 12:01
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 05/09/17 16:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1001752-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		21-120
Phenol-d6	32		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	68		15-120
2,4,6-Tribromophenol	61		10-120
4-Terphenyl-d14	73		41-149

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 05/10/17 11:09
Analyst: KL

Extraction Method: EPA 3510C
Extraction Date: 05/09/17 16:57

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1001767-1					
Acenaphthene	ND		ug/l	0.10	0.04
2-Chloronaphthalene	ND		ug/l	0.20	0.04
Fluoranthene	ND		ug/l	0.20	0.04
Hexachlorobutadiene	ND		ug/l	0.50	0.04
Naphthalene	ND		ug/l	0.20	0.04
Benzo(a)anthracene	ND		ug/l	0.20	0.02
Benzo(a)pyrene	0.04	J	ug/l	0.20	0.04
Benzo(b)fluoranthene	0.05	J	ug/l	0.20	0.02
Benzo(k)fluoranthene	0.06	J	ug/l	0.20	0.04
Chrysene	ND		ug/l	0.20	0.04
Acenaphthylene	ND		ug/l	0.20	0.04
Anthracene	ND		ug/l	0.20	0.04
Benzo(ghi)perylene	0.06	J	ug/l	0.20	0.04
Fluorene	ND		ug/l	0.20	0.04
Phenanthrene	ND		ug/l	0.20	0.02
Dibenzo(a,h)anthracene	ND		ug/l	0.20	0.04
Indeno(1,2,3-cd)pyrene	0.05	J	ug/l	0.20	0.04
Pyrene	ND		ug/l	0.20	0.04
1-Methylnaphthalene	ND		ug/l	0.20	0.04
2-Methylnaphthalene	ND		ug/l	0.20	0.05
Pentachlorophenol	ND		ug/l	0.80	0.22
Hexachlorobenzene	ND		ug/l	0.80	0.03
Hexachloroethane	ND		ug/l	0.80	0.03

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 05/10/17 11:09
Analyst: KL

Extraction Method: EPA 3510C
Extraction Date: 05/09/17 16:57

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1001767-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	55		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	81		15-120
2,4,6-Tribromophenol	96		10-120
4-Terphenyl-d14	84		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1001752-2 WG1001752-3								
Acenaphthene	76		77		37-111	1		30
Benzidine	**1**	Q	**2**	Q	10-75	**105**	Q	30
1,2,4-Trichlorobenzene	68		75		39-98	10		30
Hexachlorobenzene	81		80		40-140	1		30
Bis(2-chloroethyl)ether	72		83		40-140	14		30
2-Chloronaphthalene	79		81		40-140	3		30
1,2-Dichlorobenzene	65		73		40-140	12		30
1,3-Dichlorobenzene	64		70		40-140	9		30
1,4-Dichlorobenzene	64		71		36-97	10		30
3,3'-Dichlorobenzidine	54		58		40-140	7		30
2,4-Dinitrotoluene	89		88		48-143	1		30
2,6-Dinitrotoluene	89		90		40-140	1		30
Azobenzene	83		80		40-140	4		30
Fluoranthene	79		82		40-140	4		30
4-Chlorophenyl phenyl ether	79		78		40-140	1		30
4-Bromophenyl phenyl ether	82		78		40-140	5		30
Bis(2-chloroisopropyl)ether	70		80		40-140	13		30
Bis(2-chloroethoxy)methane	82		87		40-140	6		30
Hexachlorobutadiene	61		68		40-140	11		30
Hexachlorocyclopentadiene	65		72		40-140	10		30
Hexachloroethane	62		70		40-140	12		30
Isophorone	81		86		40-140	6		30
Naphthalene	72		79		40-140	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1001752-2 WG1001752-3								
Nitrobenzene	76		83		40-140	9		30
NDPA/DPA	82		82		40-140	0		30
n-Nitrosodi-n-propylamine	80		84		29-132	5		30
Bis(2-ethylhexyl)phthalate	89		90		40-140	1		30
Butyl benzyl phthalate	81		84		40-140	4		30
Di-n-butylphthalate	81		83		40-140	2		30
Di-n-octylphthalate	91		92		40-140	1		30
Diethyl phthalate	80		79		40-140	1		30
Dimethyl phthalate	83		84		40-140	1		30
Benzo(a)anthracene	79		80		40-140	1		30
Benzo(a)pyrene	80		84		40-140	5		30
Benzo(b)fluoranthene	82		85		40-140	4		30
Benzo(k)fluoranthene	80		82		40-140	2		30
Chrysene	80		82		40-140	2		30
Acenaphthylene	84		86		45-123	2		30
Anthracene	82		82		40-140	0		30
Benzo(ghi)perylene	83		79		40-140	5		30
Fluorene	83		81		40-140	2		30
Phenanthrene	82		83		40-140	1		30
Dibenzo(a,h)anthracene	85		81		40-140	5		30
Indeno(1,2,3-cd)pyrene	84		81		40-140	4		30
Pyrene	80		83		26-127	4		30
Biphenyl	82		85		40-140	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1001752-2 WG1001752-3								
Aniline	40		**35**	Q	40-140	13		30
4-Chloroaniline	50		45		40-140	11		30
1-Methylnaphthalene	74		76		41-103	3		30
2-Nitroaniline	98		100		52-143	2		30
3-Nitroaniline	71		70		25-145	1		30
4-Nitroaniline	84		85		51-143	1		30
Dibenzofuran	81		81		40-140	0		30
2-Methylnaphthalene	76		81		40-140	6		30
n-Nitrosodimethylamine	44		51		22-74	15		30
2,4,6-Trichlorophenol	86		87		30-130	1		30
p-Chloro-m-cresol	89		90		23-97	1		30
2-Chlorophenol	74		83		27-123	11		30
2,4-Dichlorophenol	86		88		30-130	2		30
2,4-Dimethylphenol	84		87		30-130	4		30
2-Nitrophenol	85		93		30-130	9		30
4-Nitrophenol	55		56		10-80	2		30
2,4-Dinitrophenol	84		83		20-130	1		30
4,6-Dinitro-o-cresol	80		79		20-164	1		30
Pentachlorophenol	68		65		9-103	5		30
Phenol	41		44		12-110	7		30
2-Methylphenol	73		78		30-130	7		30
3-Methylphenol/4-Methylphenol	72		77		30-130	7		30
2,4,5-Trichlorophenol	88		88		30-130	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1001752-2 WG1001752-3								
Benzoic Acid	28		21		10-164	29		30
Benzyl Alcohol	70		74		26-116	6		30
Carbazole	81		84		55-144	4		30
Pyridine	11		14		10-66	24		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	44		52		21-120
Phenol-d6	35		39		10-120
Nitrobenzene-d5	67		73		23-120
2-Fluorobiphenyl	70		72		15-120
2,4,6-Tribromophenol	74		74		10-120
4-Terphenyl-d14	69		69		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1001767-2 WG1001767-3								
Acenaphthene	87		87		37-111	0		40
2-Chloronaphthalene	89		90		40-140	1		40
Fluoranthene	90		90		40-140	0		40
Hexachlorobutadiene	77		79		40-140	3		40
Naphthalene	84		85		40-140	1		40
Benzo(a)anthracene	88		86		40-140	2		40
Benzo(a)pyrene	92		94		40-140	2		40
Benzo(b)fluoranthene	95		93		40-140	2		40
Benzo(k)fluoranthene	97		95		40-140	2		40
Chrysene	89		88		40-140	1		40
Acenaphthylene	97		97		40-140	0		40
Anthracene	93		93		40-140	0		40
Benzo(ghi)perylene	96		93		40-140	3		40
Fluorene	90		90		40-140	0		40
Phenanthrene	83		83		40-140	0		40
Dibenzo(a,h)anthracene	93		91		40-140	2		40
Indeno(1,2,3-cd)pyrene	99		95		40-140	4		40
Pyrene	88		89		26-127	1		40
1-Methylnaphthalene	87		88		40-140	1		40
2-Methylnaphthalene	87		88		40-140	1		40
Pentachlorophenol	98		96		9-103	2		40
Hexachlorobenzene	89		88		40-140	1		40
Hexachloroethane	77		79		40-140	3		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1001767-2 WG1001767-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	61		61		21-120
Phenol-d6	43		43		10-120
Nitrobenzene-d5	92		94		23-120
2-Fluorobiphenyl	85		85		15-120
2,4,6-Tribromophenol	100		98		10-120
4-Terphenyl-d14	84		85		41-149

PCBS

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 5,608
Analytical Date: 05/06/17 07:41
Analyst: JA

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)
Extraction Method: EPA 608
Extraction Date: 05/04/17 19:08
Cleanup Method: EPA 3665A
Cleanup Date: 05/05/17
Cleanup Method: EPA 3660B
Cleanup Date: 05/05/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.250	0.042	1	A
Aroclor 1221	ND		ug/l	0.250	0.056	1	A
Aroclor 1232	ND		ug/l	0.250	0.024	1	A
Aroclor 1242	ND		ug/l	0.250	0.028	1	A
Aroclor 1248	ND		ug/l	0.250	0.028	1	A
Aroclor 1254	ND		ug/l	0.250	0.043	1	A
Aroclor 1260	ND		ug/l	0.200	0.045	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	75		30-150	A
Decachlorobiphenyl	54		30-150	A

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,608
Analytical Date: 05/06/17 08:05
Analyst: JA

Extraction Method: EPA 608
Extraction Date: 05/04/17 19:08
Cleanup Method: EPA 3665A
Cleanup Date: 05/05/17
Cleanup Method: EPA 3660B
Cleanup Date: 05/05/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG1000450-1						
Aroclor 1016	ND		ug/l	0.250	0.042	A
Aroclor 1221	ND		ug/l	0.250	0.056	A
Aroclor 1232	ND		ug/l	0.250	0.024	A
Aroclor 1242	ND		ug/l	0.250	0.028	A
Aroclor 1248	ND		ug/l	0.250	0.028	A
Aroclor 1254	ND		ug/l	0.250	0.043	A
Aroclor 1260	ND		ug/l	0.200	0.045	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	75		30-150	A
Decachlorobiphenyl	72		30-150	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG1000450-2									
Aroclor 1016	88		-		30-150	-		30	A
Aroclor 1260	90		-		30-150	-		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	84				30-150	A
Decachlorobiphenyl	79				30-150	A

Matrix Spike Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000450-3 QC Sample: L1714023-02 Client ID: MS Sample													
Aroclor 1016	ND	3.12	3.49	112		-	-		40-126	-		30	A
Aroclor 1260	ND	3.12	3.13	100		-	-		40-127	-		30	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81				30-150	A
Decachlorobiphenyl	44				30-150	A

Lab Duplicate Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits	
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000450-4 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)							
Aroclor 1016	ND	ND	ug/l	NC		30	A
Aroclor 1221	ND	ND	ug/l	NC		30	A
Aroclor 1232	ND	ND	ug/l	NC		30	A
Aroclor 1242	ND	ND	ug/l	NC		30	A
Aroclor 1248	ND	ND	ug/l	NC		30	A
Aroclor 1254	ND	ND	ug/l	NC		30	A
Aroclor 1260	ND	ND	ug/l	NC		30	A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	75		55		30-150	A
Decachlorobiphenyl	54		37		30-150	A

METALS

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA
Matrix: Water
Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	ND		mg/l	0.010	0.002	1	05/04/17 10:18	05/04/17 20:54	EPA 3005A	19,200.7	PS
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	0.010	1		05/04/17 20:54	NA	107,-	
Dissolved Metals - Mansfield Lab											
Antimony, Dissolved	0.0037	J	mg/l	0.0040	0.0004	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV
Arsenic, Dissolved	0.0064		mg/l	0.0010	0.0002	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV
Cadmium, Dissolved	ND		mg/l	0.0010	0.0001	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV
Copper, Dissolved	ND		mg/l	0.0010	0.0004	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV
Iron, Dissolved	3.50		mg/l	0.050	0.009	1	05/05/17 09:05	05/05/17 15:28	EPA 3005A	19,200.7	PS
Lead, Dissolved	0.0037		mg/l	0.0010	0.0003	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	05/04/17 11:35	05/04/17 17:50	EPA 245.1	3,245.1	EA
Nickel, Dissolved	0.0009	J	mg/l	0.0020	0.0006	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV
Selenium, Dissolved	ND		mg/l	0.0050	0.0017	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV
Silver, Dissolved	ND		mg/l	0.0010	0.0003	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV
Zinc, Dissolved	ND		mg/l	0.0100	0.0034	1	05/05/17 09:05	05/05/17 15:33	EPA 3005A	3,200.8	BV

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1000216-1										
Chromium, Total	ND		mg/l	0.010	0.002	1	05/04/17 10:18	05/04/17 19:12	19,200.7	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1000276-1										
Mercury, Dissolved	ND		mg/l	0.00020	0.00006	1	05/04/17 11:35	05/04/17 17:46	3,245.1	EA

Prep Information

Digestion Method: EPA 245.1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1000614-1										
Antimony, Dissolved	0.0012	J	mg/l	0.0040	0.0004	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV
Arsenic, Dissolved	0.0003	J	mg/l	0.0010	0.0002	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV
Cadmium, Dissolved	ND		mg/l	0.0010	0.0001	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV
Copper, Dissolved	ND		mg/l	0.0010	0.0004	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV
Lead, Dissolved	ND		mg/l	0.0010	0.0003	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV
Nickel, Dissolved	ND		mg/l	0.0020	0.0006	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV
Selenium, Dissolved	ND		mg/l	0.0050	0.0017	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV
Silver, Dissolved	ND		mg/l	0.0010	0.0003	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV
Zinc, Dissolved	ND		mg/l	0.0100	0.0034	1	05/05/17 09:05	05/05/17 15:23	3,200.8	BV

Prep Information

Digestion Method: EPA 3005A

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1000617-1										
Iron, Dissolved	ND		mg/l	0.050	0.009	1	05/05/17 09:05	05/05/17 15:18	19,200.7	PS

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1000216-2								
Chromium, Total	98		-		85-115	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1000276-2								
Mercury, Dissolved	104		-		85-115	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1000614-2								
Antimony, Dissolved	88		-		85-115	-		
Arsenic, Dissolved	96		-		85-115	-		
Cadmium, Dissolved	108		-		85-115	-		
Copper, Dissolved	99		-		85-115	-		
Lead, Dissolved	103		-		85-115	-		
Nickel, Dissolved	98		-		85-115	-		
Selenium, Dissolved	108		-		85-115	-		
Silver, Dissolved	95		-		85-115	-		
Zinc, Dissolved	100		-		85-115	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1000617-2								
Iron, Dissolved	100		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1000216-3 QC Sample: L1714118-01 Client ID: MS Sample												
Chromium, Total	ND	0.2	0.194	97		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1000216-7 QC Sample: L1714077-01 Client ID: MS Sample												
Chromium, Total	0.003J	0.2	0.206	103		-	-		75-125	-		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1000276-3 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)												
Mercury, Dissolved	ND	0.005	0.00231	**46**	Q	-	-		75-125	-		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1000614-3 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)												
Antimony, Dissolved	0.0037J	0.5	0.5514	110		-	-		70-130	-		20
Arsenic, Dissolved	0.0064	0.12	0.1330	105		-	-		70-130	-		20
Cadmium, Dissolved	ND	0.051	0.0560	110		-	-		70-130	-		20
Copper, Dissolved	ND	0.25	0.2528	101		-	-		70-130	-		20
Lead, Dissolved	0.0037	0.51	0.5642	110		-	-		70-130	-		20
Nickel, Dissolved	0.0009J	0.5	0.4994	100		-	-		70-130	-		20
Selenium, Dissolved	ND	0.12	0.1180	98		-	-		70-130	-		20
Silver, Dissolved	ND	0.05	0.0494	99		-	-		70-130	-		20
Zinc, Dissolved	ND	0.5	0.5060	101		-	-		70-130	-		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1000617-3 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)												
Iron, Dissolved	3.50	1	4.53	103		-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1000276-4 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)						
Mercury, Dissolved	ND	ND	mg/l	NC		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1000614-4 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)						
Antimony, Dissolved	0.0037J	0.0021J	mg/l	NC		20
Arsenic, Dissolved	0.0064	0.0065	mg/l	0		20
Cadmium, Dissolved	ND	ND	mg/l	NC		20
Copper, Dissolved	ND	ND	mg/l	NC		20
Lead, Dissolved	0.0037	0.0035	mg/l	6		20
Nickel, Dissolved	0.0009J	0.0009J	mg/l	NC		20
Selenium, Dissolved	ND	ND	mg/l	NC		20
Silver, Dissolved	ND	ND	mg/l	NC		20
Zinc, Dissolved	ND	ND	mg/l	NC		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1000617-4 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)						
Iron, Dissolved	3.50	3.58	mg/l	2		20

INORGANICS
&
MISCELLANEOUS

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1714130-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA
Matrix: Water

Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	14.		mg/l	5.0	NA	1	-	05/06/17 01:33	121,2540D	VB
Cyanide, Total	ND		mg/l	0.020	0.007	4	05/04/17 11:15	05/04/17 17:04	121,4500CN-CE	LK
Chlorine, Total Residual	ND		mg/l	0.02	0.01	1	-	05/03/17 20:58	121,4500CL-D	AS
Nitrogen, Ammonia	3.95		mg/l	0.075	0.022	1	05/04/17 14:20	05/04/17 21:14	121,4500NH3-BH	AT
Phosphorus, Total	0.611		mg/l	0.010	0.003	1	05/05/17 13:45	05/08/17 09:20	121,4500P-E	SD
Phosphorus, Soluble	0.040		mg/l	0.020	0.008	2	05/05/17 10:30	05/05/17 14:25	121,4500P-E	SD
TPH, SGT-HEM	ND		mg/l	4.00	1.24	1	05/04/17 17:00	05/04/17 22:50	74,1664A	ML
Phenolics, Total	ND		mg/l	0.030	0.010	1	05/04/17 11:29	05/04/17 13:48	4,420.1	AW
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	05/04/17 01:45	05/04/17 02:03	1,7196A	VB
Anions by Ion Chromatography - Westborough Lab										
Chloride	1280		mg/l	50.0	8.39	100	-	05/06/17 21:10	44,300.0	JC

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1714130
Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000064-1										
Chlorine, Total Residual	ND		mg/l	0.02	0.01	1	-	05/03/17 20:58	121,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000105-1										
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	05/04/17 01:45	05/04/17 02:02	1,7196A	VB
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000202-1										
Nitrogen, Ammonia	ND		mg/l	0.075	0.022	1	05/04/17 14:20	05/04/17 20:55	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000235-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	05/04/17 11:15	05/04/17 14:55	121,4500CN-CE	LK
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000284-1										
Phenolics, Total	ND		mg/l	0.030	0.010	1	05/04/17 11:29	05/04/17 13:42	4,420.1	AW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000423-1										
TPH, SGT-HEM	ND		mg/l	4.00	1.24	1	05/04/17 17:00	05/04/17 22:50	74,1664A	ML
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000590-1										
Phosphorus, Soluble	ND		mg/l	0.010	0.004	1	05/05/17 10:30	05/05/17 14:25	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000600-1										
Phosphorus, Total	ND		mg/l	0.010	0.003	1	05/05/17 13:45	05/08/17 09:12	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1000898-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	05/06/17 01:33	121,2540D	VB
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1001110-1										
Chloride	ND		mg/l	0.500	0.083	1	-	05/06/17 19:46	44,300.0	JC

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1000064-2								
Chlorine, Total Residual	101		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1000105-2								
Chromium, Hexavalent	96		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1000202-2								
Nitrogen, Ammonia	94		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1000235-2								
Cyanide, Total	109		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1000284-2								
Phenolics, Total	94		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1000423-2								
TPH	86		-		64-132	-		34
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1000590-2								
Phosphorus, Soluble	97		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1714130

Report Date: 05/19/17

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1000600-2					
Phosphorus, Total	95	-	80-120	-	
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1001110-2					
Chloride	105	-	90-110	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000064-4 QC Sample: L1714140-01 Client ID: MS Sample												
Chlorine, Total Residual	ND	0.248	ND	**0**	Q	-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000105-4 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)												
Chromium, Hexavalent	ND	0.1	0.091	91		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000202-4 QC Sample: L1714029-01 Client ID: MS Sample												
Nitrogen, Ammonia	0.058J	4	3.86	96		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000235-4 QC Sample: L1714124-01 Client ID: MS Sample												
Cyanide, Total	ND	0.2	0.217	108		-	-		90-110	-		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000284-4 QC Sample: L1713995-01 Client ID: MS Sample												
Phenolics, Total	0.012J	0.4	0.44	110		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000423-4 QC Sample: L1714124-06 Client ID: MS Sample												
TPH	ND	20	17.5	88		-	-		64-132	-		34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000590-3 QC Sample: L1714328-01 Client ID: MS Sample												
Phosphorus, Soluble	0.024	0.5	0.506	96		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000600-3 QC Sample: L1714212-12 Client ID: MS Sample												
Phosphorus, Total	0.006J	0.5	0.491	98		-	-		75-125	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1001110-3 QC Sample: L1714286-01 Client ID: MS Sample												
Chloride	18.1	4	21.6	**89**	Q	-	-		90-110	-		18

Lab Duplicate Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000064-3 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000105-3 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000202-3 QC Sample: L1714029-01 Client ID: DUP Sample						
Nitrogen, Ammonia	0.058J	0.065J	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000235-3 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)						
Cyanide, Total	ND	ND	mg/l	NC		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000284-3 QC Sample: L1713995-01 Client ID: DUP Sample						
Phenolics, Total	0.012J	0.016J	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000423-3 QC Sample: L1714124-06 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000590-4 QC Sample: L1714130-01 Client ID: VES-I-308D(MW)						
Phosphorus, Soluble	0.040	0.040	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000600-4 QC Sample: L1714212-12 Client ID: DUP Sample						
Phosphorus, Total	0.006J	0.007J	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1000898-2 QC Sample: L1714129-03 Client ID: DUP Sample						
Solids, Total Suspended	120	130	mg/l	8		29

Lab Duplicate Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1001110-4 QC Sample: L1714286-01 Client ID: DUP Sample					
Chloride	18.1	18.1	mg/l	0	18

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1714130-01A	Vial HCl preserved	A	N/A	2.5	Y	Absent	8260-SIM(14),8260(14)
L1714130-01B	Vial HCl preserved	A	N/A	2.5	Y	Absent	8260-SIM(14),8260(14)
L1714130-01C	Vial HCl preserved	A	N/A	2.5	Y	Absent	8260-SIM(14),8260(14)
L1714130-01D	Vial Na2S2O3 preserved	A	N/A	2.5	Y	Absent	504(14)
L1714130-01E	Vial Na2S2O3 preserved	A	N/A	2.5	Y	Absent	504(14)
L1714130-01F	Vial unpreserved	A	N/A	2.5	Y	Absent	SUB-ETHANOL()
L1714130-01G	Vial Na2S2O3 preserved	A	N/A	2.5	Y	Absent	SUB-ETHANOL()
L1714130-01H	Vial Na2S2O3 preserved	A	N/A	2.5	Y	Absent	SUB-ETHANOL()
L1714130-01I	Vial Na2S2O3 preserved	A	N/A	2.5	Y	Absent	SUB-ETHANOL()
L1714130-01J	Amber 1000ml Na2S2O3	A	7	2.5	Y	Absent	PCB-608(7)
L1714130-01K	Amber 1000ml Na2S2O3	A	7	2.5	Y	Absent	PCB-608(7)
L1714130-01L	Amber 1000ml unpreserved	A	7	2.5	Y	Absent	8270TCL(7),8270TCL-SIM(7)
L1714130-01M	Amber 1000ml unpreserved	A	7	2.5	Y	Absent	8270TCL(7),8270TCL-SIM(7)
L1714130-01N	Amber 1000ml H2SO4 preserved	A	<2	2.5	Y	Absent	TPHENOL-420(28)
L1714130-01O	Plastic 250ml unpreserved	A	7	2.5	Y	Absent	SPHOS-4500(28)
L1714130-01P	Plastic 250ml NaOH preserved	A	>12	2.5	Y	Absent	TCN-4500(14)
L1714130-01Q	Plastic 250ml HNO3 preserved	A	<2	2.5	Y	Absent	AG-2008S(180),FE-RI(180),AS-2008S(180),PB-2008S(180),ZN-2008S(180),NI-2008S(180),SE-2008S(180),CD-2008S(180),CU-2008S(180),SB-2008S(180),HG-R(28)
L1714130-01R	Plastic 500ml H2SO4 preserved	A	<2	2.5	Y	Absent	TPHOS-4500(28),NH3-4500(28)
L1714130-01S	Plastic 950ml unpreserved	A	7	2.5	Y	Absent	TSS-2540(7)
L1714130-01T	Plastic 950ml unpreserved	A	7	2.5	Y	Absent	CL-300(28),HEXCR-7196(1),TRC-4500(1)
L1714130-01U	Amber 1000ml HCl preserved	A	N/A	2.5	Y	Absent	TPH-1664(28)
L1714130-01V	Amber 1000ml HCl preserved	A	N/A	2.5	Y	Absent	TPH-1664(28)
L1714130-01W	Plastic 250ml HNO3 preserved spl	A	<2	2.5	Y	Absent	CR-UI(180)
L1714130-01X	Plastic 250ml H2SO4 preserved Fi	A	N/A	2.5	Y	Absent	SPHOS-4500(28)
L1714130-02A	Vial HCl preserved	A	N/A	2.5	Y	Absent	HOLD-8260(14)
L1714130-02B	Vial HCl preserved	A	N/A	2.5	Y	Absent	HOLD-8260(14)

*Values in parentheses indicate holding time in days

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1714130
Report Date: 05/19/17

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1714130-02C	Vial Na2S2O3 preserved	A	N/A	2.5	Y	Absent	HOLD-504/8011(14)
L1714130-02D	Vial Na2S2O3 preserved	A	N/A	2.5	Y	Absent	HOLD-504/8011(14)

*Values in parentheses indicate holding time in days

Project Name:	NORTHPOINT	**Lab Number:**	L1714130
Project Number:	35663	**Report Date:**	05/19/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the

Report Format: DU Report with 'J' Qualifiers

Project Name:	NORTHPOINT	**Lab Number:**	L1714130
Project Number:	35663	**Report Date:**	05/19/17

Data Qualifiers

reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	NORTHPOINT	**Lab Number:**	L1714130
Project Number:	35663	**Report Date:**	05/19/17

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

4 Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.

5 Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).

14 Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.

19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.

44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.

74 Method 1664,Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.

107 Alpha Analytical - In-house calculation method.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 5/3/17

ALPHA Job #: L1714130

ALPHA ANALYTICAL
World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: The Vertex Companies
Address: 1 Congress St. 10th Fl. Boston, MA
Phone: 617-830-1447
Email: jfreeman@vertexeng.com; rshelling@ " ; slennon@ " ; tcairns@ "
Additional Project Information:

Project Information

Project Name: Northpoint
Project Location: Cambridge, MA
Project #: 35663
Project Manager: Jesse Freeman
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☒ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	NPDES RGP	dissolved phosphorous	total phosphorous	Ethanol 10ml/1671	Sample Comments	TOTAL # BOTTLES
14130-01	VES-I-308D(MW)	5/3/17	9:55	GW	STL									X	X	X	X		25

SAMPLE INFO
Filtration: ☒ Field ☒ Lab to do
Preservation: ☐ Lab to do

Container Type											P	V		
Preservative											C	B		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Stephanie Lemon	5/3/17 12:40	AAL	5/3/17 1240
AAL	5/3/17 1727		5/3/17 1727

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

SUB UPS: EUROFINS-LANCASTER, PA

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
stborough, MA Mansfield, MA
L: 508-898-9220 TEL: 508-822-9300
X: 508-898-9193 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1714130

Project Information

Project Name:

Project Location: MA

Project #:

Project Manager: Melissa Gulli

ALPHA Quote #:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Client Information

ient: Alpha Analytical Lab

ldress: 8 Walkup Drive

estborough, Ma 01581

one: 508-898-9220

x:

ail: subreports@alphalab.com

These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

her Project Specific Requirements/Comments/Detection Limits:

ease reference Alpha Job #L1714130 on this report.

ANALYSIS

SAMPLE HANDLING

Filtration

☐ Done

☐ Not Needed

☐ Lab to do

Preservation

☐ Lab to do

(Please specify below)

PHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Ethanol 1671I	Sample Specific Comments	TOTAL # BOTTLES
	VES-I-308D(MW)	5/3/17	09:55	GW		X		4

Container Type	V		-	-	-	-	-	-	-	-	-	-	-
Preservative	A&B		-	-	-	-	-	-	-	-	-	-	-

ASE ANSWER QUESTIONS ABOVE!

YOUR PROJECT
A MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
Corrigan	5/4/17		

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Alpha Analytical, Inc.
145 Flanders Road
Westborough MA 01581

Report Date: May 17, 2017

Project: L1714130

Submittal Date: 05/05/2017
Group Number: 1797905
PO Number: L1714130
State of Sample Origin: MA

Client Sample Description	Lancaster Labs (LL) #
VES-I-308D(MW) Water Sample	8978156

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	Alpha Analytical, Inc.	Attn: Melissa Gulli
Electronic Copy To	Alpha Analytical, Inc.	Attn: Sublab Contact

Respectfully Submitted,

Bonnie Stadelmann

Bonnie Stadelmann
Senior Project Manager

(312) 590-3133

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: VES-I-308D(MW) Water Sample
L1714130

LL Sample # WW 8978156
LL Group # 1797905
Account # 09847

Project Name: L1714130

Collected: 05/03/2017 09:55

Submitted: 05/05/2017 09:45
Reported: 05/17/2017 16:28

Alpha Analytical, Inc.
145 Flanders Road
Westborough MA 01581

-4130

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC Miscellaneous	**EPA 1671 Rev A**		**ug/l**	**ug/l**	
02366	ethanol	64-17-5	N.D.	2,000	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02366	EPA 1671 VOCs	EPA 1671 Rev A	1	171300041A	05/11/2017 04:42	Tyler O Griffin	1

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Quality Control Summary

Client Name: Alpha Analytical, Inc. Group Number: 1797905
Reported: 05/17/2017 16:28

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ
	ug/l	ug/l
Batch number: 171300041A	Sample number(s): 8978156	
ethanol	N.D.	2,000

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: 171300041A	Sample number(s): 8978156								
ethanol	4000	3979.35	4000	3876.82	99	97	70-132	3	30

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: 171300041A	Sample number(s): 8978156 UNSPK: P980336									
ethanol	N.D.	4000	4005.41	4000	4119.95	100	103	70-132	3	30

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: EPA 1671 VOCs
Batch number: 171300041A

	Amyl Alcohol
8978156	104
Blank	108
LCS	111

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Quality Control Summary

Client Name: Alpha Analytical, Inc. Group Number: 1797905
Reported: 05/17/2017 16:28

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: EPA 1671 VOCs
Batch number: 171300041A

	Amyl Alcohol
LCSD	113
MS	114
MSD	115
Limits:	52-144

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

SUB UPS: EUROFINS-LANCASTER, PA | 9847 1797905 8978156

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1714130

Report Information — ☐ FAX ☐ EMAIL ☐ ADEx ☐ Add'l Deliverables

Data Deliverables

Billing Information — ☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Client Information

Client: Alpha Analytical Lab
Address: 8 Walkup Drive
Westborough, Ma 01581
Phone: 508-898-9220
Fax:
Email: subreports@alphalab.com

☐ These samples have been Previously analyzed by Alpha

Project Information

Project Name:
Project Location: MA
Project #:
Project Manager: Melissa Gulli
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:
Please reference Alpha Job #L1714130 on this report.

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Ethanol 1671I	Sample Specific Comments	TOTAL # BOTTLES
	VES-I-308D(MW)	5/3/17	09:55	GW		X		4

Container Type	V		-	-	-	-	-	-	-	-	-	-
Preservative	A&B		-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
Courier	5/4/17		
			5/5/17 0805

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(I) (rev. 30-JUL-07)

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 182897

Group Number(s): 1797905

Client: Alpha

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	05/05/2017 9:45
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	NY		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Karen Diem (3060) at 17:07 on 05/05/2017

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT121	4.0	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

eurofins | Lancaster Laboratories Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	none detected
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…
W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ANALYTICAL REPORT

Lab Number:	L1717568
Client:	Vertex Environmental Services, Inc. One Congress Street 10th Floor Boston, MA 02114
ATTN:	Jesse Freeman
Phone:	(781) 952-6000
Project Name:	NORTHPOINT
Project Number:	35663
Report Date:	06/01/17

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1717568
Report Date: 06/01/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1717568-01	VES-I-308D(MW)	WATER	CAMBRIDGE, MA	05/03/17 09:55	05/03/17

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1717568
Report Date: 06/01/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	NORTHPOINT	**Lab Number:**	L1717568
Project Number:	35663	**Report Date:**	06/01/17

Case Narrative (continued)

Metals

The WG1007987-1 Method Blank, associated with L1717568-01, has a concentration above the reporting limit for antimony. Since the sample was non-detect to the RL for this target analyte, no further actions were taken. The results of the original analysis are reported.

The WG1007987-2 LCS recovery, associated with L1717568-01, is above the acceptance criteria for antimony (116%); however, the associated sample is non-detect to the RL for this target analyte. The results of the original analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 06/01/17

METALS

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1717568
Report Date: 06/01/17

SAMPLE RESULTS

Lab ID: L1717568-01
Client ID: VES-I-308D(MW)
Sample Location: CAMBRIDGE, MA
Matrix: Water
Date Collected: 05/03/17 09:55
Date Received: 05/03/17
Field Prep: Field Filtered (Dissolved Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.00400	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM
Arsenic, Total	0.00631		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM
Iron, Total	3.71		mg/l	0.050	--	1	05/30/17 10:13	06/01/17 15:10	EPA 3005A	19,200.7	PS
Lead, Total	0.01135		mg/l	0.00050	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	05/31/17 12:15	05/31/17 21:33	EPA 245.1	3,245.1	EA
Nickel, Total	0.00271		mg/l	0.00200	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	05/30/17 10:13	05/31/17 09:57	EPA 3005A	3,200.8	AM

Project Name: NORTHPOINT
Project Number: 35663
Lab Number: L1717568
Report Date: 06/01/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1007987-1										
Antimony, Total	0.00440		mg/l	0.00400	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Lead, Total	ND		mg/l	0.0005	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Silver, Total	ND		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1007989-1										
Iron, Total	ND		mg/l	0.050	--	1	05/30/17 10:13	06/01/17 14:06	19,200.7	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1008447-1										
Mercury, Total	ND		mg/l	0.00020	--	1	05/31/17 12:15	05/31/17 21:01	3,245.1	EA

Prep Information

Digestion Method: EPA 245.1

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORTHPOINT

Project Number: 35663

Lab Number: L1717568

Report Date: 06/01/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1007987-2								
Antimony, Total	**116**	Q	-		85-115	-		
Arsenic, Total	103		-		85-115	-		
Cadmium, Total	106		-		85-115	-		
Copper, Total	102		-		85-115	-		
Lead, Total	108		-		85-115	-		
Nickel, Total	101		-		85-115	-		
Selenium, Total	105		-		85-115	-		
Silver, Total	100		-		85-115	-		
Zinc, Total	101		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1007989-2								
Iron, Total	101		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1008447-2								
Mercury, Total	96		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1717568
Report Date: 06/01/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007987-3 QC Sample: L1717349-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.5537	111		-	-		70-130	-		20
Arsenic, Total	0.0016	0.12	0.1238	102		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05542	109		-	-		70-130	-		20
Copper, Total	0.00118	0.25	0.2625	104		-	-		70-130	-		20
Lead, Total	0.0007	0.51	0.5384	105		-	-		70-130	-		20
Nickel, Total	ND	0.5	0.5218	104		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1199	100		-	-		70-130	-		20
Silver, Total	ND	0.05	0.04981	100		-	-		70-130	-		20
Zinc, Total	ND	0.5	0.5075	102		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007987-5 QC Sample: L1717374-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.5601	112		-	-		70-130	-		20
Arsenic, Total	ND	0.12	0.1218	102		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05348	105		-	-		70-130	-		20
Copper, Total	0.0339	0.25	0.2849	100		-	-		70-130	-		20
Lead, Total	ND	0.51	0.5287	104		-	-		70-130	-		20
Nickel, Total	0.0022	0.5	0.4997	99		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1294	108		-	-		70-130	-		20
Silver, Total	ND	0.05	0.04822	96		-	-		70-130	-		20
Zinc, Total	0.1525	0.5	0.6630	102		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007989-3 QC Sample: L1717349-01 Client ID: MS Sample												
Iron, Total	0.377	1	1.43	105		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1717568
Report Date: 06/01/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008447-3 QC Sample: L1717567-01 Client ID: MS Sample									
Mercury, Total	ND	0.005	0.00459	92	-	-	70-130	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1717568
Report Date: 06/01/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007987-4 QC Sample: L1717349-01 Client ID: DUP Sample						
Cadmium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.00118	0.00135	mg/l	14		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007987-6 QC Sample: L1717374-01 Client ID: DUP Sample						
Lead, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007989-4 QC Sample: L1717349-01 Client ID: DUP Sample						
Iron, Total	0.377	0.383	mg/l	2		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008447-4 QC Sample: L1717567-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

Project Name: NORTHPOINT
Project Number: 35663

Lab Number: L1717568
Report Date: 06/01/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information **Custody Seal**

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1717568-01A	Plastic 500ml HNO3 preserved spl	A	<2	2.5	Y	Absent	CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),PB-2008T(180),SB-2008T(180)

*Values in parentheses indicate holding time in days

Project Name:	NORTHPOINT	**Lab Number:**	L1717568
Project Number:	35663	**Report Date:**	06/01/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the

Report Format: Data Usability Report

Project Name:	NORTHPOINT	**Lab Number:**	L1717568
Project Number:	35663	**Report Date:**	06/01/17

Data Qualifiers

reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	NORTHPOINT	**Lab Number:**	L1717568
Project Number:	35663	**Report Date:**	06/01/17

REFERENCES

3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF COUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL — World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 5/3/17

ALPHA Job #: ~~L1714130~~

Client Information

Client: The Vertex Companies
Address: 1 Congress St. 10th Fl. Boston, MA
Phone: 617-830-1447
Email: jfreeman@vertexeng.com, jsnelling@ " ", slennon@ " ", tcairns@ " "

Additional Project Information:

RGP- Metals- Ag,As, Sb,Cd,Cu,Fe,Pb,Hg,Ni,Se,Zn

Project Information

Project Name: Northpoint
Project Location: Cambridge, MA
Project #: 35663
Project Manager: Jesse Freeman
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH *(only confirmed if pre-approved!)*

Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☒ Yes ☐ No NPDES RGP
☐ Other State /Fed Program ______ Criteria ______

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15 ☐ PP13; METALS: ☐ RCRA5 ☐ RCRA8; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; NPDES RGP; dissolved phosphorous; total phosphorous; ethanol (well/1671)

SAMPLE INFO — Filtration: ☒ Field ☒ Lab to do; Preservation

Total - RGP Metals

ALPHA Lab ID (Lab Use Only) L1717568	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	NPDES RGP	dissolved phosphorous	total phosphorous	ethanol	Total - RGP Metals	Sample Comments	TOTAL # BOTTLES
~~14130~~ -01	VES-I-308D(MW)	5/3/17	9:55	GW	STL	~~X~~	~~X~~	~~X~~	~~X~~	X		25

Container Type	P	V			
Preservative	C	B			

Container Type: P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle

Preservative: A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H = $Na_2S_2O_3$, I= Ascorbic Acid, J = NH_4Cl, K= Zn Acetate, O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Stephanie Lennon	5/3/17 12:40	AAL	5/3/17 1240
AAL	5/3/17 1725	[signature]	5/3/17 1727

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)