HALEY & ALDRICH, INC.
465 Medford St.
Suite 2200
Boston, MA 02129
617.886.7400

5 May 2021
File No. 05304-662

Environmental Protection Agency (EPA) Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, Massachusetts 02129

Attention: Shauna Little

Subject: NPDES RGP Application for Temporary Construction Dewatering
Cambridge Crossing – Parcel U
441 Morgan Avenue
Cambridge, Massachusetts

Ladies and Gentlemen:

On behalf of our client, DW PROPCO U, LLC., Haley & Aldrich, Inc. (Haley & Aldrich) is submitting this application to request authorization under the National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) for off-site discharge of temporary construction dewatering effluent during construction activities at the Cambridge Crossing – Parcel U site located at 441 Morgan Avenue in Cambridge, Massachusetts (the "Parcel U site"). A copy of the Notice of Intent (NOI) is included in Appendix A.

GENERAL SITE INFORMATION

Site Conditions and Proposed Construction

The Parcel U site is part of a larger overall development called Cambridge Crossing located in Cambridge, Massachusetts. Refer to Figure 1 for the Project Locus. The Cambridge Crossing development includes several mixed-use buildings constructed in phases within a network of roads and other infrastructure. The Parcel U site is currently an at-grade residential parking lot, with existing grades ranging from approximately El. 24 to El. 26[1]. Several existing utilities and easements exist in and around the parking lot.

The proposed construction at the Parcel U site includes a 13-story building with 3 to 3.5 levels of below-grade parking. The approximate limits of the Parcel U site and the building footprint are shown on Figure 2.

[1] Elevations referenced herein are in feet and reference Cambridge City Base (CCB) datum unless otherwise noted.

Temporary construction dewatering will be required to lower groundwater levels inside the excavation and conduct work in-the-dry. Additional effluent may also be generated from surface runoff from precipitation, groundwater seepage, and construction-generated water (e.g., wheel washes, decontamination activities) at the Parcel U site. Dewatering is expected to begin in June 2021 and continue for up to 18 months.

Site History

The overall Cambridge Crossing (formerly known as North Point) development has a history of past maritime and industrial use. Historical maps indicate that the area was originally part of the Charles and Millers Rivers and was progressively filled during the 19th century. Since the mid 1800's numerous buildings, structures, railways, and seawalls were constructed, some of which may still be present beneath the Parcel U site. Above-grade structures have been demolished and/or filled over to the current site conditions. It is likely that the former foundation elements, below-grade building floors and walls, utilities, or other features were left in-place.

Previous site usage as a railroad included the construction of railroad tracks and associated railyard structures (i.e., freight houses and depot structures, etc.). Sanborn maps indicate the presence to railroad tracks and associated structures from 1873 to 1995. Remnants of those uses may also be present, buried within the Parcel U site.

Following construction of the adjacent buildings located at Sierra and Tango (Parcels S and T), during the 2005 to 2007 timeframe, grades at Parcel U were raised prior to parking lot construction to current site grades. The current parking lot as seen today appeared on aerial maps beginning in 2011.

Regulatory Status

While there are multiple Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Numbers (RTNs) associated with the Cambridge Crossing development, only one is associated with the Parcel U site, RTN 3-24479.

RTN 3-24479 is associated with concentrations of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and metals in soil resulting from the presence of urban fill and historical industrial uses. RTN 3-24479 also includes other portions of the Cambridge Crossing development adjacent to the Parcel U site. RTN 3-24479 achieved regulatory closure in July 2013 under a Class A-3 Response Action Outcome (RAO) through the implementation of Activity and Use Limitation (AUL) over a portion of the RTN 3-24479 Disposal Site that does not include the Parcel U site. The Parcel U site is not subject to the AUL.

The results of exploration programs in November and December 2020 and March 2021 indicated the presence of VOCs, SVOCs, metals, and TPH at concentrations exceeding the applicable MCP RCS-1 reportable concentrations and higher than those previously detected at the Parcel U site used to close out RTN 3-24479. Additionally, new compounds (polychlorinated biphenyls [PCBs]) were detected in the Parcel U site soil (at one location and depth interval) above RCS-1 criteria.

Due to the higher concentrations of previously detected compounds and newly detected compounds, on behalf of DW PROPCO U, LLC, an eligible person under M.G.L.c. 21E § 5C, a Release Notification Form (RNF) was submitted to MassDEP by Haley & Aldrich on 27 April 2021. Proposed construction activities for the Parcel U site will be conducted under a Release Abatement Measure (RAM) Plan under this newly reported RTN, to be filed with MassDEP prior to intrusive activities.

SOURCE WATER INFORMATION

To evaluate groundwater (source water) quality at the Parcel U site, one groundwater sample was obtained from observation wells VES-X-9 on 20 January 2021. The well is located at the Parcel U site as shown on Figure 2.

The groundwater sample was sent to a MassDEP-certified laboratory, Alpha Analytical (Alpha), for analysis of constituents consistent with requirements for a NPDES RGP. The groundwater sample was analyzed for the following parameters: VOCs, semi-volatile organic compounds (SVOCs), total metals, hardness, ethanol, PCBs, chloride, total residual chlorine, total cyanide, ammonia nitrogen, total phenolics, total suspended solids (TSS), and TPH. Temperature and pH were measured in the field at the time of sampling.

A summary of the groundwater chemical analytical data is provided in Table I. The data is compared to the applicable 2014 MCP Reportable Groundwater Concentrations (RCGW-2) criteria and the 2017 NPDES RGP Site-Specific Effluent Criteria as determined in the WQBEL calculations. The source water laboratory data report is provided in Appendix F.

RECEIVING WATER INFORMATION

Receiving water quality data was collected in support of this NOI on 20 January 2021 and submitted to Alpha to be analyzed for hardness, ammonia, and total metals. The results of the sample are summarized in Table I. Receiving water temperature was measured in the field at 3.42°C, noted on the effluent limitations input calculation page in Appendix B and on Table I. The receiving water laboratory data report is provided in Appendix F.

The sample was collected from the Charles River along Cambridge Parkway within 0.5 miles of the two proposed Outfalls, Outfall D03OF0005 (Figure 3) and Outfall D03OF0010 (Figure 4). Outfall D03OF0005 discharges into the Lechmere Canal off of the Charles River. Outfall D03OF0010 discharges directly into the Charles River.

The final receiving water is the Charles River with Waterbody Segment ID MA72-38 and is identified as a Class B(CSO) receiving water. On 13 April 2021, MassDEP confirmed that there is no dilution factor when discharging into the Charles River from the Lechmere Canal and that there is not a 7Q10 value available for the Lechmere Canal. MassDEP confirmation of the dilution factor, 7Q10 value, and outfall locations are provided in Appendix B.

EFFLUENT CRITERIA DETERMINATION

Groundwater and Receiving Water data were input into the WQBEL Calculation spreadsheet and used to calculate the effluent criteria for the site. A dilution factor and 7Q10 flow rate of 0 was used in the calculations as directed by MassDEP. Copies of the "EnterData" and "FreshwaterResults" tabs from the excel file provided as an additional resource by EPA will be transmitted concurrently with this application. The effluent limitations calculated are included for reference in Table I.

Copies of the "EnterData" and "FreshwaterResults" tabs from the excel file provided as an additional resource by EPA are included in Appendix B and will be transmitted electronically with the NOI. The effluent limitations calculated are included for reference in Table I.

DISCHARGE INFORMATION

Construction dewatering will include discharging effluent into catch basins adjacent to the Parcel U site. The catch basins proposed for discharge and the proposed discharge routes are shown on Figures 3 and 4. We anticipate effluent discharge rates to be about 50 gallons per minute (gpm) or less, with occasional peak flows of about 150 gpm during significant precipitation events. The temporary dewatering will take place in trench excavations and be conducted with sumps.

A Best Management Practices Plan (BMPP), which outlines the proposed discharge operations covered under the RGP, will be available at the site and is not being submitted with this NOI.

DEWATERING TREATMENT SYSTEM INFORMATION

An effluent treatment system will be designed and implemented by the Contractor to meet the applicable 2017 NPDES RGP Site-Specific Effluent Criteria. Prior to discharge, collected water will be routed through a pH controller, designed to adjust the pH when necessary, and then through a sedimentation tank and bag filters to remove suspended solids and undissolved chemical constituents, as shown on Figure 5. Additional treatment may include granulated activated carbon (GAC) and/or ion exchange.

TREATMENT CHEMICALS AND ADDITIVES

pH adjustment, if required, will be conducted using sodium hydroxide that will be dosed to reduce or increase pH using a metered system. Potential product information, including chemical formula, safety data sheet (SDS), CAS registry number, manufacturer, and associated hazards, toxicological and ecological information, and manufacturer information, including dosing and metering, are provided in Appendix C. The CAS Registry Numbers for the components of the sodium hydroxide solution are 7732-18-5 (water), 1310-73-2 (sodium hydroxide), and 7647-14-5 (sodium chloride).

A pH system that can adjust pH will be implemented as required to meet permit discharge requirements. The pH system is designed to raise the pH with sodium hydroxide solution and includes an automatic metered additive feed system with a mix tank, additive feed pumps and setpoint controls that maintain the pH approved by the permit.

The sodium hydroxide will be stored in 55-gallon plastic drums with secondary containment systems in place; a summary of control measures for proper handling and spill prevention is provided in Appendix C. The addition of sodium hydroxide to control pH is a standard treatment for temporary construction dewatering; it is not expected to exceed applicable permit limitations and water quality standards or alter conditions in the receiving water. No additional testing is considered necessary for use of this product or to demonstrate that use of this product will not adversely affect the receiving water since pH is already expected to be a required testing parameter for dewatering effluent.

pH will be automatically and continuously monitored, and additive added only as needed. The specific dosing will be based on the pH of the influent water, but at its maximum, the concentrations of sodium hydroxide would be 220 ppm mg/L based on the calculations provided below:

Worst case scenario: pumping at 150 gpm and using 48 gallons of sodium hydroxide per day (based on a 2 gal/hr metering rate).

150 gpm = 216,000 gal/day
Sodium Hydroxide use (one day) = 48 gal/day
48 gal / 216,000 gal = 2.22 x 10-4 gal
2.22 x 10-4 gal * 100% = 0.022%
1% = 10,000 ppm, therefore;
0.022% * 10,000 ppm = 220 ppm (220 mg/L)

The EC50 for sodium hydroxide for fish is 340.7 – 469.2 mg/l (ppm) as listed on the provided SDS. Even at a worst-case scenario, the addition of sodium hydroxide is less than the EC50.

If deemed necessary to meet the 2017 NPDES RGP Site-Specific Effluent Criteria, additional treatment including a GAC and/or ion exchange may be added to the treatment system. If additional treatment is needed to meet necessary effluent limits or if the specifics of the pH adjustment change before or during dewatering, a Notice of Change (NOC) will be submitted to the EPA for review, including proposed product information (e.g., Safety Data Sheets, associated hazards, manufacturer, and proper system operation, etc.).

DETERMINATION OF ENDANGERED SPECIES ACT ELIGIBILITY

According to the guidelines outlined in Appendix I of the 2017 NPDES RGP, a preliminary determination for the action area associated with this project was established using the U.S. Fish and Wildlife Service (FWS) Information, Planning, and Conservation (IPAC) online system; a copy of the determination is attached in Appendix D. Based on the results of the determination, the project and work area meet FWS Criterion A as no critical habitats have been established to be present within the project action area. Additionally, a MassDEP Phase 1 Site Assessment Map is included in Appendix E, which confirms that no critical habitats are present at the site.

DOCUMENTATION OF NATIONAL HISTORIC PRESERVATION ACT REQUIREMENTS

Based on a review of the resources provided by the U.S. National Register of Historic Places and a review of the Massachusetts Cultural Resource Information System (MACRIS), no historic properties have been established to be present at the Parcel U site, and discharges and discharge-related activities are not considered to have the potential to affect historic properties. The discharge is considered to meet Criterion A. Documentation is included in Appendix E.

SUPPLEMENTAL INFORMATION

Permits for temporary construction dewatering will also be required from the City of Cambridge. The City of Cambridge Permit to Dewater will be submitted by the Contractor prior to discharge.

Owner and operator information are provided below for reference. Mark Johnson is serving as the contact person for DW PROPCO U, LLC, an eligible person under M.G.L.c. 21E § 5C.

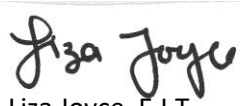
Owner:
DW PROPCO U, LLC.
301 Howard Street, Suite 2100
San Francisco, CA 94105
Attn: Mark Johnson

Operator:
John Moriarty & Associates
3 Church Street #2
Winchester, MA 01890
Attn: Gillian Dahill

CLOSING

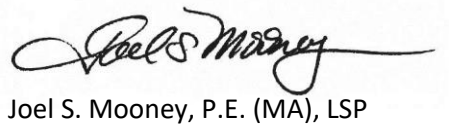
Thank you very much for your consideration. Please feel free to contact us should you wish to discuss the information contained herein or if you need additional information.

Sincerely yours,
HALEY & ALDRICH, INC.



Liza Joyce, E.I.T.
Engineer

Elizabeth J. Christmas, P.E. (NH)
Assistant Project Manager



Joel S. Mooney, P.E. (MA), LSP
Principal | Senior Vice President

Enclosures:

Table I – Summary of Water Quality Data
Figure 1 – Project Locus
Figure 2 – Site and Subsurface Exploration Plan
Figure 3 – Proposed Discharge Route 1
Figure 4 – Proposed Discharge Route 2
Figure 5 – Proposed Treatment System Schematic
Appendix A – Notice of Intent (NOI)
Appendix B – Effluent Limitations Documentation
Appendix C – Additional Treatment Information
Appendix D – Endangered Species Act Assessment
Appendix E – National Historic Preservation Act Review
Appendix F – Laboratory Data Reports

TABLES

TABLE I
SUMMARY OF GROUNDWATER DATA
PARCEL U CAMBRIDGE CROSSING
CAMBRIDGE, MA
FILE NO. 05304-652

LOCATION SAMPLE NAME SAMPLING DATE LAB SAMPLE ID SAMPLE TYPE	MassDEP MCP RCGW-2 2014	2017 NPDES RGP Site-Specific Effluent Criteria	INFLUENT VES-X-9 VES-X-9-20210120 01/20/2021 L2103167-02 WATER	EFFLUENT SW 2021-0120-SW 01/20/2021 L2103167-01 WATER
Volatile Organics (µg/l)				
1,1,1-Trichloroethane	4000	200	ND(2)	-
1,1,2-Trichloroethane	900	5	ND(1.5)	-
1,1-Dichloroethane	2000	70	ND(1.5)	-
1,1-Dichloroethene	80	3.2	ND(1)	-
1,2-Dichlorobenzene	2000	600	ND(5)	-
1,2-Dichloroethane	5	5	ND(1.5)	-
1,3-Dichlorobenzene	6000	320	ND(5)	-
1,4-Dichlorobenzene	60	5	ND(5)	-
Acetone	50000	7970	ND(10)	-
Benzene	1000	5	ND(1)	-
Carbon tetrachloride	2	4.4	ND(1)	-
cis-1,2-Dichloroethene	20	70	ND(1)	-
Ethylbenzene	5000	100	ND(1)	-
Methyl tert butyl ether	5000	70	ND(10)	-
Methylene chloride	2000	4.6	ND(1)	-
o-xylene	3000	NA	ND(1)	-
p/m-Xylene	3000	NA	ND(2)	-
Tert-Butyl Alcohol	NA	120	ND(100)	-
Tertiary-Amyl Methyl Ether	NA	90	ND(20)	-
Tetrachloroethene	50	5	ND(1)	-
Toluene	40000	100	ND(1)	-
Trichloroethene	5	5	ND(1)	-
Vinyl chloride	2	2	ND(1)	-
Xylenes, Total	3000	100	ND(1)	-
SUM of Volatile Organic Compounds	NA	NA	ND	-
Volatile Organics by SIM (µg/l)				
1,4-Dioxane	6000	200	ND(50)	-
Semivolatile Organics (µg/l)				
Bis(2-ethylhexyl)phthalate	50000	101	ND(2.2)	-
Butyl benzyl phthalate	10000	NA	ND(5)	-
Di-n-butylphthalate	5000	NA	ND(5)	-
Di-n-octylphthalate	100000	NA	ND(5)	-
Diethyl phthalate	9000	101	ND(5)	-
Dimethyl phthalate	50000	NA	ND(5)	-
Total Phthalates	NA	190	ND	-
Pentachlorophenol	200	1	ND(1)	-
Phenol	2	1080	ND(30)	-
SUM of Semivolatile Organic Compounds	NA	NA	ND	-
Semivolatile Organics by SIM (µg/l)				
Acenaphthene	10000	Group II PAHs	ND(0.1)	-
Acenaphthylene	40	Group II PAHs	ND(0.1)	-
Anthracene	30	Group II PAHs	ND(0.1)	-
Benzo(a)anthracene	1000	1	ND(0.1)	-
Benzo(a)pyrene	500	1	ND(0.1)	-
Benzo(b)fluoranthene	400	1	ND(0.1)	-
Benzo(ghi)perylene	20	Group II PAHs	ND(0.1)	-
Benzo(k)fluoranthene	100	1	ND(0.1)	-
Chrysene	70	1	ND(0.1)	-
Dibenzo(a,h)anthracene	40	1	ND(0.1)	-
Fluoranthene	200	Group II PAHs	ND(0.1)	-
Fluorene	40	Group II PAHs	ND(0.1)	-
Indeno(1,2,3-cd)pyrene	100	1	ND(0.1)	-
Naphthalene	700	20	ND(0.1)	-
Phenanthrene	10000	Group II PAHs	ND(0.1)	-
Pyrene	20	Group II PAHs	ND(0.1)	-
SUM of Group I PAHs	NA	1	ND	-
SUM of Group II PAHs	NA	100	ND	-
SUM of Semivolatile Organic Compounds (SIM)	NA	NA	ND	-

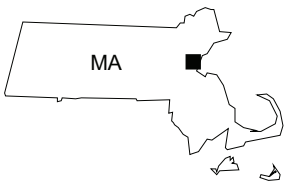
TABLE I
SUMMARY OF GROUNDWATER DATA
PARCEL U CAMBRIDGE CROSSING
CAMBRIDGE, MA
FILE NO. 05304-652

			INFLUENT	EFFLUENT
LOCATION			**VES-X-9**	**SW**
SAMPLE NAME	**MassDEP MCP RCGW-2 2014**	**2017 NPDES RGP Site-Specific Effluent Criteria**	**VES-X-9-20210120**	**2021-0120-SW**
SAMPLING DATE			**01/20/2021**	**01/20/2021**
LAB SAMPLE ID			**L2103167-02**	**L2103167-01**
SAMPLE TYPE			**WATER**	**WATER**
Total Petroleum Hydrocarbons (µg/l)				
TPH, SGT-HEM	5000	5000	ND(4000)	-
Total Metals (µg/l)				
Antimony, Total	8000	206	ND(2)	ND(4)
Arsenic, Total	900	10	**16.85**	ND(1)
Cadmium, Total	4	10.2	ND(1)	ND(0.2)
Chromium, Total	300	NA	ND(5)	ND(1)
Copper, Total	100000	242	ND(5)	1.61
Iron, Total	NA	1000	**43400**	362
Lead, Total	10	160	ND(5)	1.93
Mercury, Total	20	0.739	ND(0.2)	ND(0.2)
Nickel, Total	200	1450	ND(10)	ND(2)
Selenium, Total	100	235.8	ND(25)	ND(5)
Silver, Total	7	35.1	ND(2)	ND(0.4)
Zinc, Total	900	420	ND(50)	16.49
Polychlorinated Biphenyls (µg/l)				
Aroclor 1016	5	NA	ND(0.25)	-
Aroclor 1221	5	NA	ND(0.25)	-
Aroclor 1232	5	NA	ND(0.25)	-
Aroclor 1242	5	NA	ND(0.25)	-
Aroclor 1248	5	NA	ND(0.25)	-
Aroclor 1254	5	NA	ND(0.25)	-
Aroclor 1260	5	NA	ND(0.2)	-
Total PCBs	5	0.5	ND	-
Microextractables (µg/l)				
1,2-Dibromoethane (Ethylene Dibromide)	2	0.05	ND(0.01)	-
General Chemistry (µg/l)				
Chloride	NA	Report	1960000	-
Chlorine, Total Residual	NA	50	ND(20)	-
Chromium, Hexavalent	300	323	ND(10)	ND(10)
Chromium, Trivalent	600	323	ND(10)	ND(10)
Cyanide, Total	30	5.2	**11**	-
Ethanol	NA	Report	ND(20000)	-
Hardness	NA	NA	332000	67300
Nitrogen, Ammonia	NA	Report	3560	190
pH*	NA	6.5 - 8.5	6.51	7.53
Temperature (°C)*	NS	NA	11.65	3.42
Phenolics, Total	NA	NA	ND(30)	-
Total Suspended Solids	NA	30000	23000	-

ABBREVIATIONS NOTES:

- : Not analyzed
µg/l: micrograms per liter
ND (2.5): Result not detected above reporting limit (shown in parentheses)
* Measured in the field at the time of sampling.
1. **Red Bold** values indicate an exceedance of site-specific RGP Criteria.

FIGURES



MAP SOURCE: ESRI
SITE COORDINATES: 42°22'13"N, 71°4'21"W

HALEY ALDRICH

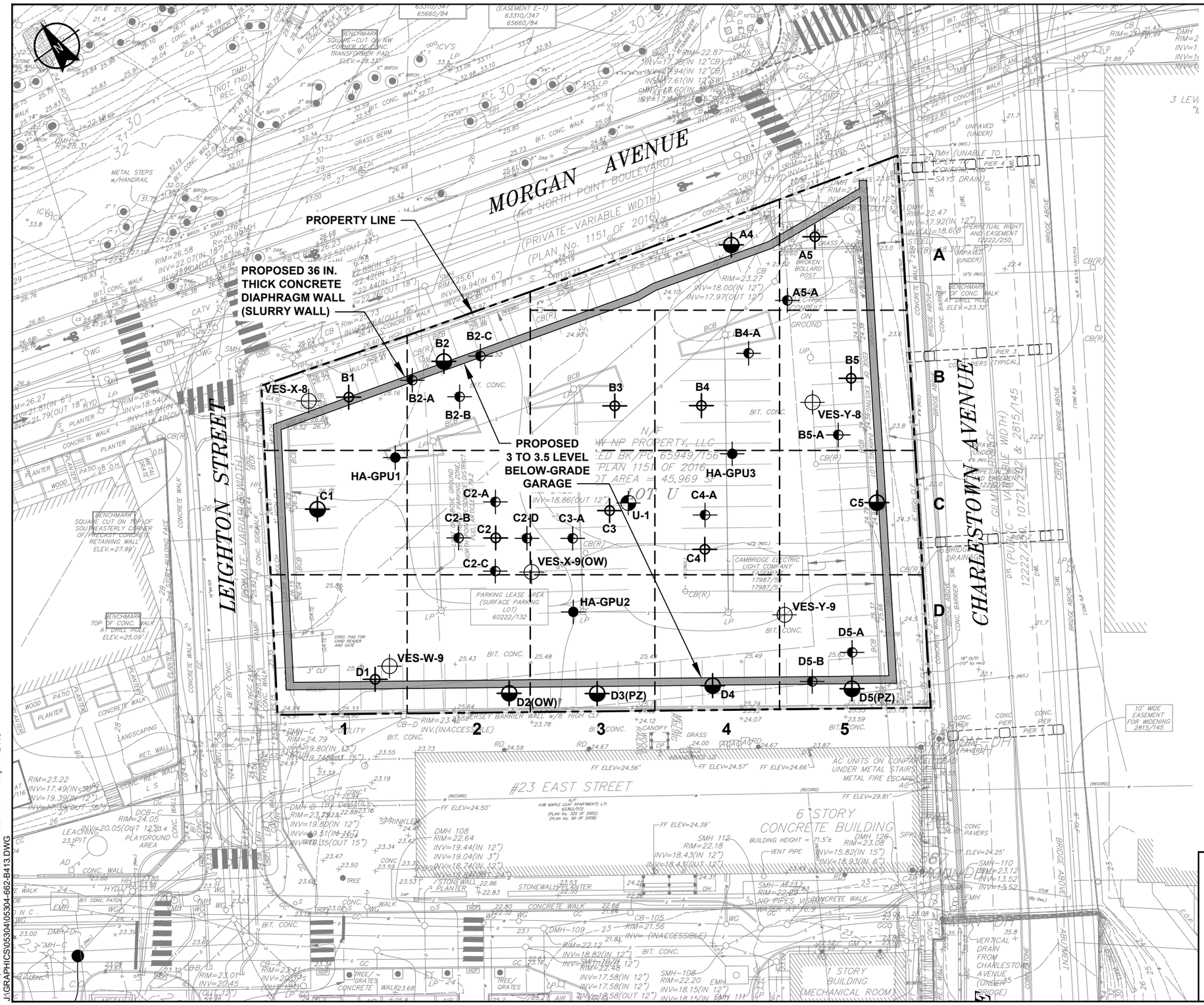
CAMBRIDGE CROSSING – PARCEL U
CAMBRIDGE, MASSACHUSETTS

PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
MAY 2021

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\bos_common\105304\Global\GIS\MapProjects\2021_01105304_652_0001_PROJECT_LOCUS.mxd — USER: hwachholz — LAST SAVED: 1/14/2021 2:27:49 PM



LEGEND

B2-A	DESIGNATION AND APPROXIMATE LOCATION OF GEORPROBE PREFORMED BY G & M SUBSURFACE AND MONITORED BY HALEY & ALDRICH, INC. BETWEEN 22 TO 25 MARCH 2021
A4	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING PERFORMED BY CARR-DEE CORPORATION AND MONITORED BY HALEY & ALDRICH, INC. BETWEEN 17 NOVEMBER TO 17 DECEMBER 2020
B1	DESIGNATION AND APPROXIMATE LOCATION OF GEOPROBE PERFORMED BY CARR-DEE CORPORATION AND MONITORED BY HALEY & ALDRICH, INC. BETWEEN 19 TO 23 DECEMBER 2020
HA-GPU3	DESIGNATION AND APPROXIMATE LOCATION OF GEOPROBE PERFORMED BY NEW HAMPSHIRE BORING, INC. AND MONITORED BY HALEY & ALDRICH, INC. ON 3 OCTOBER 2006
T3	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING PERFORMED BY NEW HAMPSHIRE BORING, INC. AND MONITORED BY HALEY & ALDRICH, INC. BETWEEN 25 JUNE AND 9 JULY 2004
VES-X-8	DESIGNATION AND APPROXIMATE LOCATION OF EXPLORATIONS PERFORMED AND MONITORED BY OTHERS
(OW)	INDICATES OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE
(PZ)	INDICATES PIEZOMETER INSTALLED IN COMPLETED BOREHOLE
— — — —	SOIL PRECHARACTERIZATION GRID

NOTES

1. BASE PLAN TAKEN FROM ELECTRONIC FILE TITLED “208477B061D.dwg” PROVIDED BY BEALS + THOMAS ON 29 SEPTEMBER 2020.
2. ELEVATIONS ARE IN FEET AND REFERENCE THE CAMBRIDGE CITY BASE (CCB) DATUM.
3. APPROXIMATE LIMITS OF PROPOSED SLURRY WALL OBTAINED FROM ELECTRONIC FILE TITLED “05304-652-HAI-CXU-SOE-2020-1019-V2.DWG” BY HALEY & ALDRICH, INC. DATED 19 OCTOBER 2020.

0 40 80
SCALE IN FEET

HALEY ALDRICH

CAMBRIDGE CROSSING - PARCEL U
CAMBRIDGE, MASSACHUSETTS

SITE AND SUBSURFACE EXPLORATION LOCATION PLAN

SCALE: AS SHOWN
MAY 2021

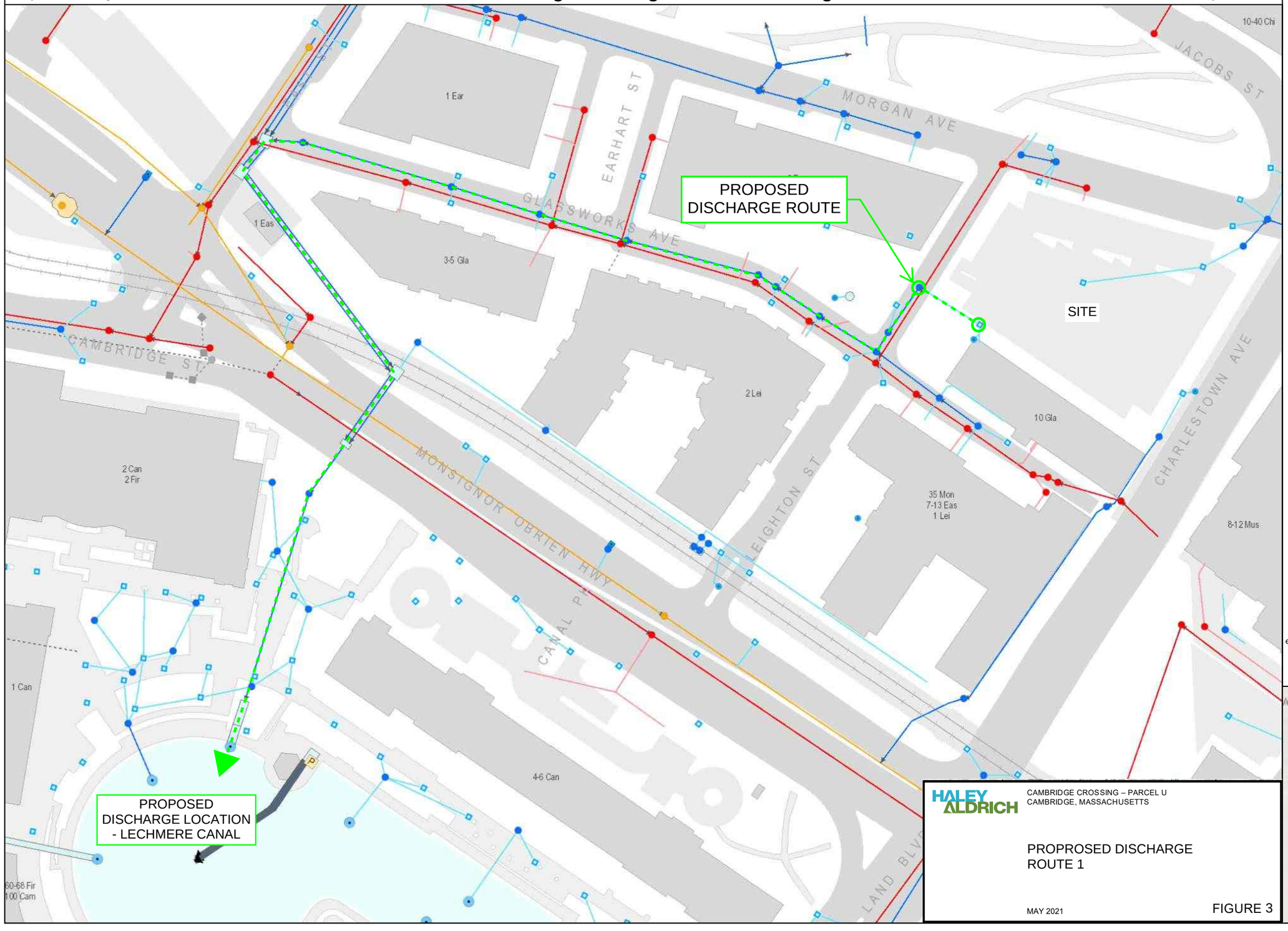
FIGURE 2

ERVIN, DAYNA
J:\GRAPHICS\05304\05304-662-B413.DWG
Printed: 4/13/2021 9:31 PM
Layout: B413

City of Cambridge

Cambridge Crossing - Parcel U Discharge Plan

January 14, 2021



LEGEND

- Sewer
  - Manholes
    - Manholes
      - Stormwater
      - Sewage
      - Combined Sewage
      - Abandoned
  - Outfalls
    - Stormwater
    - Combined Sewer Overflo
    - Abandoned
  - Pumping Structures
    - Pump Station
    - Lift Station
  - Lampholes
    - LampHole, Sewage
    - LampHole, Storm Runoff
  - Catchbasins
    - Standard Sump
    - Drop Inlet
    - Area Drain
    - Drywell
    - Oil/Water Separator
    - Abandoned
  - Trench Drains
  - Service Laterals
    - Combined Wastewater, In
    - Stormwater
    - Sewage
    - Abandoned
  - Force Mains
    - Combined Wastewater
    - Sewage
    - Storm Runoff
  - Gravity Mains
    - Flow Arrows
    - Over / Under
      - Abandoned - Over
      - Abandoned - Under
      - Combined - Over
      - Combined - Under
      - Sewage - Over
      - Sewage - Under
      - Storm - Over
      - Storm - Under
  - MWRA Mains
    - Abandoned
    - Low Service
- Underground Structures
  - Stormwater
  - Sewage
  - Combined Sewage
- Zoom Three Paved Surfaces
  - Paved Roads
  - Other Paved Surface
  - Bridges
  - Public Footpath

City of Cambridge
Massachusetts

1" = 94 ft

All data is provided for graphic representation only. The City of Cambridge expressly disclaims all warranties of any type, expressed or implied, including, but not limited to, any warranty as to the accuracy of the data, merchantability, or fitness for a particular purpose.

www.cambridgema.gov/gis

HALEY ALDRICH

CAMBRIDGE CROSSING – PARCEL U
CAMBRIDGE, MASSACHUSETTS

PROPROSED DISCHARGE ROUTE 1

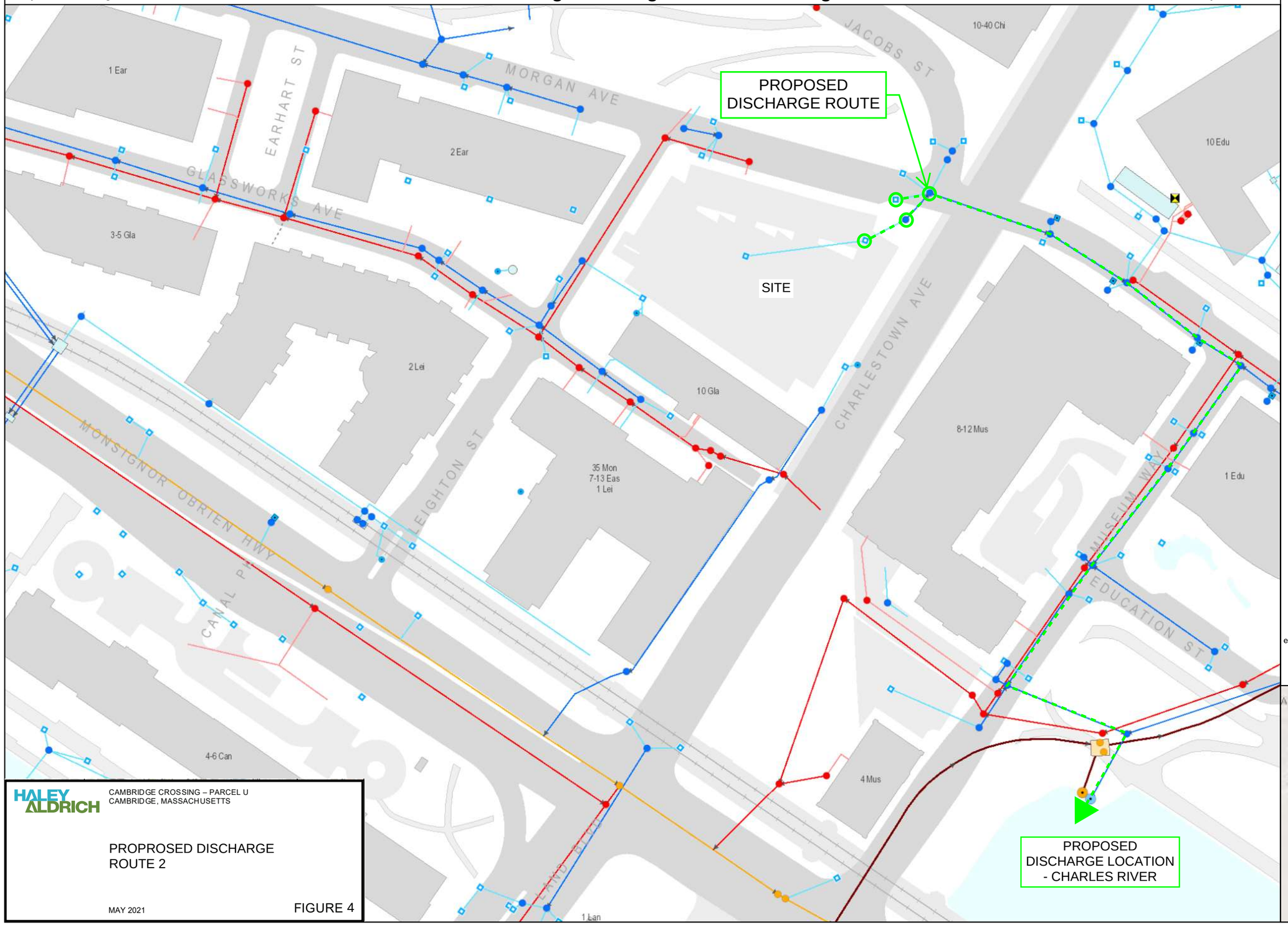
MAY 2021

FIGURE 3

City of Cambridge

Cambridge Crossing - Parcel U Discharge Plan

January 14, 2021



LEGEND

- Sewer
  - Manholes
    - Manholes
      - Stormwater
      - Sewage
      - Combined Sewage
      - Abandoned
  - Outfalls
    - Stormwater
    - Combined Sewer Overflo
    - Abandoned
  - Pumping Structures
    - Pump Station
    - Lift Station
  - Lampholes
    - LampHole, Sewage
    - LampHole, Storm Runoff
  - Catchbasins
    - Standard Sump
    - Drop Inlet
    - Area Drain
    - Drywell
    - Oil/Water Separator
    - Abandoned
  - Trench Drains
  - Service Laterals
    - Combined Wastewater, In
    - Stormwater
    - Sewage
    - Abandoned
  - Force Mains
    - Combined Wastewater
    - Sewage
    - Storm Runoff
  - Gravity Mains
    - Flow Arrows
    - Over / Under
      - Abandoned - Over
      - Abandoned - Under
      - Combined - Over
      - Combined - Under
      - Sewage - Over
      - Sewage - Under
      - Storm - Over
      - Storm - Under
  - MWRA Mains
    - Abandoned
    - In Service
  - Underground Structures
    - Stormwater
    - Sewage
    - Combined Sewage
- Zoom Three Paved Surfaces
  - Paved Roads
  - Other Paved Surface
  - Bridges
  - Public Footpath

City of Cambridge
Massachusetts

1" = 94 ft

All data is provided for graphic representation only. The City of Cambridge expressly disclaims all warranties of any type, expressed or implied, including, but not limited to, any warranty as to the accuracy of the data, merchantability, or fitness for a particular purpose.

www.cambridgema.gov/gis

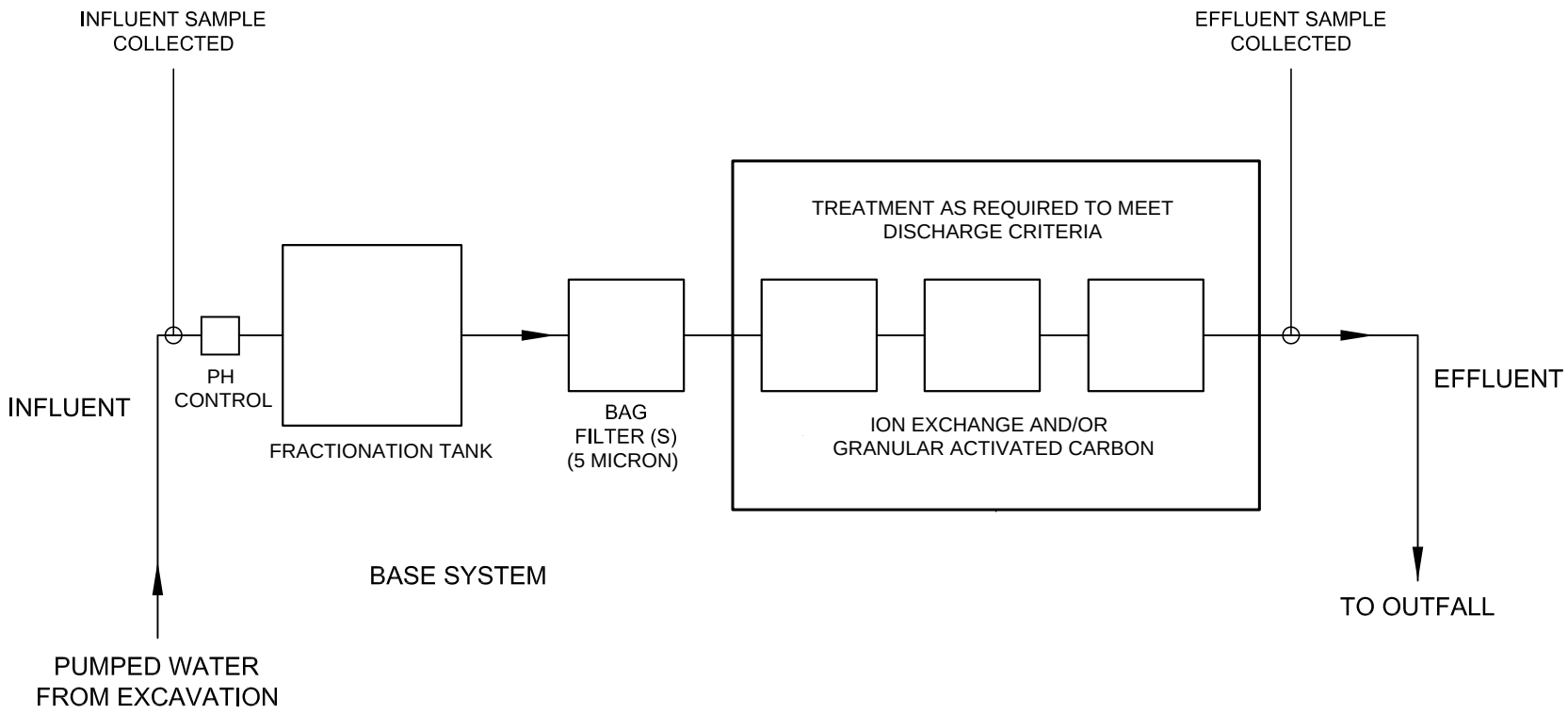
HALEY ALDRICH

CAMBRIDGE CROSSING – PARCEL U
CAMBRIDGE, MASSACHUSETTS

PROPROSED DISCHARGE
ROUTE 2

MAY 2021

FIGURE 4



LEGEND:

DIRECTION OF FLOW

NOTE:

1. DETAILS OF TREATMENT SYSTEM MAY VARY FROM SYSTEM INDICATED ABOVE. SPECIFIC MEANS AND METHODS OF TREATMENT TO BE SELECTED BY CONTRACTOR. WATER WILL BE TREATED TO MEET REQUIRED EFFLUENT STANDARDS.

HALEY ALDRICH

CAMBRIDGE CROSSING – PARCEL U
CAMBRIDGE, MASSACHUSETTS

PROPOSED TREATMENT SYSTEM SCHEMATIC

SCALE: NONE
MAY 2021

FIGURE 5

APPENDIX A

Notice of Intent (NOI)

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

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:
Cambridge Crossing - Parcel U</td><td colspan="3">Site address: 441 Morgan Avenue
Street:</td></tr>
<tr><td>City: Cambridge</td><td>State: MA</td><td>Zip: 02141</td></tr>
<tr><td rowspan="4">2. Site owner
DW PROPCO U, LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ☐ Private
■ Other; if so, specify: Institution</td><td colspan="3">Contact Person: Mark Johnson</td></tr>
<tr><td colspan="2">Telephone: 617.914.8640</td><td>Email: MJohnson@divcowest.com</td></tr>
<tr><td colspan="3">Mailing address: 301 Howard Street, Suite 2100
Street:</td></tr>
<tr><td>City: San Francisco</td><td>State: CA</td><td>Zip: 94105</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
John Moriarty & Associates</td><td colspan="3">Contact Person: Gillian Dahill</td></tr>
<tr><td colspan="2">Telephone: 781.264.1096</td><td>Email: GDahill@jm-a.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 3 Church Street #2</td></tr>
<tr><td>City: Winchester</td><td>State: MA</td><td>Zip: 01890</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
Not Applicable

NPDES permit is (check all that apply: ■ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
■ MA Chapter 21e; list RTN(s):

☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:

☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Charles River	MA72-38	Class B(CSO)

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

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

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

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP. Impaired - aesthetic (P), fish consumption, fish, other aquatic life and wildlife (P), primary contact rec. (P, pathogens), and secondary contact rec (P): two TMDLs (pathogens and phosphorus)

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	0
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.	0

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:

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	☐ Contaminated surface water	☐ The receiving water	☐ Potable water; if so, indicate municipality or origin:
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	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	☐ A surface water other than the receiving water; if so, indicate waterbody:	☐ Other; if so, specify:

2. Source water contaminants: arsenic, iron, chloride, ammonia, cyanide, total suspended solids	
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): D03OF0010 D03OF0005	Outfall location(s): (Latitude, Longitude) 42.369176, -71.071378 42.369442, -71.075856
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Into the Charles/into the Lechmere Canal and then the Charles River via City of Cambridge storm drains ☐ 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: City of Cambridge dewatering application will be submitted by the Contractor before discharge Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ■ Yes ☐ No	
Provide the expected start and end dates of discharge(s) (month/year): June 2021 to June 2022 Indicate if the discharge is expected to occur over a duration of: ☐ less than 12 months ■ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="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>

Additional "Compliane Level Applies if Shown" value of 50 ug/L on FreshwaerResults page

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	121,4500	75	3560	-	Report mg/L	---
Chloride		✓	1	44,300.0	50000	1960000	-	Report µg/l	---
Total Residual Chlorine	✓		1	121,4500	20	<20	-	0.2 mg/L	NA
Total Suspended Solids		✓	1	121,2540	10000	23000	-	30 mg/L	---
Antimony	✓		1	3,200.8	2	<2	-	206 µg/L	NA
Arsenic		✓	1	3,200.8	5	16.85	-	104 µg/L	NA
Cadmium	✓		1	3,200.8	1	<1	-	10.2 µg/L	NA
Chromium III	✓		1	107,-	10	<10	-	323 µg/L	NA
Chromium VI	✓		1	1,7196A	10	<10	-	323 µg/L	NA
Copper	✓		1	3,200.8	5	<5	-	242 µg/L	NA
Iron		✓	1	19,200.7	50	43400	-	5,000 µg/L	NA
Lead	✓		1	3,200.8	5	<5	-	160 µg/L	NA
Mercury	✓		1	3,245.1	0.2	<0.2	-	0.739 µg/L	NA
Nickel	✓		1	3,200.8	10	<10	-	1,450 µg/L	NA
Selenium	✓		1	3,200.8	25	<25	-	235.8 µg/L	NA
Silver	✓		1	3,200.8	2	<2	-	35.1 µg/L	NA
Zinc	✓		1	3,200.8	50	<50	-	420 µg/L	NA
Cyanide		✓	1	121,4500	5	11	-	178 mg/L	5.2
B. Non-Halogenated VOCs									
Total BTEX	✓		1	128,624.1	2	<2	-	100 µg/L	---
Benzene	✓		1	128,624.1	1	<1	-	5.0 µg/L	---
1,4 Dioxane	✓		1	128,624.1	50	<50	-	200 µg/L	---
Acetone	✓		1	128,624.1	10	<10	-	7.97 mg/L	---
Phenol	✓		1	4,420.1	30	<30	-	1,080 µg/L	NA

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	128,624.1	1	<1	-	4.4 µg/L	NA
1,2 Dichlorobenzene	✔		1	128,624.1	5	<5	-	600 µg/L	---
1,3 Dichlorobenzene	✔		1	128,624.1	5	<5	-	320 µg/L	---
1,4 Dichlorobenzene	✔		1	128,624.1	5	<5	-	5.0 µg/L	---
Total dichlorobenzene	✔		1	NA	5	<5	-	763 µg/L in NH	---
1,1 Dichloroethane	✔		1	128,624.1	1.5	<1.5	-	70 µg/L	---
1,2 Dichloroethane	✔		1	128,624.1	1.5	<1.5	-	5.0 µg/L	---
1,1 Dichloroethylene	✔		1	128,624.1	1	<1	-	3.2 µg/L	---
Ethylene Dibromide	✔		1	14,504.1	0.01	<0.01	-	0.05 µg/L	---
Methylene Chloride	✔		1	128,624.1	1	<1	-	4.6 µg/L	---
1,1,1 Trichloroethane	✔		1	128,624.1	2	<2	-	200 µg/L	---
1,1,2 Trichloroethane	✔		1	128,624.1	1.5	<1.5	-	5.0 µg/L	---
Trichloroethylene	✔		1	128,624.1	1	<1	-	5.0 µg/L	---
Tetrachloroethylene	✔		1	128,624.1	1	<1	-	5.0 µg/L	NA
cis-1,2 Dichloroethylene	✔		1	128,624.1	1	<1	-	70 µg/L	---
Vinyl Chloride	✔		1	128,624.1	1	<1	-	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		1	129,625.1	5	<5	-	190 µg/L	NA
Diethylhexyl phthalate	✔		1	129,625.1	2.2	<2.2	-	101 µg/L	NA
Total Group I PAHs	✔		1	129,625.1	0.1	<0.1	-	1.0 µg/L	---
Benzo(a)anthracene	✔		1	129,625.1	0.1	<0.1	-	As Total PAHs	NA
Benzo(a)pyrene	✔		1	129,625.1	0.1	<0.1	-		NA
Benzo(b)fluoranthene	✔		1	129,625.1	0.1	<0.1	-		NA
Benzo(k)fluoranthene	✔		1	129,625.1	0.1	<0.1	-		NA
Chrysene	✔		1	129,625.1	0.1	<0.1	-		NA
Dibenzo(a,h)anthracene	✔		1	129,625.1	0.1	<0.1	-		NA
Indeno(1,2,3-cd)pyrene	✔		1	129,625.1	0.1	<0.1	-		NA

Additional "Compliane Level Applies if Shown" value of 0.5 ug/L on FreshwaerResults page

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	129,625.1	0.1	<0.1	-	100 µg/L	---
Naphthalene	✔		1	129,625.1	0.1	<0.1	-	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		1	127,608.3	0.25	<0.25	-	0.000064 µg/L	---
Pentachlorophenol	✔		1	129,625.1	1	<1	-	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✔		1	74,1664A	4000	<4000	-	5.0 mg/L	---
Ethanol	✔		1	1671A	20000	<20000	-	Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	128,624.1	10	<10	-	70 µg/L	NA
tert-Butyl Alcohol	✔		1	128,624.1	100	<100	-	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		1	128,624.1	20	<20	-	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	NA	651	-		
Hardeness		✔	1	19,200.7	660	332000	-		
Temperature		✔	1	Field	NA	11.65 C			
See next page									

LIST OF COMPOUNDS DETECTED IN SOIL		
*compounds detected in GW and Soil		
Volatile Organic Compounds (mg/kg)	**Semi-Volatile Organic Compounds (mg/kg)**	**Inorganic Compounds (mg/kg)**
1,2,4-Trimethylbenzene	1,4-Dichlorobenzene	Antimony
1,3,5-Trimethylbenzene	2-Methylnaphthalene	Arsenic *
1,4-Dichlorobenzene	3&4-Methylphenol	Barium
2-Butanone (Methyl Ethyl Ketone)	Acenaphthene	Beryllium
2-Chlorotoluene	Acenaphthylene	Cadmium
2-Phenylbutane (sec-Butylbenzene)	Anthracene	Chromium
Acetone	Benzo(a)anthracene	Lead
Benzene	Benzo(a)pyrene	Mercury
Carbon disulfide	Benzo(b)fluoranthene	Nickel
Chlorobenzene	Benzo(g,h,i)perylene	Vanadium
cis-1,2-Dichloroethene	Benzo(k)fluoranthene	Zinc
Cymene (p-Isopropyltoluene)	bis(2-Chloroethyl)ether	
Ethylbenzene	bis(2-Ethylhexyl)phthalate	**PCBs (mg/kg)**
Isopropylbenzene (Cumene)	Chrysene	Aroclor-1242 (PCB-1242)
Naphthalene	Dibenz(a,h)anthracene	Aroclor-1260 (PCB-1260)
n-Butylbenzene	Dibenzofuran	
n-Propylbenzene	Fluoranthene	**Total Petroleum Hydrocarbons (mg/kg)**
Styrene	Fluorene	Petroleum hydrocarbons
Tetrachloroethene	Indeno(1,2,3-cd)pyrene	
Toluene	Naphthalene	
trans-1,2-Dichloroethene	Phenanthrene	
Trichloroethene	Phenol	
Xylene (total)	Pyrene	

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:
Granular activated carbon (GAC), Ion Exchange and/or pH adjustment may be added to meet necessary effluent limits.

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.
Prior to discharge, collected water will be routed through a pH controller, designed to raise or lower the pH when necessary, and then through a sedimentation tank and bag filters to remove suspended solids and undissolved chemical constituents, as shown on Figure 4. Additional treatment may include granulated activated carbon (GAC) and/or ion exchange.

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: pH Adjustment as needed
Granulated Activated Carbon (GAC) and/or Ion Exchange may be added to meet necessary effluent limits.

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: Flowmeter Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	250 gpm
Provide the proposed maximum effluent flow in gpm.	150 gpm
Provide the average effluent flow in gpm.	50 gpm
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:
pH conditioners may be added to the treatment system if necessary to meet effluent limits.

2. Provide the following information for each chemical/additive, using attachments, if necessary:

Refer to attached Haley & Aldrich, Inc. letter
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.

Refer to attached Haley & Aldrich, Inc. letter

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

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

J. Certification requirement

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

BMPP certification statement:	A BMPP meeting the requirements of this general permit will be implemented at the site and is not being submitted with this NOI.
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 ■ Will be sent by the Contractor prior to start of discharge
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. 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 ☐ Will be sent by the Contractor prior to start of discharge 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: Gillian Daniell *	Date: 4/21/21
Print Name and Title: Gillian Daniell PROJECT ENGINEER	

*As development manager, on behalf of DW Propco U, LLC and not individually.

APPENDIX B

Effluent Limitations Documentation

Joyce, Liza

From: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>
Sent: Monday, April 19, 2021 9:19 AM
To: Joyce, Liza
Subject: Re: 7Q10 + Dilution Factor for NPDES NOI - Cambridge Crossing - Parcel U

CAUTION: External Email

Yes, if this was a discharge to the shoreline of the Charles River, you could calculate a 7Q10 but since this is a discharge to the canal where there is much less flushing, the dilution is zero. And the 7Q10 is not available.

From: "Joyce, Liza" <EJoyce@haleyaldrich.com>
Date: Monday, April 19, 2021 at 9:03 AM
To: "Vakalopoulos, Catherine (DEP)" <catherine.vakalopoulos@mass.gov>
Subject: RE: 7Q10 + Dilution Factor for NPDES NOI - Cambridge Crossing - Parcel U

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Okay, good to know about the Lechmere Canal. So to summarize, I will be using both a dilution factor of 0 and therefore a 7Q10 value of 0.

Liza Joyce, E.I.T. | Haley & Aldrich, Inc.
Engineer

From: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>
Sent: Tuesday, April 13, 2021 2:47 PM
To: Joyce, Liza <EJoyce@haleyaldrich.com>
Subject: Re: 7Q10 + Dilution Factor for NPDES NOI - Cambridge Crossing - Parcel U

CAUTION: External Email

Hi Liza,
I've looked at Lechmere Canal for other RGP authorizations, including Cambridge Crossing (back in 2017 when it was called Northpoint). Though there is a high 7Q10 and plenty of dilution in the main channel of the Charles River, there isn't in Lechmere Canal. Also, the drainage lines you see in StreamStats are not quite accurate. Therefore, using a 7Q10 from a location downstream of the Museum of Science is not applicable for Lechmere Canal. Unfortunately, as with the other RGPs that discharged to Lechmere Canal, a dilution factor cannot be used for this proposed discharge.

For the NOI:
Waterbody and ID: Charles River (MA72-38) within Charles River Watershed
Classification: B(CSO)
Outstanding Resource Water?: no
State's most recent Integrated List is located here: https://www.mass.gov/files/documents/2020/01/07/16ilwplist.pdf, search for "MA72-38" to see the causes of impairments.
TMDLs: there are two approved TMDL (pathogens and phosphorus) for this segment.

As you may know, if this is not a *current* MCP site, then in addition to submitting the NOI to EPA, you need to apply with MassDEP and submit a $500 fee (unless fee exempt, e.g., municipality) using the ePLACE. The instructions are located here: https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent. Technical assistance is available on the front page of the ePLACE application webpage.

Please let me know if you have any questions, and again, I'm very sorry for the delay.

Cathy

From: "Joyce, Liza" <EJoyce@haleyaldrich.com>
Date: Wednesday, March 17, 2021 at 1:50 PM
To: "Vakalopoulos, Catherine (DEP)" <catherine.vakalopoulos@mass.gov>
Subject: 7Q10 + Dilution Factor for NPDES NOI - Cambridge Crossing - Parcel U

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Cathy,

I am working on a NPDES NOI for a site in Cambridge. For your review, I have attached the StreamStats report with the 7Q10 low flow value and the dilution factor calculations. The maximum design flow of the system is 150 GPM, which was used in the calculation. Can you confirm that my calculations are appropriate for the project?

The proposed discharge routes are into the Lechmere Canal (which feeds to the Charles River), and directly into the Charles River. I have attached the discharge figures for reference.

Let me know if you need anymore information. Thanks!

Liza Joyce, E.I.T.
Engineer

Haley & Aldrich, Inc
465 Medford Street | Suite 2200
Charlestown, MA 02129

T: 617-886-7432
C: 404-384-1988

Enter number values in green boxes below

Enter values in the units specified

↓

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

Enter a dilution factor, if other than zero

↓

0

Enter values in the units specified

↓

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

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

↓

7.53	pH in **Standard Units**
3.42	Temperature in **°C**
0.19	Ammonia in **mg/L**
67.3	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**
1.61	Copper in **µg/L**
362	Iron in **µg/L**
1.93	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
16.49	Zinc in **µg/L**

Enter **influent** concentrations in the units specified

↓

0	TRC in **µg/L**
3.32	Ammonia in **mg/L**
0	Antimony in **µg/L**
16.85	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**
43400	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**
11	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0	Benzo(a)anthracene in **µg/L**
0	Benzo(a)pyrene in **µg/L**
0	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

Notes:

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

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

Leave 0 if no entry

Freshwater only

pH, temperature, and ammonia required for all discharges

Hardness required for freshwater

Salinity required for saltwater (estuarine and marine)

Metals required for all discharges if present and if dilution factor is > 1

Enter 0 if non-detect or testing not required

if >1 sample, enter maximum

if >10 samples, may enter 95th percentile

Enter 0 if non-detect or testing not required

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:

$$C_r = \frac{Q_dC_d + Q_sC_s}{Q_r}$$

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

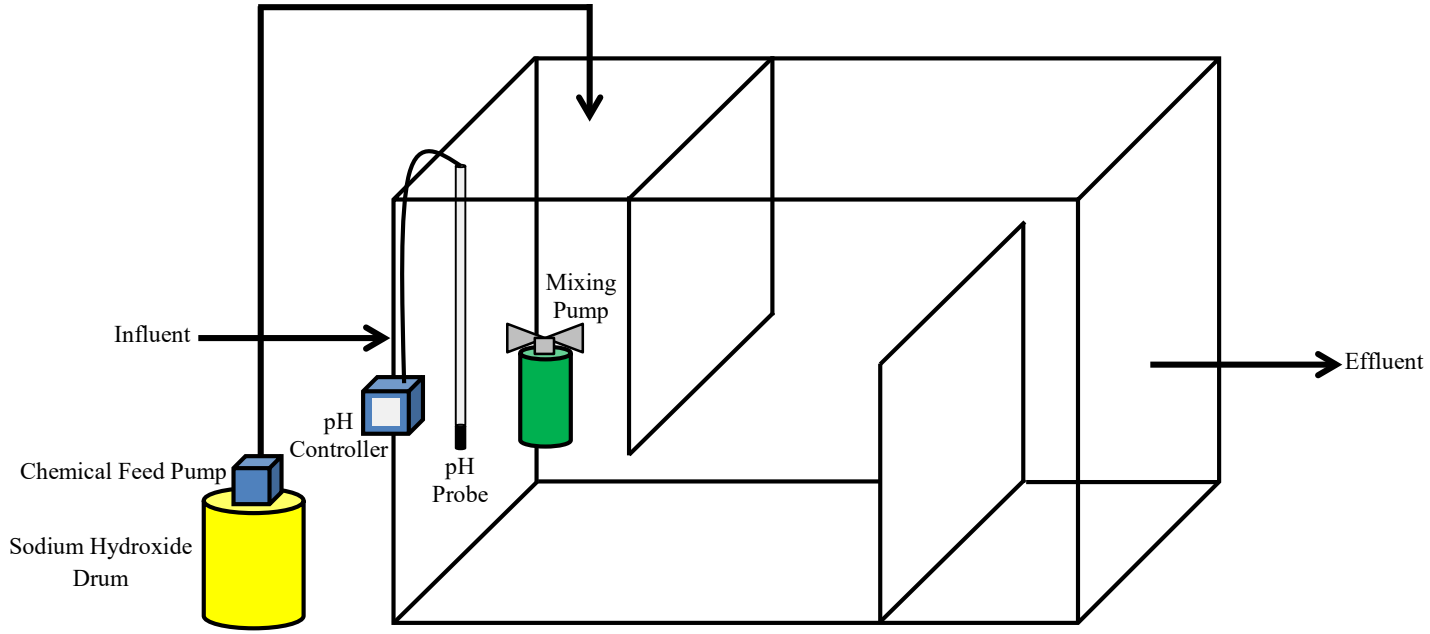
Part 2.1.1 of the RGP for that parameter applies.

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	0.6584	µg/L		
Chromium III	**323**	µg/L	230.3	µg/L		
Chromium VI	**323**	µg/L	11.4	µg/L		
Copper	**242**	µg/L	26.0	µg/L		
Iron	5000	µg/L	**1000**	µg/L		
Lead	**160**	µg/L	14.66	µg/L		
Mercury	**0.739**	µg/L	0.91	µg/L		
Nickel	**1450**	µg/L	144.0	µg/L		
Selenium	**235.8**	µg/L	5.0	µg/L		
Silver	**35.1**	µg/L	29.8	µg/L		
Zinc	**420**	µg/L	331.2	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	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	20	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

APPENDIX C

Additional Treatment Information



Notes:

1.) Figure is not to scale.
2.) System layout can vary with site conditions.

Configuration of pH Adjustment System

Job Safety Analysis

pH/Chem Feed System

Required PPE: Hard Hat, Safety Toe Boots, Reflective Vest, Safety Glasses, Chemical Resistant Gloves

TASK	POTENTIAL RISK/HAZARD	CONTROLS
Transporting acid/chemical drum	Splash, spill, heavy lifting	Inspect condition of drum prior to transportation. Use material handling devices when possible to move equipment (lift gates, pallet jacks, hand trucks, etc.). If necessary, use a ramp for loading/unloading wheeled devices, ensuring the ramp is properly supported prior to use. Lift with your knees and use drum dolly. Make sure drum is secure in vehicle prior to transportation. Review SDS on acid/chemical. Wear proper PPE and dispose of materials after clean up in a sealed container. Immediately use the eye wash station if acid or chemical comes in contact with your eye.
Opening acid drum	Splash, spill	Review MSDS on acid/chemical. Wear proper PPE and dispose of materials after clean up in a sealed container. Immediately use the eye wash station if acid or chemical comes in contact with your eye. Use bung wrench to open the drum properly.
Set up chemical feed pump	Splash, spill, leak	Wear proper PPE and dispose of materials after clean up in a sealed container. Immediately use the eye wash station if acid or chemical comes in contact with your eye. Monitor chem feed pump to assure its working and not leaking. Use chemical resistant tubing to transport liquid from the pump.
Notes:		

Note any changes/deviations to this JSA

One Controller for the Broadest Range of Sensors.

Choose from 30 digital and analog sensor families for up to 17 di:erent parameters.

Maximum Versatility

The sc200 controller allows the use of digital and analog sensors, either alone or in combination, to provide compatibility with Hach's broad range of sensors, eliminating the need for dedicated, parameter-specific controllers.

Ease of Use and Confidence in Results

Large, high-resolution, transreflective display provides optimal viewing resolution in any lighting condition. Guided calibration procedures in 19 languages minimize complexity and reduce operator error. Password-protected SD card reader o:ers a simple solution for data download and transfer. Visual warning system provides critical alerts.

Wide Variety of Communication Options

Utilize two to five analog outputs to transmit primary and secondary values for each sensor, or integrate Hach sensors and analyzers into MODBUS RS232/RS485, Profibus® DP, and HART networks.

Password protected SD card reader offers a simple solution for data download and transfer, and sc200 and digital sensor configuration file duplication and backup.

Controller Comparison

Features	Previous Models sc100™ Controller	Previous Models GLI53 Controller	sc200™ Controller	Benefits
Display	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	160 x 240 pixels 48 x 68 mm (1.89 x 2.67 in.) Transreflective	• Improved user interface—50% bigger • Easier to read in daylight and sunlight
Data Management	irDA Port/PDA Service Cable	N/A	SD Card Service Cable	• Simplifies data transfer • Standardized accessories/max compatibility
Sensor Inputs	2 Max Direct Digital Analog via External Gateway	2 Max Analog Depending on Parameter	2 Max Digital and/or Analog with Sensor Card	• Simplifies analog sensor connections • Works with analog and digital sensors
Analog Inputs	N/A	N/A	1 Analog Input Signal Analog 4-20mA Card	• Enables non-sc analyzer monitoring • Accepts mA signals from other analyzers for local display • Consolidates analog mA signals to a digital output
4-20 mA Outputs	2 Standard	2 Standard	2 Standard Optional 3 Additional	• Total of five (5) 4-20 mA outputs allows multiple mA outputs per sensor input
Digital Communication	MODBUS RS232/RS485 Profibus DP V1.0	HART	MODBUS RS232/RS485 Profibus DP V1.0 HART 7.2	• Unprecedented combination of sensor breadth and digital communication options

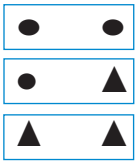
Choose from Hach's Broad Range of Digital and Analog Sensors

Parameter	Sensor	Digital or Analog
Ammonia	AMTAX™ sc, NH4D sc, AISE sc, AN-ISE sc	●
Chlorine	CLF10 sc, CLT10 sc, 9184 sc	●
Chlorine Dioxide	9185 sc	●
Conductivity	GLI 3400 Contacting, GLI 3700 Inductive	▲
Dissolved Oxygen	LDO® Model 2, 5740 sc	●
Dissolved Oxygen	5500	▲
Flow	U53, F53 Sensors	▲
Nitrate	NITRATAX™ sc, NO3D sc, NISE sc, AN-ISE sc	●
Oil in Water	FP360 sc	●
Organics	UVAS sc	●
Ozone	9187 sc	●
pH/ORP	pHD	●
pH/ORP	pHD, pH Combination, LCP	▲
Phosphate	PHOSPHAX™ sc	●
Sludge Level	SONATAX™ sc	●
Suspended Solids	SOLITAX™ sc, TSS sc	●
Turbidity	1720E, FT660 sc, SS7 sc, ULTRATURB sc, SOLITAX sc, TSS sc	●
Ultra Pure Conductivity	8310, 8311, 8312, 8315, 8316, 8317 Contacting	▲
Ultra Pure pH/ORP	8362	▲

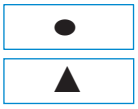
● = Digital ▲ = Analog

Connect up to two of any of the sensors listed above, in any combination, to meet your application needs. The diagrams below demonstrate the potential configurations. Operation of analog sensors requires the controller to be equipped with the appropriate sensor module. Contact Hach Technical Support for help with selecting the appropriate module.

2 Channel Configurations



1 Channel Configurations



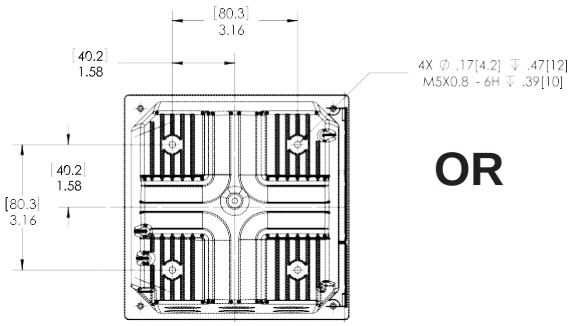
Specifications*

Dimensions (H x W x D)	5.7 in x 5.7 in x 7.1 in (144 mm x 144 mm x 181 mm)
Display	Graphic dot matrix LCD with LED backlighting, transreflective
Display Size	1.9 x 2.7 in. (48 mm x 68 mm)
Display Resolution	240 x 160 pixels
Weight	3.75 lbs. (1.70 kg)
Power Requirements (Voltage)	100 - 240 V AC, 24 V DC
Power Requirements (Hz)	50/60 Hz
Operating Temperature Range	-20 to 60 °C , 0 to 95% RH non-condensing
Analog Outputs	Two (Five with optional expansion module) to isolated current outputs, max 550 Ω , Accuracy: ± 0.1% of FS (20mA) at 25 °C, ± 0.5% of FS over -20 °C to 60 °C range Operational Mode: measurement or calculated value
Analog Output Functional Mode	Linear, Logarithmic, Bi-linear, PID
Security Levels	2 password-protected levels
Mounting Configurations	Wall, pole, and panel mounting
Enclosure Rating	NEMA 4X/IP66
Conduit Openings	1/2 in NPT Conduit
Relay: Operational Mode	Primary or secondary measurement, calculated value (dual channel only) or timer
Relay Functions	Scheduler (Timer), Alarm, Feeder Control, Event Control, Pulse Width Modulation, Frequency Control, and Warning
Relays	Four electromechanical SPDT (Form C) contacts, 1200 W, 5 A
Communication	MODBUS RS232/RS485, PROFIBUS DPV1, or HART 7.2 optional
Memory Backup	Flash memory
Electrical Certifications	EMC CE compliant for conducted and radiated emissions: - CISPR 11 (Class A limits) - EMC Immunity EN 61326-1 (Industrial limits) Safety cETLus safety mark for: - General Locations per ANSI/UL 61010-1 & CAN/CSA C22.2. No. 61010-1 - Hazardous Location Class I, Division 2, Groups A,B,C & D (Zone 2, Group IIC) per FM 3600 / FM 3611 & CSA C22.2 No. 213 M1987 with approved options and appropriately rated Class I, Division 2 or Zone 2 sensors cULus safety mark - General Locations per UL 61010-1 & CAN/CSA C22.2. No. 61010-1

**Subject to change without notice.*

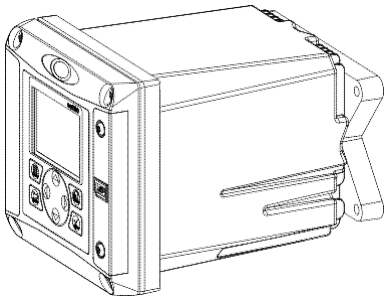
Dimensions

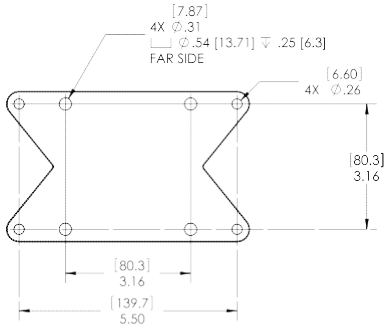
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

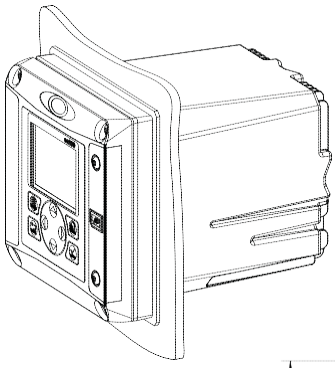
OR

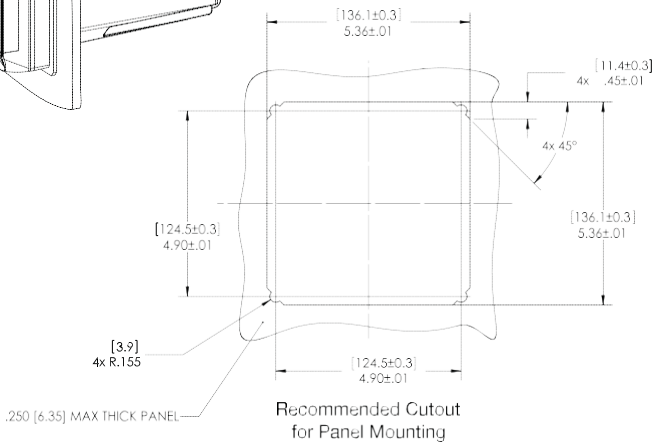




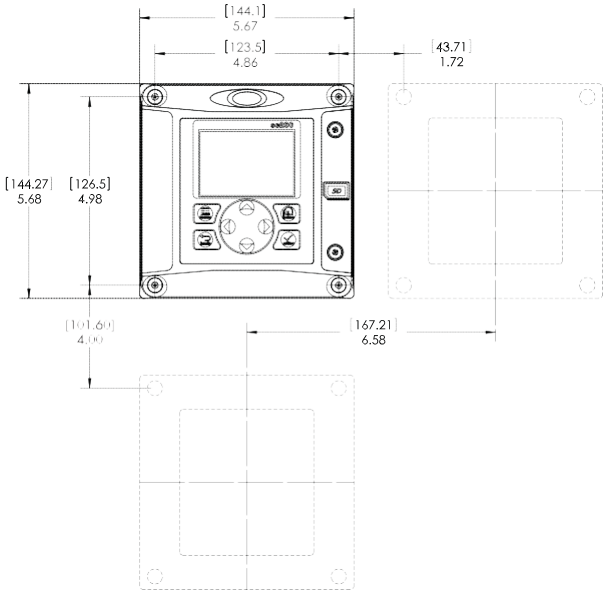
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



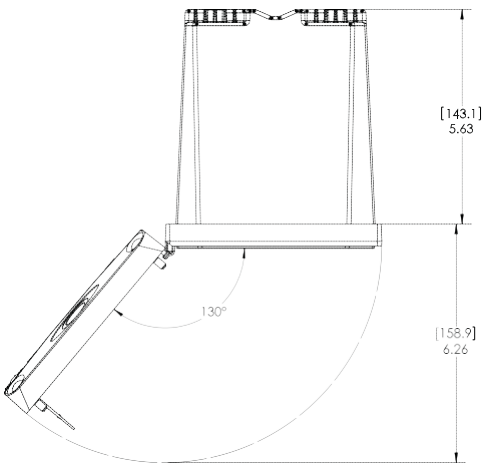


Recommended Cutout
for Panel Mounting

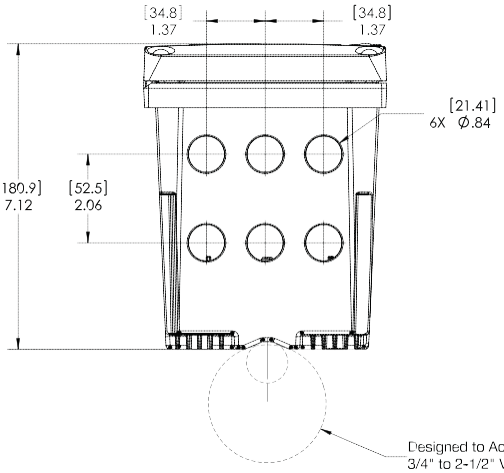


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views



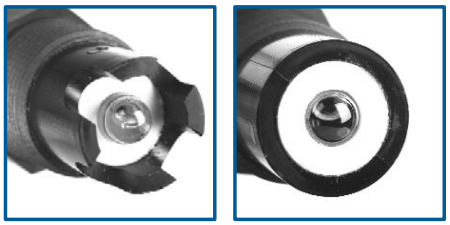
Door Opening Details



Designed to Accommodate
3/4" to 2-1/2" Vertical / Horizontal Pipe

3/4-inch Combination pH and ORP Sensor Kits

Use the Digital Gateway to make any Hach analog combination pH or ORP sensor compatible with the Hach sc1000 Controller.



Digital combination pH and ORP sensors are available in convertible, insertion, and sanitary mounting styles. Choose from rugged dome electrodes or "easy-to-clean" flat glass electrodes.

Features and Benefits

Low Price—High Performance

These combination sensors are designed for specialty applications for immersion or in-line mounting. The reference cell features a double-junction design for extended service life, and a built-in solution ground. The body is molded from chemically-resistant Ryton® or PVDF, and the reference junction is coaxial porous Teflon®. All sensors are rated 0 to 105ºC up to 100 psig, and have integral 4.5 m (15 ft.) cables with tinned leads. The PC-series (for pH) and RC-series (for ORP) combination sensors are ideal for measuring mild and aggressive media.

Special Electrode Configurations

Sensors with rugged dome electrodes, "easy-to-clean" flat glass electrodes, and even HF (hydrofluoric acid) resistant glass electrodes are available for a wide variety of process solutions.

Temperature Compensation Element Option

The PC-series combination pH sensors are available with or without a Pt 1000 ohm RTD temperature element. The RC-series combination ORP sensors are supplied without a temperature element.

Versatile Mounting Styles

Sensors are available in three mounting styles—convertible, insertion, and sanitary. Please turn to page 3 for more information.

Full-Featured "Plug and Play" Hach sc Digital Controllers

There are no complicated wiring or set up procedures with any Hach sc controller. Just plug in any combination of Hach digital sensors and it's ready to use—it's "plug and play."

One or multiple sensors—The sc controller family allows you to receive data from up to eight Hach digital sensors in any combination using a single controller.

Communications—Multiple alarm/control schemes are available using the relays and PID control outputs. Available communications include analog 4-20 mA, digital MODBUS® (RS485 and RS232) or Profibus DP protocols. (Other digital protocols are available. Contact your Hach representative for details.)

Data logger—A built-in data logger collects measurement data, calibration, verification points, and alarm history.

Specifications*

Most pH applications fall in the 2.5-12.5 pH range. General purpose pH glass electrodes perform well in this range. Some industrial applications require accurate measurements and control at pH values below 2 or above 12. Consult Hach Technical Support for details on these applications.

Combination pH Sensors

Measuring Range
0 to 14 pH

Accuracy
Less than 0.1 pH under reference conditions

Temperature Range
0 to 105ºC (32 to 221ºF)

Flow Rate
0 to 2 m/s (0 to 6.6 ft./s); non-abrasive

Pressure Range
0 to 6.9 bar at 100ºC (0 to 100 psig at 212ºF)

Signal Transmission Distance
100 m (328 ft.) when used with the Hach Digital Gateway and a Hach sc Digital Controller.

1000 m (3280 ft.) when used with the Hach Digital Gateway, Termination Box, and a Hach sc Digital Controller.

Sensor Cable
Integral coaxial cable (plus two conductors for temperature compensator option); 4.5 m (15 ft.) long

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Sanitary style: 316 stainless steel sleeved PVDF body

Common materials for all sensor styles include PTFE Teflon double junction, glass process electrode, and Viton® O-rings

Warranty
90 days

Combination ORP Sensors

Measuring Range
-2000 to +2000 millivolts

Accuracy
Limited to calibration solution accuracy (± 20 mV)

Temperature Range
0 to 105ºC (32 to 221ºF)

Flow Rate
0 to 2 m/s (0 to 6.6 ft./s); non-abrasive

Pressure Range
0 to 6.9 bar at 100ºC (0 to 100 psig at 212ºF)

Signal Transmission Distance
100 m (328 ft.) when used with the Hach Digital Gateway and a Hach sc Digital Controller.

1000 m (3280 ft.) when used with the Hach Digital Gateway, Termination Box, and a Hach sc Digital Controller.

Sensor Cable
Integral coaxial cable; 4.5 m (15 ft.) long; terminated with stripped and tinned wires

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Common materials for all sensor styles include PTFE Teflon double junction, glass with platinum process electrode, and Viton® O-rings

Warranty
90 days

**Specifications subject to change without notice.*

Ryton® is a registered trademark of Phillips 66 Co.; Viton® is a registered trademark of E.I. DuPont de Nemours + Co.; Kynar® is a registered trademark of Pennwalt Corp.

Engineering Specifications

1. The pH sensor shall be available in convertible, insertion or sanitary styles. The ORP sensor shall be available in only convertible or insertion styles.
2. The convertible style sensor shall have a Ryton® body. The insertion style sensor shall have a PVDF body. The sanitary style sensor shall have a 316 stainless steel sleeved PVDF body. Common materials for all sensor styles shall include a PTFE Teflon® double junction, and Viton® O-rings. The pH sensor shall have a glass pH electrode. The ORP sensor shall have a platinum ORP electrode.
3. The convertible style pH sensor shall be available with or without a built-in Pt 1000 ohm RTD temperature element. Insertion and sanitary style pH sensors shall have a built-in Pt 1000 ohm RTD temperature element. Convertible and insertion style ORP sensors shall not have a built-in temperature element.
4. The sensor shall communicate via MODBUS® RS-485 to a Hach sc Digital Controller.
5. The sensor shall be Hach Company Model PC sc or PC-series for pH measurement or Model PC sc or RC-series for ORP measurement.

Dimensions

Convertible Style Sensor

The convertible style sensor has a Ryton® body that features 3/4-inch NPT threads on both ends. The sensor can be directly mounted into a standard 3/4-inch pipe tee for flow-through mounting or fastened onto the end of a pipe for immersion mounting. The convertible style sensor enables inventory consolidation, thereby reducing associated costs. Mounting tees and immersion mounting hardware are offered in a variety of materials to suit application requirements.

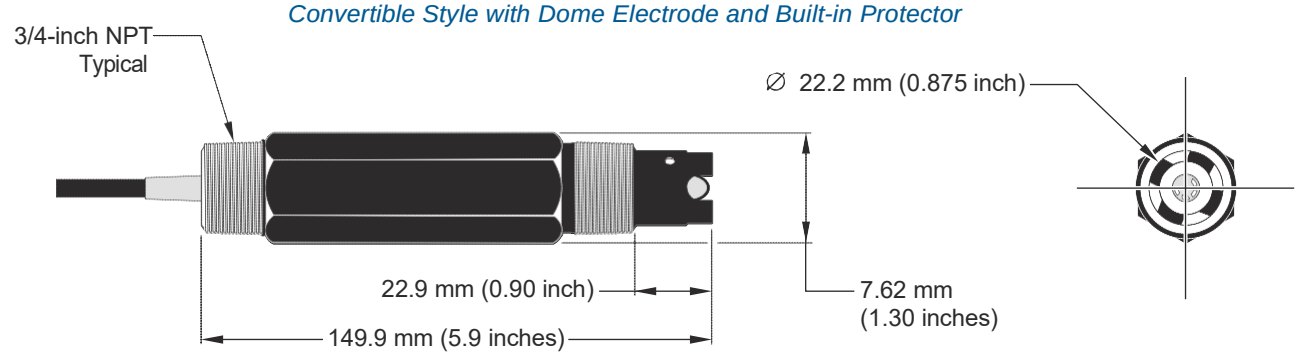
Insertion Style Sensor

Insertion style sensors feature a longer, non-threaded PVDF body with two Viton® O-rings, providing a seal when used with the optional Hach insertion mount hardware assembly. This ball valve hardware enables sensor insertion and retraction from a pipe or vessel without having to stop the process flow.

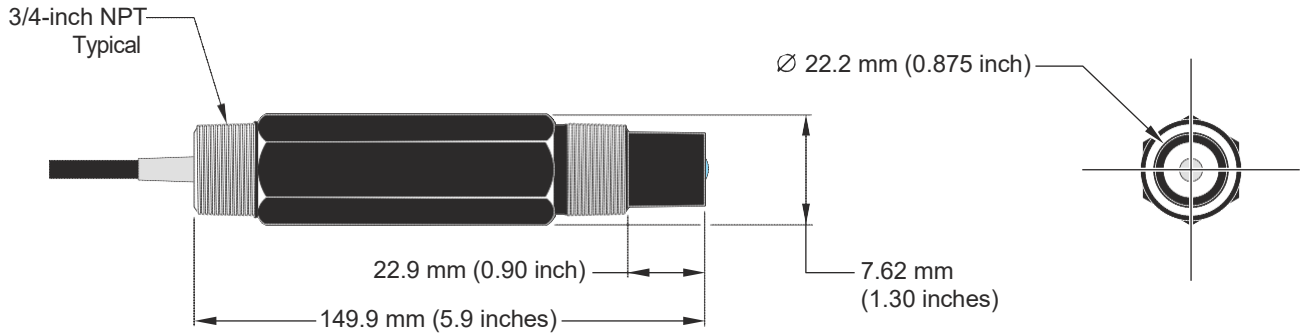
Sanitary Style Sensor

The sanitary style sensor, offered for pH measurement, has a 316 stainless steel-sleeved PVDF body with a 2-inch flange. The sensor mates to a standard 2-inch Tri-Clover fitting. The optional Hach sanitary mounting hardware includes a standard 2-inch sanitary tee, sanitary clamp, and Viton® sanitary gasket.

Convertible Style with Dome Electrode and Built-in Protector



Convertible Style with Flat Electrode



The Pulsatron Series A Plus offers manual function controls over stroke length and stroke rate as standard with the option to select external pace for automatic control.

Ten distinct models are available, having pressure capabilities to 250 PSIG (17 BAR) @ 12 GPO (1.9 lph), and flow capacities to 58 GPO (9.1 lph) @ 100 PSIG (7.0 BAR), with a standard turndown ratio of 100:1, and optional ratio of 1000:1. Metering performance is reproducible to within ± 3% of maximum capacity.

Features

- Manual Control by on-line adjustable stroke rate and stroke length.
- Highly Reliable timing circuit.
- Circuit Protection against voltage and current upsets.
- Solenoid Protection by thermal overload with auto-reset.
- Water Resistant, for outdoor and indoor applications.
- Internally Dampened To Reduce Noise.
- Guided Ball Check Valve Systems, to reduce back flow and enhance outstanding priming characteristics.
- Few Moving Parts and Wall Mountable.
- Safe & Easy Priming with durable leak-free bleed valve assembly (standard).
- Optional Control: External pace with auto/manual selection.

Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

Controls Options		
Feature	Standard Configuration	Optional Configuration [1]
External Pacing	--	Auto / Manual Selection
External Pace w/ Stop (125 SPM only)	--	Auto / Manual Selection [2]
Manual Stroke Rate	10:1 Ratio	100:1 Raio
Manual Stroke Length	10:1 Ratio	10:1 Ratio
Total Turndown Ratio	100:1 Ratio	1000:1 Ratio

Note 1: On S2, S3 & S4 sizes only.

Note 2: Not available on 1000:1 turndown pumps.

Operating Benefits

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

Aftermarket

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

Series A Plus
Electronic Metering Pumps

Series A Plus

Specifications and Model Selection

MODEL			LBC2	LB02	LBC3	LB03	LB04	LB64	LBC4	LBS2	LBS3	LBS4
Capacity nominal (max.)		GPH	0.25	0.25	0.42	0.50	1.00	1.25	2.00	0.50	1.38	2.42
		GPO	6	6	10	12	24	30	48	12	33	58
		LPH	0.9	0.9	1.6	1.9	3.8	4.7	7.6	1.9	5.2	9.14
Pressure[3] (max.)	GFPP, PVDF, 316SS or PVC <; N code) wITFE Seats)	PSIG (Bar)	250 (17)	150 (10)	250 (17)	150 (10)	100 (7)	100 (7)	50 (3.3)	250 (17)	150 (10)	100 (7)
	PVC (V code) Viton or CSPE Seats IDegas Liquid End		150 (10)							150 (10)		
Connections:		Tubina	1 14' ID X 3 8' OD						3 8' D X 1 2' OD	1 4' D X 3 8' OD		
		Pioina	1 4' FNPT									
Strokes/Minute		SPM	125							250		

Note 3: Pumps with rated pressure above 150 PSI will be de-rated to 150 PSI Max. when selecting certain valve options, see Price Book for details.

Engineering Data

Pump Head Materials Available:	GFPPL
	PVC
	PVDF
	316 SS
Diaphragm:	PTFE-faced CSPE-backed
Check Valves Materials Available:	
Seats/0-Rings:	PTFE
	CSPE
	Viton
Balls:	Ceramic
	PTFE
	316 SS
	Alloy C
Fittings Materials Available:	GFPPL
	PVC
	PVDF
Bleed Valve:	Same as fitting and check valve selected, except 316SS
Injection Valve & Foot Valve Assy:	Same as fitting and check valve selected
Tubing:	Clear PVC
	White PE

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

Engineering Data

Reproducibility:	+/- 3% at maximum capacity
Viscosity Max CPS:	1000 CPS
Stroke Frequency Max SPM:	125 / 250 by Model
Stroke Frequency Turn-Down Ratio:	10:1 / 100:1 by Model
Stroke Length Turn-Down Ratio:	10:1
Power Input:	115 VAC/50-60 HZ/1 ph
	230 VAC/50-60 HZ/1 ph
Average Current Draw:	
@ 115 VAC; Amps:	0.6 Amps
@ 230 VAC; Amps:	0.3 Amps
Peak hput Power:	130 Watts
Average Input Power @ Max SPM:	50 Watts

Custom Engineered Designs - Pre-Engineered Systems

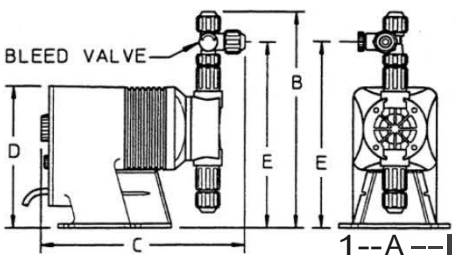
Pre-Engineered Systems

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

Dimensions

Series A PLUS Dimensions (inches)						
Model No.	A	B	C	D	E	Shipping Weight
LB02 IS2	5.0	9.6	9.5	6.5	8.2	10
LBC2	5.0	9.9	9.5	6.5	8.5	10
LBC3	5.0	9.9	9.5	6.5	8.5	10
LB03 IS3	5.0	9.9	9.5	6.5	8.5	10
LB0[illegible]4	5.0	9.9	9.5	6.5	8.5	10
LB64	5.0	9.9	9.5	6.5	8.5	10
LBC4	5.0	9.9	9.5	6.5	8.5	10

NOTE: Inches X 2.54 cm



95-Gallon OverPack - 32" dia x 41.5", 1 each/package

Stock a SpillTech® OverPack with sorbents for emergency spill response, or use it as a salvage drum to ship damaged containers or hazardous waste.

- DOT-Approved for Salvage: All SpillTech® OverPacks are DOT-approved and X-rated for use as salvage drums. Helps companies conform to federal regulations when shipping damaged or leaking containers of hazardous materials, or absorbents contaminated with hazardous substances.
- Perfect for Spill Kits: Stores sorbent products (not included) for easy access as needed for spill control. Saves time when quick response is necessary.
- Sturdy Construction: 100% polyethylene OverPack resists chemicals, rust and corrosion for years of use. Integrated handles make them easy to lift, move or carry with standard material handling equipment. Twist-on, double-wall lid with closed-cell gasket provides sealed, secure closure to prevent leaks and protect contents from moisture, dirt and damage. Durable to withstand rough handling.
- Customized for You: We can customize a Spill Kit to your exact specifications, including the container, its contents and accessories, with no upcharge! Contact your local Distributor for details.

A95OVER Specifications

Dimensions:	ext. dia. 32" x 41.5" H
Shipping Dimensions:	31.75" W x 41.5" L x 31.75" H
Sold as:	1 per package
Color:	Yellow
Composition:	Polyethylene
# per Pallet:	3
Incinerable:	No
Ship Class:	250

Metric Equivalent Specifications

Dimensions:	ext. dia. 81.3cm x 105.4cm H
Shipping Dimensions:	80.6cm W x 105.4cm L x 80.6cm H

A95OVER Technical Information

Warnings & Restrictions:
There are no known warnings and restrictions for this product.

Regulations and Compliance:
49 CFR 173.3(c)(1) - If a container of hazardous waste is damaged or leaking, it can be placed in a compatible salvage drum that meets UN criteria for shipping

49 CFR 173.12(b)(2)(iv) - When labpacking, "Inner packagings…must be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents."

49 CFR 173.12(b) - A container used for labpacking must be "a UN 1A2 or UN 1B2 metal drum, a UN 1D plywood drum, a UN 1G fiber drum or a UN 1H2 plastic drum tested and marked at least for the Packing Group III performance level for liquids or solids."

SAFETY DATA SHEET

M32415 - ANSI - EN

CAUSTIC SODA LIQUID (ALL GRADES)

SDS No.: M32415 **SDS Revision Date:** 13-Jan-2016

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 5005 LBJ Freeway P.O. Box 809050 Dallas, TX 75380-9050 1-800-752-5151
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (USA); CANUTEC (Canada): 1-613-996-6666; CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700 (55) 55959542 (Mexico)
Product Identifier:	**CAUSTIC SODA LIQUID (ALL GRADES)**
Trade Name:	Caustic Soda Diaphragm Grade 10%, 15%, 18%, 20%, 25%, 30%, 35%, 40%, 50%, 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%, Membrane Blended, 50% Caustic Soda Diaphragm (West Coast), Membrane Cell Liquor
Synonyms:	Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye, Secondary Caustic Soda Liquids
Product Use:	Metal finishing, Cleaner, Process chemical, Petroleum Industry
Uses Advised Against:	None identified

SECTION 2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

****

EMERGENCY OVERVIEW:

Color: Colorless to slightly colored
Physical State: Liquid
Appearance: Clear to opaque
Odor: Odorless

Signal Word: **DANGER**

MAJOR HEALTH HAZARDS: CORROSIVE. CAUSES SERIOUS EYE DAMAGE. CAUSES SEVERE SKIN BURNS AND EYE DAMAGE. MAY CAUSE RESPIRATORY IRRITATION. EFFECTS OF CONTACT OR INHALATION MAY BE DELAYED.

PHYSICAL HAZARDS: MAY BE CORROSIVE TO METALS. Mixing with water, acid or incompatible materials may cause splattering and release of heat. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated.

ECOLOGICAL HAZARDS: This material has exhibited moderate toxicity to aquatic organisms. Keep out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters.

PRECAUTIONARY STATEMENTS: Do not get in eyes, on skin, or on clothing. Wear eye protection, face protection, protective gloves. Do not breathe mist, vapors, or spray. Do not ingest. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling- exposure can cause burns which are not immediately painful or visible.

ADDITIONAL HAZARD INFORMATION: This material is corrosive. It may cause severe burns and permanent damage to any tissue with which it comes into contact. Toxicity may be delayed, and may not be readily visible. To treat contacted tissue, flush with water to dilute. There is no specific antidote. Significant exposures must be referred for medical attention immediately.

****

GHS CLASSIFICATION:

GHS: PHYSICAL HAZARDS:	Corrosive to Metals Mixing with water may cause splattering and release of heat
GHS: CONTACT HAZARD - SKIN:	Category 1B - Causes severe skin burns and eye damage.
GHS: CONTACT HAZARD - EYE:	Category 1 - Causes serious eye damage

GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE):	Category 3 - May cause respiratory irritation
GHS: CARCINOGENICITY:	Not classified as a carcinogen per GHS criteria. This product is not classified as a carcinogen by NTP, IARC or OSHA.
GHS: HAZARDOUS TO AQUATIC ENVIRONMENT - ACUTE HAZARD:	Category 3 - Harmful to aquatic life

UNKNOWN ACUTE TOXICITY: 100% of the mixture consists of ingredient(s) of unknown toxicity. There is no acute toxicity data available for this product.

GHS SYMBOL: Corrosive

GHS SIGNAL WORD: **DANGER**

GHS HAZARD STATEMENTS:

GHS - Physical Hazard Statement(s)
• May be corrosive to metals

GHS - Health Hazard Statement(s)
• Causes serious eye damage
• Causes severe skin burns and eye damage
• May cause respiratory irritation

GHS - Precautionary Statement(s) - Prevention
• Do not breathe mist, vapors, or spray
• Wear protective gloves, protective clothing, eye, and face protection
• Wash thoroughly after handling
• Keep only in original container
• Use only outdoors or in a well-ventilated area

GHS - Precautionary Statement(s) - Response
• IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower
• Wash contaminated clothing before reuse
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
• Immediately call a POISON CENTER or doctor/physician
• IF INHALED: Remove person to fresh air and keep comfortable for breathing
• Immediately call a POISON CENTER or doctor/physician
• IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
• Specific treatment (see First Aid information on product label and/or Section 4 of the SDS)
• Absorb spillage to prevent material damage

GHS - Precautionary Statement(s) - Storage
• Store locked up
• Store in a well-ventilated place. Keep container tightly closed
• Store in corrosive resistant and NON-ALUMINUM container with a resistant inner liner (NOTE: flammable hydrogen gas may be generated if aluminum container and/or aluminum fittings are used)

GHS - Precautionary Statement(s) - Disposal
• Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations

Hazards Not Otherwise Classified (HNOC)
Mixing with water may cause splattering and release of heat

Additional Hazard Information
Mixing with water may cause splattering and release of heat.

See Section 11: TOXICOLOGICAL INFORMATION

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye, Secondary Caustic Soda Liquids

Component	Percent [%]	CAS Number
Water	48.5 - 94.5	7732-18-5
Sodium Hydroxide	5.5 - 51.5	1310-73-2
Sodium Chloride	0 - 35	7647-14-5

Notes: *All hazardous and non-hazardous components of product composition are listed.*

SECTION 4. FIRST AID MEASURES

INHALATION: If inhalation of mists, vapors, or spray occurs and adverse effects result, remove to uncontaminated area. Evaluate ABC's (is Airway constricted, is Breathing occurring, and is blood Circulating) and treat symptomatically. GET MEDICAL ATTENTION IMMEDIATELY. There is no specific antidote, treat symptomatically.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with large amounts of water. GET MEDICAL ATTENTION IMMEDIATELY. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods.

EYE CONTACT: Immediately flush contaminated eyes with a directed stream of water for as long as possible. Remove contact lenses, if present and easy to do. Continue rinsing. GET MEDICAL ATTENTION IMMEDIATELY. Washing eyes within several seconds is essential to achieve maximum effectiveness.

INGESTION: If swallowed, do not induce vomiting. For definite or probable ingestion, do not administer oral fluids. If vomiting occurs spontaneously, keep airway clear. Monitor airway. Volume resuscitation (IV fluids) and circulatory support (CPR) may be required. Never give anything by mouth to an unconscious or convulsive person. GET MEDICAL ATTENTION IMMEDIATELY.

Most Important Symptoms/Effects (Acute and Delayed) Corrosive. This material may be corrosive to any tissue it comes in contact with. It can cause serious burns and extensive tissue destruction resulting in: liquefaction, necrosis, and/or perforation.

Acute Symptoms/Effects: Listed below.
Inhalation (Breathing): Respiratory System Effects: Exposure to airborne material may cause irritation, redness of upper and lower airways, coughing, laryngeospasm, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. Pulmonary edema may develop several hours after a severe acute exposure. Aspiration of this material may cause the same conditions.
Skin: Skin Corrosion. Exposure to skin may cause redness, itching, irritation, swelling, burns (first, second, or third degree), liquefaction of skin, and damage to underlying tissues (deep and painful wounds).
Eye: Serious Eye Damage. Eye exposures may cause eye lid burns, conjunctivitis, corneal edema, corneal burn, corneal perforation, damage to internal contents of the eye, permanent visual defects, and blindness and/or loss of the eye.
Ingestion (Swallowing): Gastrointestinal System Effects: Exposure by ingestion may cause irritation, swelling, and perforation of upper and lower gastrointestinal tissues. Permanent scarring may occur.

Delayed Symptoms/Effects:
- Skin: Repeated and prolonged skin contact may cause a chronic dermatitis

Interaction with Other Chemicals Which Enhance Toxicity: None known.

Medical Conditions Aggravated by Exposure: May aggravate preexisting conditions such as: eye disorders that decrease tear production or have reduced integrity of the eye; skin disorders that compromise the integrity of the skin; and respiratory conditions including asthma and other breathing disorders.

Protection of First-Aiders: Protect yourself by avoiding contact with this material. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Do not ingest. Use personal protective equipment. Refer to Section 8 for specific personal protective equipment recommendations. At minimum, treating personnel should utilize PPE sufficient for prevention of bloodborne pathogen transmission.

Notes to Physician: Medical observation and assessment is recommended for all ingestions, all eye exposures, and symptomatic inhalation and dermal exposures. For symptomatic ingestion, do not administer oral fluids and consider investigation by endoscopy, X-ray, or CT scan. Esophageal perforation, airway compromise, hypotension, and shock are possible. For prolonged exposures and significant exposures, consider delayed injury to exposed tissues. There is no antidote. Treatment is supportive care. Follow normal parameters for airway, breathing, and circulation. Surgical intervention may be required.

SECTION 5. FIRE-FIGHTING MEASURES

Fire Hazard: Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. May react with chemically reactive metals such as aluminum, zinc, magnesium, copper, etc. to release hydrogen gas which can form explosive mixtures in air.

Extinguishing Media: Use extinguishing agents appropriate for surrounding fire.

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water. Do not apply water directly on this product. Heat is generated when mixed with water. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Avoid contact with skin.

Component	Immediately Dangerous to Life/ Health (IDLH)
Sodium Hydroxide 1310-73-2	10 mg/m^3 IDLH

Hazardous Combustion Products: Sodium hydroxide fumes can be generated by thermal decomposition at elevated temperatures

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Lower Flammability Level (air): Not flammable

Upper Flammability Level (air): Not flammable

Flash point: Not flammable

Auto-ignition Temperature: Not applicable

GHS: PHYSICAL HAZARDS:
- Corrosive to Metals
- Mixing with water may cause splattering and release of heat

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Do not get in eyes, on skin or on clothing. Avoid breathing mist, vapor, or spray. Do not ingest. Wear appropriate personal protective equipment recommended in Section 8 of the SDS.

Methods and Materials for Containment and Cleaning Up:
In case of spill or leak, stop the leak as soon as possible, if safe to do so. Completely contain spilled materials 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.

Environmental Precautions:
Keep out of water supplies and sewers. Do not flush into surface water or sanitary sewer system. 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.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling:
Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not ingest. Do not eat, drink or smoke in areas where this material is used. Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the SDS. NEVER add water to product. When mixing, slowly add to water to minimize heat generation and spattering.

Safe 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 (see below or Section 10 of the Safety Data Sheet).

Incompatibilities/ Materials to Avoid:
Acids and halogenated compounds, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys, Releases heat when diluted in water

GHS: PHYSICAL HAZARDS:
- Corrosive to Metals
- Mixing with water may cause splattering and release of heat

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Regulatory Exposure Limit(s): Listed below for the product components that have regulatory occupational exposure limits (OEL's).

Component	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PELCeiling
Sodium Hydroxide 1310-73-2	2 mg/m^3	-----	-----

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit

NON-REGULATORY EXPOSURE LIMIT(S): Listed below for the product components that have non-regulatory occupational exposure limits (OEL's).

Component	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Sodium Hydroxide	-----	-----	2 mg/m^3	-----	-----	2 mg/m^3

- The Non-Regulatory United States Occupational Safety and Health Administration (OSHA) limits, if shown, are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

Component	OXY REL 8 hr TWA	OXY REL STEL	OXY REL Ceiling
Sodium Chloride 7647-14-5 (0 - 35)	-----	-----	-----

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 face-shield 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 protective clothing to minimize skin contact. Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Always place pants legs over boots. Contaminated clothing should be removed, then discarded or laundered. Discard contaminated leather goods.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types:
- Natural rubber
- Neoprene
- Nitrile
- Polyvinyl chloride (PVC)
- Tyvek®
- Tychem®

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.

Component	Immediately Dangerous to Life/ Health (IDLH)
Sodium Hydroxide 1310-73-2	10 mg/m^3 IDLH

HYGIENE MEASURES: Handle in accordance with good industrial hygiene and safety practices. Wash hands and affected skin immediately after handling, before breaks, and at the end of the workday. When using do not eat or drink. When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Clear to opaque
Color:	Colorless to slightly colored
Odor:	Odorless
Odor Threshold [ppm]:	No data available.
Molecular Weight:	40.01
Molecular Formula:	NaOH
Decomposition Temperature:	No data available
Boiling Point/Range:	215 - 291°F (102 - 144°C)
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
Relative Density/Specific Gravity (water=1):	1.05 – 1.56 @ 15.6 °C
Density:	8.8 - 13.0 lbs/gal @ 15.6 °C
Water Solubility:	100%
pH:	14.0 (theoretical value of 7.5% solution)
Volatility:	No data available
Evaporation Rate (ether=1):	No data available
Partition Coefficient (n-octanol/water):	No data available
Flash point:	Not flammable
Flammability (solid, gas):	Not flammable
Lower Flammability Level (air):	Not flammable
Upper Flammability Level (air):	Not flammable
Auto-ignition Temperature:	Not applicable
Viscosity:	About 24cp for 50% solution at 40 °C (104 °F)

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Soluble in water, releasing heat sufficient to ignite combustibles. Reacts with metals, and may form hydrogen gas.

Chemical Stability: Stable at normal temperatures and pressures.

Possibility of Hazardous Reactions:
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.

Conditions to Avoid: (e.g., static discharge, shock, or vibration) -. None known.

Incompatibilities/ Materials to Avoid: Acids and halogenated compounds. Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys. Releases heat when diluted in water.

Hazardous Decomposition Products: Toxic fumes of sodium oxide

Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

IRRITATION DATA: PRIMARY SKIN IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)
PRIMARY EYE IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)

TOXICITY DATA:

PRODUCT TOXICITY DATA: CAUSTIC SODA LIQUID (ALL GRADES)

LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
No reliable data available	No reliable data available	No data available

COMPONENT TOXICITY DATA:
Note: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

Component	LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
Water 7732-18-5	90 mL/kg (Rat)	-----	-----
Sodium Hydroxide 1310-73-2	140-3400 mg/kg	1350 mg/kg (Rabbit)	-----
Sodium Chloride 7647-14-5	3 g/kg (Rat)	-----	42 g/m^3 (1 hr-Rat)

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POTENTIAL HEALTH EFFECTS:

Eye contact: Corrosive. Causes serious eye damage which can result in: severe irritation, pain and burns, and permanent damage including blindness.

Skin contact: Corrosive. Causes severe skin burns. Prolonged or repeat skin exposures can result in dermatitis.

Inhalation: Corrosive. Inhalation injury may result from ingestion and/or aspiration of this material. May cause severe irritation of the respiratory tract with potential airway compromise, coughing, choking, pain, and burns of the mucous membrane and respiratory system. This material can be extremely destructive to the tissue of the mucus membranes and respiratory system. Aspiration may cause chemical pneumonitis, pulmonary edema, damage to lung tissue, death.

Ingestion: Corrosive. If swallowed, may cause severe oral and esophageal, mucus membrane, and gastrointestinal burns and possible perforation. If swallowed, may pose a lung aspiration hazard during vomiting.

Chronic Effects: Repeated or prolonged skin contact may result in dermatitis.

SIGNS AND SYMPTOMS OF EXPOSURE:
This material may cause severe burns and permanent damage to any tissue with which it comes into contact. It can cause serious burns and extensive tissue destruction resulting in liquefaction, necrosis and/or perforation. Signs and symptoms of exposure vary, and are dependent on the route of exposure, degree of exposure, and duration of exposure.

Inhalation (Breathing): Respiratory System Effects: Exposure to airborne material may cause irritation, redness of upper and lower airways, coughing, laryngeospasm, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. Pulmonary edema may develop several hours after a severe acute exposure. Aspiration of this material may cause the same conditions.
Skin: Skin Corrosion. Exposure to skin may cause redness, itching, irritation, swelling, burns (first, second, or third degree), liquefaction of skin, and damage to underlying tissues (deep and painful wounds).
Eye: Serious Eye Damage. Eye exposures may cause eye lid burns, conjunctivitis, corneal edema, corneal burn, corneal perforation, damage to internal contents of the eye, permanent visual defects, and blindness and/or loss of the eye.
Ingestion (Swallowing): Gastrointestinal System Effects: Exposure by ingestion may cause irritation, swelling, and perforation of upper and lower gastrointestinal tissues. Permanent scarring may occur.

TOXICITY:
When in solution, this material will affect all tissues with which it comes in contact. 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 mucus membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

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GHS HEALTH HAZARDS:

GHS: CONTACT HAZARD - EYE: Category 1 - Causes serious eye damage

GHS: CONTACT HAZARD - SKIN: Category 1B - Causes severe skin burns and eye damage

Skin Absorbent / Dermal Route? No.

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

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):
Category 3 - Respiratory Irritation

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

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

Component	Freshwater Fish	Invertebrate Toxicity:	Algae Toxicity:	Other Toxicity:
Sodium Chloride 7647-14-5 (0 - 35)		340.7 - 469.2 mg/L EC50 = 1000 mg/L EC50	-----	

FATE AND TRANSPORT:

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.

BIOACCUMULATIVE POTENTIAL: Does not bioaccumulate.

MOBILITY IN SOIL: No data available.

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

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from material:
Reuse or reprocess, if possible. May be subject to disposal regulations. Dispose in accordance with all applicable regulations.

Container Management:
Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

SECTION 14. TRANSPORT INFORMATION

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:

UN NUMBER: UN1824
PROPER SHIPPING NAME: Sodium Hydroxide Solution
HAZARD CLASS/ DIVISION: 8

PACKING GROUP: II
LABELING REQUIREMENTS: 8
RQ (lbs): RQ 1000 lbs. (Sodium Hydroxide)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

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

MARITIME TRANSPORT (IMO / IMDG) :

UN NUMBER: UN1824
PROPER SHIPPING NAME: Sodium hydroxide solution
HAZARD CLASS / DIVISION: 8
Packing Group: II
LABELING REQUIREMENTS: 8

SECTION 15. REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Component	CERCLA Reportable Quantities:
Sodium Hydroxide	1000 lb (final RQ)

SARA EHS Chemical (40 CFR 355.30)
No components are listed

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):
Acute Health Hazard

EPCRA SECTION 313 (40 CFR 372.65):
No components are listed

DEPARTMENT OF HOMELAND SECURITY (DHS)- Chemical Facility Anti-Terrorism Standards (6 CFR 27):
No components in this material are regulated under DHS

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):
Not regulated

FDA: This material has Generally Recognized as Safe (GRAS) status under specific FDA regulations. Additional information is available from the Code of Federal Regulations which is accessible on the FDA's website. This product is not produced under all current Good Manufacturing Practices (cGMP) requirements as defined by the Food and Drug Administration (FDA).

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA): All components are listed or exempt

Component	U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA):
Water 7732-18-5 (48.5 - 94.5)	Listed
Sodium Hydroxide 1310-73-2 (5.5 - 51.5)	Listed
Sodium Chloride 7647-14-5 (0 - 35)	Listed

TSCA 12(b): This product is not subject to export notification.

Canadian Chemical Inventory: All components of this product are listed on either the DSL or the NDSL.

STATE REGULATIONS

California Proposition 65:
This product and its ingredients are not listed, but it may contain impurities/trace elements 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 OxyChem Technical Services at 1-800-733-1165.

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List
Sodium Hydroxide 1310-73-2	Not Listed	Not Listed	Not Listed	Listed	1706	corrosive

Component	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List	Rhode Island Right to Know Hazardous Substance List
Water 7732-18-5	Not Listed	Listed	Not Listed	Not Listed	Not Listed
Sodium Hydroxide 1310-73-2	Not Listed	Listed	Not Listed	Present	Listed

CANADIAN REGULATIONS

• This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations

Component	Water
WHMIS - Classifications of Substances: Uncontrolled product according to WHMIS classification criteria	
Component	Sodium Hydroxide
WHMIS - Classifications of Substances: E	
Component	Sodium Chloride
WHMIS - Classifications of Substances: Uncontrolled product according to WHMIS classification criteria	

SECTION 16. OTHER INFORMATION

Prepared by: OxyChem Corporate HESS - Product Stewardship

Rev. Date: 13-Jan-2016

Other information:
The Safety Data Sheet for Caustic Soda Liquid (ALL Grades) can be used for hazard communication purposes for off-specification, secondary caustic soda liquids generated when cleaning caustic soda storage tanks, including the general disclaimer found in section 16 of the Safety Data Sheet

HMIS: (SCALE 0-4) (Rated using National Paint & Coatings Association HMIS: Rating Instructions, 2nd Edition)

Health Rating: 3 **Flammability Rating:** 0 **Reactivity Rating:** 1

NFPA 704 - Hazard Identification Ratings (SCALE 0-4) : Listed below.

Health Rating: 3 **Flammability:** 0 **Reactivity Rating:** 1

Reason for Revision:
• Changed GHS Classification: SEE SECTION 2
• Toxicological Information has been revised: SEE SECTION 11

CAUSTIC SODA LIQUID (ALL GRADES)

SDS No.: M32415 **SDS Revision Date:** 13-Jan-2016

IMPORTANT:
The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESSED OR IMPLIED, IS MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and OxyChem assumes no liability whatsoever for the use of or reliance upon this information. While our technical personnel will be happy to respond to questions, safe handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal, State, local or foreign laws

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees

End of Safety Data Sheet

APPENDIX D

Endangered Species Act Assessment

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Middlesex County, Massachusetts

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. 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.

THERE ARE NO ENDANGERED SPECIES EXPECTED TO OCCUR AT THIS LOCATION.

NOT FOR CONSULTATION

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE.

NOT FOR CONSULTATION

"BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 29 to Jul 20
Dunlin *Calidris alpina arcticola* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere

NOT FOR CONSULTATION

Nelson's Sparrow Ammodramus nelsoni — Breeds May 15 to Sep 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prairie Warbler Dendroica discolor — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-throated Loon Gavia stellata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird Euphagus carolinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper Calidris pusilla — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Snowy Owl Bubo scandiacus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

NOT FOR CONSULTATION

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

NOT FOR CONSULTATION

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

MassDEP - Bureau of Waste Site Cleanup

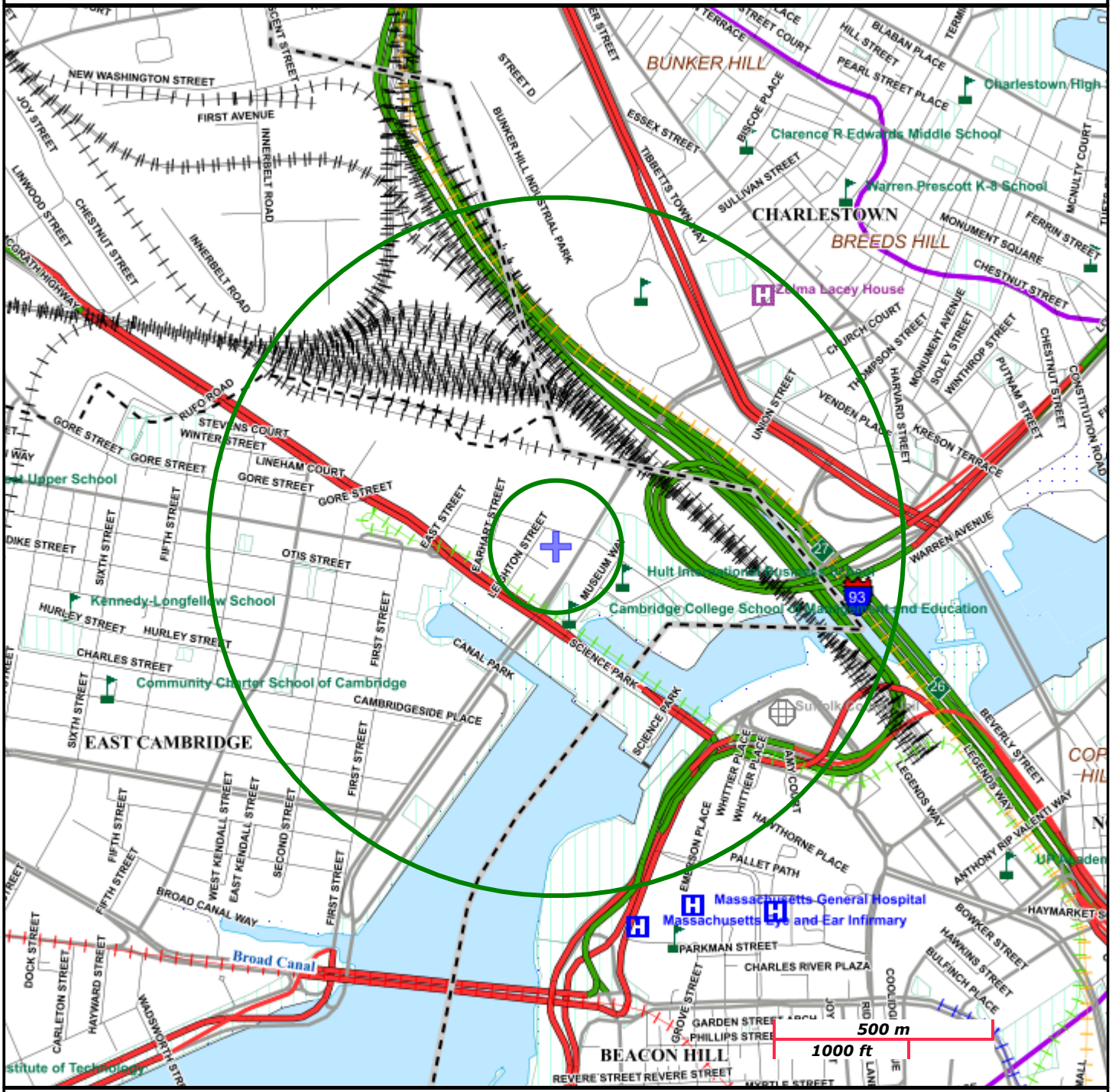
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
CAMBRIDGE CROSSING - PARCEL U
CAMBRIDGE, MA

NAD83 UTM Meters:
4693011mN , 329347mE (Zone: 19)
March 19, 2021

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

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

APPENDIX E

National Historic Preservation Act Review

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

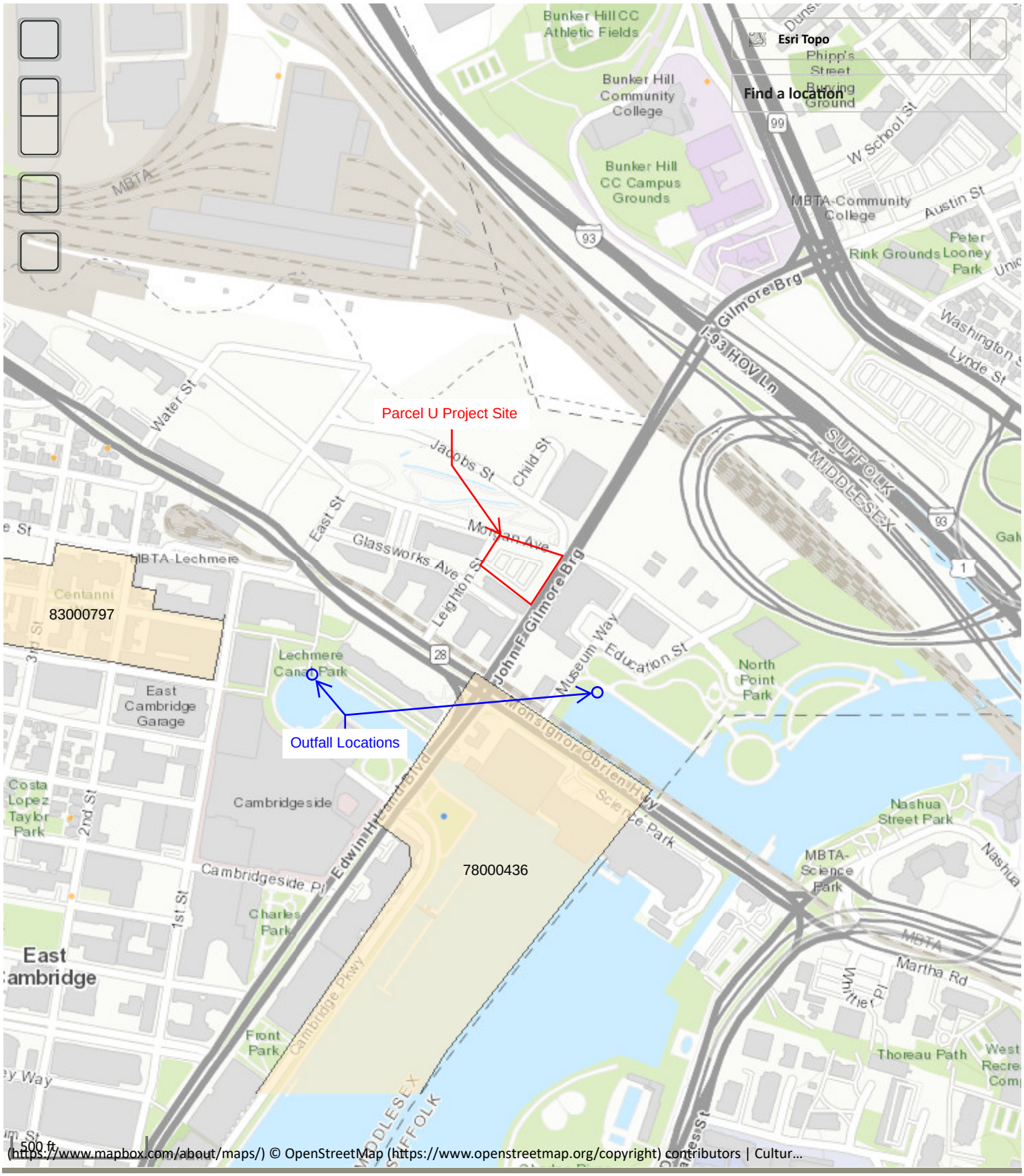
Search Criteria: Town(s): Cambridge; Street Name: Leighton St; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year

National Register of Histori…

National Park Service
U.S. Department of the Interior

Public, non-restricted data depicting National Register spatial data proce…



APPENDIX F

Laboratory Data Reports

ANALYTICAL REPORT

Lab Number:	L2103167
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Tim Becker
Phone:	(617) 886-7400
Project Name:	PARCEL U - CAMBRIDGE CROSSING
Project Number:	05304-662
Report Date:	01/27/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2103167-01	VES-X-9	WATER	CAMBRIDGE, MA	01/20/21 12:40	01/20/21
L2103167-02	2021-0120-SW	WATER	CAMBRIDGE, MA	01/20/21 14:30	01/20/21

Project Name:	PARCEL U - CAMBRIDGE CROSSING	**Lab Number:**	L2103167
Project Number:	05304-662	**Report Date:**	01/27/21

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. 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 Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data 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.

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 Alpha Project Manager 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 Project Management at 800-624-9220 with any questions.

Project Name:	PARCEL U - CAMBRIDGE CROSSING	**Lab Number:**	L2103167
Project Number:	05304-662	**Report Date:**	01/27/21

Case Narrative (continued)

Report Submission

January 27, 2021: This final report includes the results of all requested analyses.

January 26, 2021: This is a preliminary report.

Sample Receipt

L2103167-01 (VES-X-9): The sample was received above the appropriate pH for the Total Phenol - EPA 420.1 analysis. The laboratory added additional H2SO4 to a pH <2.

Total Metals

L2103167-01 (VES-X-9): The sample has elevated detection limits for all elements, with the exception of iron and mercury, due to the dilution required by the high concentrations of non-target elements.

The WG1457346-3 MS recoveries for iron (0%) and hardness (74%), performed on L2103167-01 (VES-X-9), do not apply because the sample concentrations are greater than four times the spike amounts added.

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: Jennifer L Clements

Title: Technical Director/Representative Date: 01/27/21

ORGANICS

VOLATILES

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01 Date Collected: 01/20/21 12:40
Client ID: VES-X-9 Date Received: 01/20/21
Sample Location: CAMBRIDGE, MA Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1
Analytical Date: 01/22/21 18:41
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethane	ND		ug/l	1.5	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.5	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	1.5	--	1
1,1,1-Trichloroethane	ND		ug/l	2.0	--	1
Benzene	ND		ug/l	1.0	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	5.0	--	1
1,3-Dichlorobenzene	ND		ug/l	5.0	--	1
1,4-Dichlorobenzene	ND		ug/l	5.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
Acetone	ND		ug/l	10	--	1
Methyl tert butyl ether	ND		ug/l	10	--	1
Tert-Butyl Alcohol	ND		ug/l	100	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--	1

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01 Date Collected: 01/20/21 12:40

Client ID: VES-X-9 Date Received: 01/20/21

Sample Location: CAMBRIDGE, MA Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	95		60-140
Fluorobenzene	97		60-140
4-Bromofluorobenzene	101		60-140

Project Name: PARCEL U - CAMBRIDGE CROSSING
Lab Number: L2103167
Project Number: 05304-662
Report Date: 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01
Client ID: VES-X-9
Sample Location: CAMBRIDGE, MA
Date Collected: 01/20/21 12:40
Date Received: 01/20/21
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1-SIM
Analytical Date: 01/22/21 18:41
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	50	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	101		60-140
4-Bromofluorobenzene	101		60-140

Project Name: PARCEL U - CAMBRIDGE CROSSING
Lab Number: L2103167
Project Number: 05304-662
Report Date: 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01
Client ID: VES-X-9
Sample Location: CAMBRIDGE, MA

Date Collected: 01/20/21 12:40
Date Received: 01/20/21
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 01/22/21 15:09
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 01/22/21 13:52

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

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662
Lab Number: L2103167
Report Date: 01/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
Analytical Date: 01/22/21 14:30
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 01/22/21 13:52

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG1457276-1						
1,2-Dibromoethane	ND		ug/l	0.010	--	A

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 01/22/21 17:27
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1458014-4					
Methylene chloride	ND		ug/l	1.0	--
1,1-Dichloroethane	ND		ug/l	1.5	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.5	--
Tetrachloroethene	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	1.5	--
1,1,1-Trichloroethane	ND		ug/l	2.0	--
Benzene	ND		ug/l	1.0	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--
1,2-Dichlorobenzene	ND		ug/l	5.0	--
1,3-Dichlorobenzene	ND		ug/l	5.0	--
1,4-Dichlorobenzene	ND		ug/l	5.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
Acetone	ND		ug/l	10	--
Methyl tert butyl ether	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	100	--
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 01/22/21 17:27
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1458014-4					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	95		60-140
Fluorobenzene	97		60-140
4-Bromofluorobenzene	99		60-140

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1-SIM
Analytical Date: 01/22/21 17:27
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1458016-4					
1,4-Dioxane	ND		ug/l	50	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	101		60-140
4-Bromofluorobenzene	102		60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 01		Batch: WG1457276-2						
1,2-Dibromoethane	84		-		80-120	-			A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

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: WG1458014-3								
Methylene chloride	115		-		60-140	-		28
1,1-Dichloroethane	115		-		50-150	-		49
Carbon tetrachloride	110		-		70-130	-		41
1,1,2-Trichloroethane	105		-		70-130	-		45
Tetrachloroethene	110		-		70-130	-		39
1,2-Dichloroethane	95		-		70-130	-		49
1,1,1-Trichloroethane	105		-		70-130	-		36
Benzene	100		-		65-135	-		61
Toluene	110		-		70-130	-		41
Ethylbenzene	115		-		60-140	-		63
Vinyl chloride	105		-		5-195	-		66
1,1-Dichloroethene	110		-		50-150	-		32
cis-1,2-Dichloroethene	130		-		60-140	-		30
Trichloroethene	100		-		65-135	-		48
1,2-Dichlorobenzene	100		-		65-135	-		57
1,3-Dichlorobenzene	95		-		70-130	-		43
1,4-Dichlorobenzene	95		-		65-135	-		57
p/m-Xylene	118		-		60-140	-		30
o-xylene	110		-		60-140	-		30
Acetone	88		-		40-160	-		30
Methyl tert butyl ether	100		-		60-140	-		30
Tert-Butyl Alcohol	100		-		60-140	-		30
Tertiary-Amyl Methyl Ether	80		-		60-140	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

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: WG1458014-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	94				60-140
Fluorobenzene	98				60-140
4-Bromofluorobenzene	101				60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

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: WG1458016-3								
1,4-Dioxane	110		-		60-140	-		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Fluorobenzene	101				60-140
4-Bromofluorobenzene	103				60-140

Matrix Spike Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

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: WG1457276-3 QC Sample: L2102846-01 Client ID: MS Sample													
1,2-Dibromoethane	ND	0.25	0.246	98		-	-		80-120	-		20	A
1,2-Dibromo-3-chloropropane	ND	0.25	0.324	**130**	Q	-	-		80-120	-		20	A
1,2,3-Trichloropropane	ND	0.25	0.186	**74**	Q	-	-		80-120	-		20	A

SEMIVOLATILES

Project Name: PARCEL U - CAMBRIDGE CROSSING
Lab Number: L2103167
Project Number: 05304-662
Report Date: 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01
Client ID: VES-X-9
Sample Location: CAMBRIDGE, MA

Date Collected: 01/20/21 12:40
Date Received: 01/20/21
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1
Analytical Date: 01/21/21 17:40
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 01/21/21 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	--	1
Butyl benzyl phthalate	ND		ug/l	5.00	--	1
Di-n-butylphthalate	ND		ug/l	5.00	--	1
Di-n-octylphthalate	ND		ug/l	5.00	--	1
Diethyl phthalate	ND		ug/l	5.00	--	1
Dimethyl phthalate	ND		ug/l	5.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		42-122
2-Fluorobiphenyl	92		46-121
4-Terphenyl-d14	87		47-138

Project Name: PARCEL U - CAMBRIDGE CROSSING
Lab Number: L2103167
Project Number: 05304-662
Report Date: 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01
Client ID: VES-X-9
Sample Location: CAMBRIDGE, MA

Date Collected: 01/20/21 12:40
Date Received: 01/20/21
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1-SIM
Analytical Date: 01/22/21 15:57
Analyst: ALS

Extraction Method: EPA 625.1
Extraction Date: 01/21/21 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.100	--	1
Fluoranthene	ND		ug/l	0.100	--	1
Naphthalene	ND		ug/l	0.100	--	1
Benzo(a)anthracene	ND		ug/l	0.100	--	1
Benzo(a)pyrene	ND		ug/l	0.100	--	1
Benzo(b)fluoranthene	ND		ug/l	0.100	--	1
Benzo(k)fluoranthene	ND		ug/l	0.100	--	1
Chrysene	ND		ug/l	0.100	--	1
Acenaphthylene	ND		ug/l	0.100	--	1
Anthracene	ND		ug/l	0.100	--	1
Benzo(ghi)perylene	ND		ug/l	0.100	--	1
Fluorene	ND		ug/l	0.100	--	1
Phenanthrene	ND		ug/l	0.100	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--	1
Pyrene	ND		ug/l	0.100	--	1
Pentachlorophenol	ND		ug/l	1.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		25-87
Phenol-d6	37		16-65
Nitrobenzene-d5	85		42-122
2-Fluorobiphenyl	96		46-121
2,4,6-Tribromophenol	110		45-128
4-Terphenyl-d14	105		47-138

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1-SIM
Analytical Date: 01/21/21 12:22
Analyst: RP

Extraction Method: EPA 625.1
Extraction Date: 01/20/21 15:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1456953-1					
Acenaphthene	ND		ug/l	0.100	--
Fluoranthene	ND		ug/l	0.100	--
Naphthalene	ND		ug/l	0.100	--
Benzo(a)anthracene	ND		ug/l	0.100	--
Benzo(a)pyrene	ND		ug/l	0.100	--
Benzo(b)fluoranthene	ND		ug/l	0.100	--
Benzo(k)fluoranthene	ND		ug/l	0.100	--
Chrysene	ND		ug/l	0.100	--
Acenaphthylene	ND		ug/l	0.100	--
Anthracene	ND		ug/l	0.100	--
Benzo(ghi)perylene	ND		ug/l	0.100	--
Fluorene	ND		ug/l	0.100	--
Phenanthrene	ND		ug/l	0.100	--
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--
Pyrene	ND		ug/l	0.100	--
Pentachlorophenol	ND		ug/l	1.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	60		25-87
Phenol-d6	44		16-65
Nitrobenzene-d5	**124**	Q	42-122
2-Fluorobiphenyl	87		46-121
2,4,6-Tribromophenol	115		45-128
4-Terphenyl-d14	108		47-138

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662
Lab Number: L2103167
Report Date: 01/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1
Analytical Date: 01/21/21 13:32
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 01/20/21 18:03

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1457031-1					
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	--
Butyl benzyl phthalate	ND		ug/l	5.00	--
Di-n-butylphthalate	ND		ug/l	5.00	--
Di-n-octylphthalate	ND		ug/l	5.00	--
Diethyl phthalate	ND		ug/l	5.00	--
Dimethyl phthalate	ND		ug/l	5.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		42-122
2-Fluorobiphenyl	94		46-121
4-Terphenyl-d14	95		47-138

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

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: WG1456953-3								
Acenaphthene	102		-		60-132	-		30
Fluoranthene	103		-		43-121	-		30
Naphthalene	90		-		36-120	-		30
Benzo(a)anthracene	106		-		42-133	-		30
Benzo(a)pyrene	102		-		32-148	-		30
Benzo(b)fluoranthene	113		-		42-140	-		30
Benzo(k)fluoranthene	100		-		25-146	-		30
Chrysene	101		-		44-140	-		30
Acenaphthylene	100		-		54-126	-		30
Anthracene	106		-		43-120	-		30
Benzo(ghi)perylene	106		-		1-195	-		30
Fluorene	97		-		70-120	-		30
Phenanthrene	99		-		65-120	-		30
Dibenzo(a,h)anthracene	115		-		1-200	-		30
Indeno(1,2,3-cd)pyrene	124		-		1-151	-		30
Pyrene	103		-		70-120	-		30
Pentachlorophenol	53		-		38-152	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

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: WG1456953-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	64				25-87
Phenol-d6	48				16-65
Nitrobenzene-d5	**125**	Q			42-122
2-Fluorobiphenyl	88				46-121
2,4,6-Tribromophenol	116				45-128
4-Terphenyl-d14	106				47-138

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

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: WG1457031-3								
Bis(2-ethylhexyl)phthalate	98		-		29-137	-		82
Butyl benzyl phthalate	107		-		1-140	-		60
Di-n-butylphthalate	97		-		8-120	-		47
Di-n-octylphthalate	101		-		19-132	-		69
Diethyl phthalate	94		-		1-120	-		100
Dimethyl phthalate	98		-		1-120	-		183

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	105				42-122
2-Fluorobiphenyl	93				46-121
4-Terphenyl-d14	97				47-138

PCBS

Project Name: PARCEL U - CAMBRIDGE CROSSING
Lab Number: L2103167
Project Number: 05304-662
Report Date: 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01
Client ID: VES-X-9
Sample Location: CAMBRIDGE, MA

Date Collected: 01/20/21 12:40
Date Received: 01/20/21
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 127,608.3
Analytical Date: 01/24/21 08:41
Analyst: JAW

Extraction Method: EPA 608.3
Extraction Date: 01/22/21 11:56
Cleanup Method: EPA 3665A
Cleanup Date: 01/23/21
Cleanup Method: EPA 3660B
Cleanup Date: 01/23/21

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	95		37-123	B
Decachlorobiphenyl	86		38-114	B
2,4,5,6-Tetrachloro-m-xylene	78		37-123	A
Decachlorobiphenyl	67		38-114	A

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662
Lab Number: L2103167
Report Date: 01/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 127,608.3
Analytical Date: 01/24/21 07:56
Analyst: JAW

Extraction Method: EPA 608.3
Extraction Date: 01/22/21 11:56
Cleanup Method: EPA 3665A
Cleanup Date: 01/23/21
Cleanup Method: EPA 3660B
Cleanup Date: 01/23/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG1457752-1						
Aroclor 1016	ND		ug/l	0.250	--	A
Aroclor 1221	ND		ug/l	0.250	--	A
Aroclor 1232	ND		ug/l	0.250	--	A
Aroclor 1242	ND		ug/l	0.250	--	A
Aroclor 1248	ND		ug/l	0.250	--	A
Aroclor 1254	ND		ug/l	0.250	--	A
Aroclor 1260	ND		ug/l	0.200	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	94		37-123	B
Decachlorobiphenyl	94		38-114	B
2,4,5,6-Tetrachloro-m-xylene	85		37-123	A
Decachlorobiphenyl	74		38-114	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

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: WG1457752-2									
Aroclor 1016	91		-		50-140	-		36	A
Aroclor 1260	78		-		8-140	-		38	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	86				37-123	B
Decachlorobiphenyl	86				38-114	B
2,4,5,6-Tetrachloro-m-xylene	75				37-123	A
Decachlorobiphenyl	68				38-114	A

METALS

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01 Date Collected: 01/20/21 12:40

Client ID: VES-X-9 Date Received: 01/20/21

Sample Location: CAMBRIDGE, MA Field Prep: Refer to COC

Sample Depth:

Matrix: Water

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	0.02000	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Arsenic, Total	0.01685		mg/l	0.00500	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00100	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Chromium, Total	ND		mg/l	0.00500	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Copper, Total	ND		mg/l	0.00500	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Iron, Total	43.4		mg/l	0.050	--	1	01/22/21 04:35	01/26/21 10:02	EPA 3005A	19,200.7	GD
Lead, Total	ND		mg/l	0.00500	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	01/22/21 06:28	01/26/21 14:03	EPA 245.1	3,245.1	VW
Nickel, Total	ND		mg/l	0.01000	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.02500	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00200	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.05000	--	5	01/22/21 04:35	01/22/21 13:01	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	332		mg/l	0.660	NA	1	01/22/21 04:35	01/26/21 10:02	EPA 3005A	19,200.7	GD
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		01/22/21 13:01	NA	107,-	

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-02 Date Collected: 01/20/21 14:30

Client ID: 2021-0120-SW Date Received: 01/20/21

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Sample Depth:

Matrix: Water

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	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Copper, Total	0.00161		mg/l	0.00100	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Iron, Total	0.362		mg/l	0.050	--	1	01/22/21 04:35	01/26/21 09:57	EPA 3005A	19,200.7	GD
Lead, Total	0.00193		mg/l	0.00100	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	01/22/21 06:28	01/26/21 14:06	EPA 245.1	3,245.1	VW
Nickel, Total	ND		mg/l	0.00200	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Zinc, Total	0.01649		mg/l	0.01000	--	1	01/22/21 04:35	01/22/21 13:17	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	67.3		mg/l	0.660	NA	1	01/22/21 04:35	01/26/21 09:57	EPA 3005A	19,200.7	GD
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		01/22/21 13:17	NA	107,-	

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

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): 01-02 Batch: WG1457346-1										
Iron, Total	ND		mg/l	0.050	--	1	01/22/21 04:35	01/26/21 09:38	19,200.7	GD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-02 Batch: WG1457346-1										
Hardness	ND		mg/l	0.660	NA	1	01/22/21 04:35	01/26/21 09:38	19,200.7	GD

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): 01-02 Batch: WG1457349-1										
Antimony, Total	ND		mg/l	0.00400	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Lead, Total	ND		mg/l	0.00100	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	01/22/21 04:35	01/22/21 12:39	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

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): 01-02 Batch: WG1457351-1										
Mercury, Total	ND		mg/l	0.00020	--	1	01/22/21 06:28	01/26/21 13:00	3,245.1	VW

Prep Information

Digestion Method: EPA 245.1

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1457346-2								
Iron, Total	95		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 Batch: WG1457346-2								
Hardness	101		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1457349-2								
Antimony, Total	88		-		85-115	-		
Arsenic, Total	110		-		85-115	-		
Cadmium, Total	113		-		85-115	-		
Chromium, Total	100		-		85-115	-		
Copper, Total	102		-		85-115	-		
Lead, Total	105		-		85-115	-		
Nickel, Total	99		-		85-115	-		
Selenium, Total	114		-		85-115	-		
Silver, Total	107		-		85-115	-		
Zinc, Total	110		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1457351-2								
Mercury, Total	102		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

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): 01-02 QC Batch ID: WG1457346-3 QC Sample: L2103167-01 Client ID: VES-X-9												
Iron, Total	43.4	1	43.3	**0**	Q	-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457346-3 QC Sample: L2103167-01 Client ID: VES-X-9												
Hardness	332	66.2	381	**74**	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457346-7 QC Sample: L2103167-02 Client ID: 2021-0120-SW												
Iron, Total	0.362	1	1.37	101		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457346-7 QC Sample: L2103167-02 Client ID: 2021-0120-SW												
Hardness	67.3	66.2	135	102		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457349-3 QC Sample: L2103167-01 Client ID: VES-X-9												
Antimony, Total	ND	0.5	0.5409	108		-	-		70-130	-		20
Arsenic, Total	0.01685	0.12	0.1484	110		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05590	110		-	-		70-130	-		20
Chromium, Total	ND	0.2	0.1965	98		-	-		70-130	-		20
Copper, Total	ND	0.25	0.2420	97		-	-		70-130	-		20
Lead, Total	ND	0.51	0.5494	108		-	-		70-130	-		20
Nickel, Total	ND	0.5	0.4763	95		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1333	111		-	-		70-130	-		20
Silver, Total	ND	0.05	0.05088	102		-	-		70-130	-		20
Zinc, Total	ND	0.5	0.5121	102		-	-		70-130	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

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): 01-02 QC Batch ID: WG1457351-3 QC Sample: L2103127-01 Client ID: MS Sample									
Mercury, Total	ND	0.005	0.00485	97	-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457351-5 QC Sample: L2103150-01 Client ID: MS Sample									
Mercury, Total	0.00031	0.005	0.00508	95	-	-	70-130	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457346-4 QC Sample: L2103167-01 Client ID: VES-X-9						
Iron, Total	43.4	43.2	mg/l	0		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457346-4 QC Sample: L2103167-01 Client ID: VES-X-9						
Hardness	332	330	mg/l	1		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457346-8 QC Sample: L2103167-02 Client ID: 2021-0120-SW						
Iron, Total	0.362	0.366	mg/l	1		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457346-8 QC Sample: L2103167-02 Client ID: 2021-0120-SW						
Hardness	67.3	67.8	mg/l	1		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457349-4 QC Sample: L2103167-01 Client ID: VES-X-9						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	0.01685	0.01664	mg/l	1		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	ND	ND	mg/l	NC		20
Copper, Total	ND	ND	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457351-4 QC Sample: L2103127-01 Client ID: DUP Sample					
Mercury, Total	ND	ND	mg/l	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1457351-6 QC Sample: L2103150-01 Client ID: DUP Sample					
Mercury, Total	0.00031	0.00027	mg/l	13	20

INORGANICS
&
MISCELLANEOUS

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662
Lab Number: L2103167
Report Date: 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-01
Client ID: VES-X-9
Sample Location: CAMBRIDGE, MA
Sample Depth:
Matrix: Water

Date Collected: 01/20/21 12:40
Date Received: 01/20/21
Field Prep: Refer to COC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	23.		mg/l	10	NA	2	-	01/22/21 14:00	121,2540D	AC
Cyanide, Total	0.011		mg/l	0.005	--	1	01/21/21 10:05	01/21/21 12:35	121,4500CN-CE	CR
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	01/20/21 20:39	121,4500CL-D	AS
Nitrogen, Ammonia	3.56		mg/l	0.075	--	1	01/20/21 23:45	01/21/21 20:45	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	4.00	--	1	01/25/21 16:00	01/25/21 17:00	74,1664A	TL
Phenolics, Total	ND		mg/l	0.030	--	1	01/25/21 07:18	01/25/21 10:24	4,420.1	KP
Chromium, Hexavalent	ND		mg/l	0.010	--	1	01/21/21 07:20	01/21/21 07:57	1,7196A	KP
Anions by Ion Chromatography - Westborough Lab										
Chloride	1960		mg/l	50.0	--	100	-	01/22/21 18:51	44,300.0	AT

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662
Lab Number: L2103167
Report Date: 01/27/21

SAMPLE RESULTS

Lab ID: L2103167-02
Client ID: 2021-0120-SW
Sample Location: CAMBRIDGE, MA
Sample Depth:
Matrix: Water

Date Collected: 01/20/21 14:30
Date Received: 01/20/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	0.190		mg/l	0.075	--	1	01/20/21 23:45	01/21/21 20:46	121,4500NH3-BH	AT
Chromium, Hexavalent	ND		mg/l	0.010	--	1	01/21/21 07:20	01/21/21 07:57	1,7196A	KP

Project Name: PARCEL U - CAMBRIDGE CROSSING **Lab Number:** L2103167

Project Number: 05304-662 **Report Date:** 01/27/21

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: WG1457074-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	01/20/21 20:39	121,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1457088-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	01/20/21 23:45	01/21/21 20:27	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1457217-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	01/21/21 07:20	01/21/21 07:55	1,7196A	KP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1457243-1										
Cyanide, Total	ND		mg/l	0.005	--	1	01/21/21 10:05	01/21/21 12:19	121,4500CN-CE	CR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1457685-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	01/22/21 14:00	121,2540D	AC
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1457931-1										
Chloride	ND		mg/l	0.500	--	1	-	01/22/21 16:50	44,300.0	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1458180-1										
Phenolics, Total	ND		mg/l	0.030	--	1	01/25/21 07:18	01/25/21 10:13	4,420.1	KP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1458367-1										
TPH, SGT-HEM	ND		mg/l	4.00	--	1	01/25/21 16:00	01/25/21 17:00	74,1664A	TL

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1457074-2								
Chlorine, Total Residual	100		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1457088-2								
Nitrogen, Ammonia	106		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1457217-2								
Chromium, Hexavalent	108		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1457243-2								
Cyanide, Total	90		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1457685-2								
Solids, Total Suspended	102		-		80-120	-		
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1457931-2								
Chloride	108		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1458180-2								
Phenolics, Total	108		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING

Project Number: 05304-662

Lab Number: L2103167

Report Date: 01/27/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1458367-2					
TPH	70	-	64-132	-	34

Matrix Spike Analysis
Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

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: WG1457074-4 QC Sample: L2103167-01 Client ID: VES-X-9												
Chlorine, Total Residual	ND	0.25	0.21	84		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1457088-4 QC Sample: L2102839-03 Client ID: MS Sample												
Nitrogen, Ammonia	0.149	4	3.70	89		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1457217-4 QC Sample: L2103167-02 Client ID: 2021-0120-SW												
Chromium, Hexavalent	ND	0.1	0.103	103		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1457243-4 QC Sample: L2103168-02 Client ID: MS Sample												
Cyanide, Total	ND	0.2	0.182	91		-	-		90-110	-		30
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1457931-3 QC Sample: L2103503-05 Client ID: MS Sample												
Chloride	142	40	184	104		-	-		90-110	-		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1458180-4 QC Sample: L2103167-01 Client ID: VES-X-9												
Phenolics, Total	ND	0.4	0.47	117		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1458367-4 QC Sample: L2100009-160 Client ID: MS Sample												
TPH	ND	19.4	12.5	64		-	-		64-132	-		34

Lab Duplicate Analysis

Batch Quality Control

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1457074-3 QC Sample: L2102975-01 Client ID: DUP Sample						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1457088-3 QC Sample: L2102839-03 Client ID: DUP Sample						
Nitrogen, Ammonia	0.149	0.143	mg/l	4		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1457217-3 QC Sample: L2103167-01 Client ID: VES-X-9						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1457243-3 QC Sample: L2103114-02 Client ID: DUP Sample						
Cyanide, Total	ND	ND	mg/l	NC		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1457685-3 QC Sample: L2103167-01 Client ID: VES-X-9						
Solids, Total Suspended	23	26	mg/l	12		29
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1457931-4 QC Sample: L2103503-05 Client ID: DUP Sample						
Chloride	142	140	mg/l	1		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1458180-3 QC Sample: L2103167-01 Client ID: VES-X-9						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1458367-3 QC Sample: L2100009-159 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2103167-01A	Vial Na2S2O3 preserved	C	NA		2.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2103167-01A1	Vial Na2S2O3 preserved	C	NA		2.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2103167-01B	Vial Na2S2O3 preserved	C	NA		2.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2103167-01B1	Vial Na2S2O3 preserved	C	NA		2.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2103167-01C	Vial Na2S2O3 preserved	C	NA		2.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2103167-01C1	Vial Na2S2O3 preserved	C	NA		2.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2103167-01D	Vial Na2S2O3 preserved	C	NA		2.8	Y	Absent		504(14)
L2103167-01E	Vial Na2S2O3 preserved	C	NA		2.8	Y	Absent		504(14)
L2103167-01F	Vial unpreserved	C	NA		2.8	Y	Absent		SUB-ETHANOL(14)
L2103167-01G	Vial unpreserved	C	NA		2.8	Y	Absent		SUB-ETHANOL(14)
L2103167-01H	Vial unpreserved	C	NA		2.8	Y	Absent		SUB-ETHANOL(14)
L2103167-01I	Plastic 250ml NaOH preserved	C	>12	>12	2.8	Y	Absent		HOLD-WETCHEM(),TCN-4500(14)
L2103167-01I1	Plastic 250ml NaOH preserved	C	>12	>12	2.8	Y	Absent		HOLD-WETCHEM(),TCN-4500(14)
L2103167-01J	Plastic 250ml HNO3 preserved	C	<2	<2	2.8	Y	Absent		HOLD-METAL-DISSOLVED(180)
L2103167-01K	Plastic 250ml HNO3 preserved	C	<2	<2	2.8	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),HARDU(180),FE-UI(180),HG-U(28),AS-2008T(180),AG-2008T(180),SE-2008T(180),PB-2008T(180),CR-2008T(180),SB-2008T(180)
L2103167-01L	Plastic 500ml H2SO4 preserved	C	<2	<2	2.8	Y	Absent		NH3-4500(28)
L2103167-01M	Plastic 950ml unpreserved	C	7	7	2.8	Y	Absent		CL-300(28),HEXCR-7196(1),TRC-4500(1)
L2103167-01N	Plastic 950ml unpreserved	C	7	7	2.8	Y	Absent		TSS-2540(7)
L2103167-01O	Amber 950ml H2SO4 preserved	C	7	<2	2.8	N	Absent		TPHENOL-420(28)
L2103167-01P	Amber 1000ml Na2S2O3	C	7	7	2.8	Y	Absent		PCB-608.3(365)
L2103167-01P1	Amber 1000ml Na2S2O3	C	7	7	2.8	Y	Absent		PCB-608.3(365)

*Values in parentheses indicate holding time in days

Project Name: PARCEL U - CAMBRIDGE CROSSING
Project Number: 05304-662

Lab Number: L2103167
Report Date: 01/27/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2103167-01Q	Amber 1000ml Na2S2O3	C	7	7	2.8	Y	Absent		625.1-RGP(7)
L2103167-01Q1	Amber 1000ml Na2S2O3	C	7	7	2.8	Y	Absent		625.1-RGP(7)
L2103167-01R	Amber 1000ml Na2S2O3	C	7	7	2.8	Y	Absent		625.1-SIM-RGP(7)
L2103167-01R1	Amber 1000ml Na2S2O3	C	7	7	2.8	Y	Absent		625.1-SIM-RGP(7)
L2103167-01S	Amber 1000ml HCl preserved	C	NA		2.8	Y	Absent		TPH-1664(28)
L2103167-01S1	Amber 1000ml HCl preserved	C	NA		2.8	Y	Absent		TPH-1664(28)
L2103167-02A	Plastic 250ml HNO3 preserved	C	<2	<2	2.8	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),FE-UI(180),HARDU(180),CU-2008T(180),HG-U(28),AS-2008T(180),SE-2008T(180),AG-2008T(180),CR-2008T(180),SB-2008T(180),PB-2008T(180)
L2103167-02B	Plastic 500ml H2SO4 preserved	C	<2	<2	2.8	Y	Absent		NH3-4500(28)
L2103167-02C	Plastic 950ml unpreserved	C	7	7	2.8	Y	Absent		HEXCR-7196(1)

*Values in parentheses indicate holding time in days

Project Name:	PARCEL U - CAMBRIDGE CROSSING	**Lab Number:**	L2103167
Project Number:	05304-662	**Report Date:**	01/27/21

GLOSSARY

Acronyms

DL	- 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 limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
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).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
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.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
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. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
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.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
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.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
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.

Report Format: Data Usability Report

Project Name:	PARCEL U - CAMBRIDGE CROSSING	**Lab Number:**	L2103167
Project Number:	05304-662	**Report Date:**	01/27/21

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

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.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

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.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

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 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.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

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.

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

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

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

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	PARCEL U - CAMBRIDGE CROSSING	**Lab Number:**	L2103167
Project Number:	05304-662	**Report Date:**	01/27/21

Data Qualifiers

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.

Report Format: Data Usability Report

Project Name:	PARCEL U - CAMBRIDGE CROSSING	**Lab Number:**	L2103167
Project Number:	05304-662	**Report Date:**	01/27/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

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.

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.

127 Method 608.3: Organochlorine Pesticides and PCBs by GC/HSD, EPA 821-R-16-009, December 2016.

128 Method 624.1: Purgeables by GC/MS, EPA 821-R-16-008, December 2016.

129 Method 625.1: Base/Neutrals and Acids by GC/MS, EPA 821-R-16-007, December 2016.

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 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
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.
EPA TO-12 Non-methane organics
EPA 3C Fixed gases
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, 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, SM4500NO2-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, 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 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: 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 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

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, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

ALPHA CHAIN OF CUSTODY

Service Centers: Brewer, ME 04412 · Portsmouth, NH 03801 · Mahwah, NJ 07430 · Albany, NY 12205 · Tonawanda, NY 14150 · Holmes, PA 19043

Westborough, MA 01581, 8 Walkup Dr., TEL: 508-898-9220, FAX: 508-898-9193 · Mansfield, MA 02048, 320 Forbes Blvd, TEL: 508-822-9300, FAX: 508-822-3288

Page 1 of 1

Date Rec'd in Lab: 1/20/21

ALPHA Job #: L2103187

Project Information

Project Name: Parcel U - Cambridge Crossing
Project Location: Cambridge, MA
Project #: 05304-682
(Use Project name as Project #) ☐
Project Manager: Tim Becker; Liz Christmas
ALPHAQuote #: 12964

Turn-Around Time

Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days: 5 Day

H&A Information

H&A Client: DW NP Property, LLC
H&A Address: 465 Medford Street
Boston, MA 02129
H&A Phone: 617-886-7400
H&A Fax: elcoon@haleyaldrich.com
H&A Email: schatterton@haleyaldrich.com

Deliverables

☑ Email ☐ Fax
☐ EQuIS (1 File) ☑ EQuIS (4 File)
☐ Other:

Billing Information

☐ Same as Client Info
PO #

Regulatory Requirements (Program/Criteria)

EPA NPDES RGP

Note: Select State from menu & identify criteria.

Disposal Site Information

Please identify below location of applicable disposal facilities.

Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Note 1. Metals: Cadmium, chromium, hex. chromium, tri. chromium, copper, lead, nickel, silver, zinc, arsenic, mercury, selenium, antimony, iron, hardness
Note 2. Hold PACN & ACN
3. Dissolved metals on hold
Note 4. Please sample per EPA Approved 2017 RGP Methods

Analysis

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TRC - 4500	TSS - 2540	TCN - 4500 HOLD PACN & ACN	504	624.1 & Dioxane	HEXCR - 3500 & Trivalent Chromium	Metals - 200.7 (245.1 (Note 1)	TPHNOL - 420	625.1 (including Diethylphthalate)	625.1 - SIM, or applicable method	CL - 300	Ammonia	Diss Metals - Ag As Cd Cr, Cu Ni Pb Sb, Se Zn Fe Hg	A2-ALCOHOL (Ethanol)	TPH - 1664	PCB - 608	Sample Specific Comments
03187-01	[illegible] VES-X-01	1/20/21	11:40	W	VDS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Metals w/ hardness
-02	2021-0120-SW	1/20/21	14:30	W	VDS						X	X					X					Metals w/ hardness

Sample Filtration: ☐ Done ☐ Lab to do
Preservation: ☐ Lab to do
(Please Specify below)

Total Bottles

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, K/E = Zn Ac/NaOH, O = Other

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

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible signature]	1/20/21 15:10	[illegible signature]	1/20/21 16:00
[illegible signature]	1/20/21 16:50	[illegible signature]	1/20/21 16:50

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. Alpha Analytical's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement# 2015-18-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 1 (1/28/2016)

Teklab, Inc.
Environmental Laboratory

http://www.teklabinc.com/

January 27, 2021

Melissa Gulli
Alpha Analytical
145 Flanders Road
Westborough, MA 01581
TEL: (603) 319-5010
FAX:

Illinois	100226
Kansas	E-10374
Louisiana	05002
Louisiana	05003
Oklahoma	9978

RE: L2103167 **WorkOrder:** 21011149

Dear Melissa Gulli:

TEKLAB, INC received 1 sample on 1/22/2021 9:47:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Marvin L. Darling II

Marvin L. Darling
Project Manager
(618)344-1004 ex 41
mdarling@teklabinc.com

Report Contents

http://www.teklabinc.com/

Client: Alpha Analytical
Client Project: L2103167

Work Order: 21011149
Report Date: 27-Jan-21

This reporting package includes the following:

Teklab, Inc.
Environmental Laboratory

Definitions

http://www.teklabinc.com/

Client: Alpha Analytical **Work Order:** 21011149

Client Project: L2103167 **Report Date:** 27-Jan-21

Abbr	Definition
*	Analytes on report marked with an asterisk are not NELAP accredited
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
CRQL	A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.
DNI	Did not ignite
DUP	Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample is a sample matrix, free from the analytes of interest,spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MBLK	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	"The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
NC	Data is not acceptable for compliance purposes
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TIC	Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"
TNTC	Too numerous to count (> 200 CFU)

Teklab, Inc. Environmental Laboratory

Definitions

http://www.teklabinc.com/

Client: Alpha Analytical

Work Order: 21011149

Client Project: L2103167

Report Date: 27-Jan-21

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
C -	RL shown is a Client Requested Quantitation Limit	E -	Value above quantitation range
H -	Holding times exceeded	I -	Associated internal standard was outside method criteria
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	T -	TIC(Tentatively identified compound)
X -	Value exceeds Maximum Contaminant Level		

Teklab, Inc.
Environmental Laboratory

Case Narrative

http://www.teklabinc.com/

Client: Alpha Analytical
Client Project: L2103167

Work Order: 21011149
Report Date: 27-Jan-21

Cooler Receipt Temp: 1.4 °C

Locations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email KKlostermann@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email jhriley@teklabinc.com

Collinsville Air

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
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Address 1319 Butterfield Rd.
Downers Grove, IL 60515
Phone (630) 324-6855
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Email arenner@teklabinc.com

Accreditations

http://www.teklabinc.com/

Client: Alpha Analytical
Work Order: 21011149
Client Project: L2103167
Report Date: 27-Jan-21

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2021	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2021	Collinsville
Louisiana	LDEQ	05002	NELAP	6/30/2021	Collinsville
Louisiana	LDEQ	05003	NELAP	6/30/2021	Collinsville
Oklahoma	ODEQ	9978	NELAP	8/31/2021	Collinsville
Arkansas	ADEQ	88-0966		3/14/2021	Collinsville
Illinois	IDPH	17584		5/31/2021	Collinsville
Kentucky	UST	0073		1/31/2021	Collinsville
Missouri	MDNR	00930		5/31/2021	Collinsville
Missouri	MDNR	930		1/31/2022	Collinsville

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Alpha Analytical
Work Order: 21011149
Client Project: L2103167
Report Date: 27-Jan-21
Lab ID: 21011149-001
Client Sample ID: VES-X-9
Matrix: AQUEOUS
Collection Date: 01/20/2021 12:40

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE ORGANICS								
Ethanol	*	20		**ND**	mg/L	1	01/22/2021 13:08	R286595

Teklab, Inc. Environmental Laboratory

Quality Control Results

http://www.teklabinc.com/

Client: Alpha Analytical
Client Project: L2103167

Work Order: 21011149
Report Date: 27-Jan-21

EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE ORG

Batch R286595 **SampType:** MBLK Units **mg/L**
SampID: MBLK-012221

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**ND**						01/22/202

Batch R286595 **SampType:** LCS Units **mg/L**
SampID: LCS-012221

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**230**	250.0	0	90.3	70	132	01/22/202

Batch R286595 **SampType:** MS Units **mg/L**
SampID: 21011149-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**230**	250.0	0	92.9	70	132	01/22/202

Batch R286595 **SampType:** MSD Units **mg/L** RPD Limit **30**
SampID: 21011149-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Ethanol	*	20		**240**	250.0	0	94.3	232.1	1.57	01/22/202

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Alpha Analytical
Client Project: L2103167

Work Order: 21011149
Report Date: 27-Jan-21

Carrier: UPS

Completed by: Elizabeth A. Hurley
On: 22-Jan-21

Received By: EAH

Reviewed by: Emily Pohlman
On: 22-Jan-21

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 1.4
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☑	No ☐	No VOA vials ☐
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	NA ☐
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑

Any No responses must be detailed below or on the COC.

ALPHA ANALYTICAL
World Class Chemistry

Subcontract Chain of Custody

Tek Lab, Inc.
5445 Horsehoe Lake Road
Collinsville, IL 62234-7425

2101149
Alpha Job Number
L2103167

Client Information

Client: Alpha Analytical Labs
Address: Eight Walkup Drive
Westborough, MA 01581-1019

Phone: 603.319.5010
Email: mgulli@alphalab.com

Project Information

Project Location: MA
Project Manager: Melissa Gulli

Turnaround & Deliverables Information

Due Date: 01/29/21
Deliverables:

Regulatory Requirements/Report Limits

State/Federal Program:

Regulatory Criteria: RCS-1-14;S1/G1-14

Project Specific Requirements and/or Report Requirements

Reference following Alpha Job Number on final report/deliverables: L2103167

Report to include Method Blank, LCS/LCSD:

Additional Comments: Send all results/reports to subreports@alphalab.com

Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
2101149-001	VES-X-9	01-20-21 12:40	WATER	Ethanol by EPA 1671 Revision A	

Relinquished By:	Date/Time:	Received By:	Date/Time:
Chris Tebeau	1/21/21	[illegible] (UPS)	1/22/21 0947

Form No: AL_subcoc

ICE 1.4°C LTG | OHS PRY 1/22/21