HALEY & ALDRICH, INC.
465 Medford Street, Suite 2200
Boston, MA 02129
(617) 886.7400

21 December 2017
File No. 128553-002

US Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square – Suite 100 (OEP06-01)
Boston, MA 02109-3912

Attention: EPA/OEP RGP Applications Coordinator

Subject: Notice of Intent (NOI)
Temporary Construction Dewatering
Proposed Building Expansion at 100 East Newton Street
Boston University School of Dental Medicine
Boston, Massachusetts

Dear Ms. Little:

On behalf of our client, Boston University (BU), and in accordance with the National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) in Massachusetts, MAG910000, this letter submits a Notice of Intent (NOI) and the applicable documentation as required by the US Environmental Protection Agency (EPA) for temporary construction site dewatering under the RGP. Haley & Aldrich, Inc. (Haley & Aldrich) has prepared this submission to facilitate off-site discharge of temporary dewatering during construction activities at the BU School of Dental Medicine Project, located at 100 East Newton Street in Boston, Massachusetts.

Site Location and Historical Site Usage

The proposed Building Expansion at the BU School of Dental Medicine project site is located at 100 East Newton Street in Boston, MA, at the corner of East Newton Street and Albany Street (see Figure 1, Project Locus). The site is primarily occupied by the existing Dental School Building. Street and sidewalk grades in the area vary from approximately El. 16 to El. 18 BCB.

The existing BU School of Dental Medicine building consist of a seven-story structure with one basement level constructed in the 1960s, with a basement slab varying from El. 6 to El. 9. A one-story building with a basement was added to the rear of the existing Dental Building in the 1970s.

Proposed Activities

The proposed Building Expansion will consist of a L-shaped building expansion on the north and west side of the existing building. The addition on the north side will be two stories above grade, with one

basement level (top of slab typical at El. 6). On the west side, a seven-story addition is planned with no basement level. A storm water detention tank will be located below the first floor of the new addition on the west side. Water from this detention tank will be pumped to groundwater recharge wells are planned along the Albany Street sidewalk.

Groundwater Quality Data

One groundwater sample was obtained from observation well HA17-B9(OW) in October 2017. The collected sample was submitted to Alpha Analytical Laboratory (Alpha) of Westborough, MA, for chemical analysis of 2017 NPDES Remediation General Permit parameters including volatile organic compounds, semivolatile organic compounds, polycyclic aromatic hydrocarbons, total metals, total petroleum hydrocarbons, pesticides, polychlorinated biphenyls, total suspended solids, chloride, total cyanide, total phenolics, and total residual chlorine.

Refer to Table I for a summary of groundwater analytical data. The recent groundwater analyses did not detect concentrations of chemical constituents above applicable Massachusetts Contingency Plan RCGW-2 reportable concentrations. The construction dewatering effluent at the Site will be managed under an RGP. The location of the observation well HA17-B9(OW) is shown on Figure 2.

Ethanol Discussion

Ethanol sampling was not conducted on the groundwater sample collected in October 2017 as site history does not suggest that ethanol was stored at the property, and a petroleum product containing ethanol is not known to have been released at the site. Ethanol has been increasingly used in fuels since 2006 (according to the 2016 NOI Fact Sheet), and according to site history, the site has been used for campus building since the 1960's, with no known fuel-related storage or handling activities conducted onsite.

Receiving Water Quality Information and Dilution Factor

On 27 October 2017, Haley & Aldrich collected a receiving water sample from the Fort Point Channel area using a disposable polyethylene bailer. The surface water sample was collected and submitted to Alpha for chemical analysis of pH, ammonia, and salinity. Field parameters, including pH and temperature, were collected from surface water sample at the time of sampling. The results of water quality testing are summarized in Table I.

The pH and temperature readings collected in the field were used to calculate the site Water Quality Based Effluent Limitations (WQBELs). It is our understanding that since the receiving water is a saltwater body, hardness does not need to be analyzed on either the effluent water or receiving water. We have additionally confirmed with the MassDEP that the dilution factor for the receiving waters is 1.

Effluent Criteria Determination

The EPA suggested WQBEL Calculation spreadsheet was used to calculate the effluent criteria for the site. Groundwater and Receiving Water data were input and the resulting criteria was tabulated in the attached

Table I. As requested by EPA, the Microsoft Excel spreadsheet for the WQBEL calculation will be submitted to the EPA via email, for their review upon submission of this NOI.

Dewatering System and Off-site Discharge

During the remedial activities, it will be necessary to perform temporary dewatering to control surface water runoff from precipitation, groundwater seepage and construction-generated water to enable remedial excavations in-the-dry. Dewatering activities are anticipated to start in February 2018 and is anticipated to be required for up to 18 months. On average, we estimate effluent discharge rates of about 50 gallons per minute (gpm), with occasional peak flows of approximately 100 gpm during significant precipitation events. Temporary dewatering will be conducted from sumps located in excavations or from dewatering wells installed at the site.

Construction dewatering includes piping and discharging to storm drains located on or near the site that discharge to the Boston Inner Harbor at the Fort Point Channel, as shown on Figure 3. An effluent treatment system has been designed by the Contractor to meet the 2017 NPDES RGP Discharge Effluent Criteria. Prior to discharge, collected water is routed through a sedimentation tank and a bag filter and other necessary treatment components, to remove suspended solids and undissolved chemical constituents, as shown on Figure 4.

NMFS Eligibility

Based on our review of the NMFS criterion, it is the opinion of Haley & Aldrich that related activities under the NPDES RGP are not likely to adversely affect federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and should not result in a take of listed species.

According to Appendix I: Endangered Species Act (ESA) Guidance and Eligibility Criteria in the NPDES RGP, and reference footnoted below[1], the Atlantic Sturgeon and the Shortnose Sturgeon are the only ESA-listed species under the NMFS jurisdiction that may have a critical habitat in Massachusetts Bay. The Shortnose Sturgeon mainly occupy deep channel sections of large coastal rivers and nearshore marine waters.

The outfall to be used for the BU School of Dental Medicine building discharge is not situated adjacent to large coastal rivers and is not expected to affect the Shortnose Sturgeon population. The closest river to the outfall is the Charles River, which is approximately 1.25 miles from the site. Similarly, the Atlantic Sturgeon is more commonly found in large rivers and brackish waters; adults who live in coastal waters are typically found in shallow areas with sand and gravel substrates. The outfall proposed for discharge is not located in an area where Atlantic Sturgeon may be found, and the discharge is similarly not expected to affect its population. Furthermore, according the CRWA and NRWA references below[2], resident populations of Sturgeon no longer exist in the Charles River.

[1] https://www3.epa.gov/region1/npdes/remediation/RGPNMFSletter.pdf
[2] http://blog.crwa.org/blog/5-migratory-fish-found-in-the-charles-river-ecosystem
https://www.neponset.org/your-watershed/natural-history/aquatic-habitat/aquatic-life/migratory-fish/

Owner and Operator Information

Owner:
Boston University
Real Estate & Facility Services
120 Ashford Street
Boston, MA 02215
Contact: Mr. Gregg Snyder
Director, Special Projects & Strategic Initiatives

Operator:
Shawmut Design and Construction
560 Harrison Avenue
Boston, MA 02118
Contact: Mr. Dan O'Sullivan
Senior Project Manager

Appendices

The completed "Suggested Notice of Intent" form as provided in the RGP is enclosed in Appendix A. The site owner is the BU. BU has hired Shawmut Design and Construction as the Contractor conducting the site work, including dewatering activities. The excavation subcontractor will operate the dewatering system. Haley & Aldrich is monitoring the Contractor's dewatering activities on behalf of BU in accordance with the requirements for this NOI submission.

Appendices B and C include the National Register of Historic Places and ESA Documentation, respectively. Appendix D provides a copy of the Boston Water and Sewer Commission (BWSC) Dewatering Permit provided by the BWSC as part of the previous RGP submission. Copies of the groundwater testing laboratory data reports are provided in Appendix E. Appendix F provides the Site Contractor's dewatering submittal which includes details of the dewatering system. 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 as requested by EPA.

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

Kenneth N. Alepidis, P.G. (NH)
Senior Technical Specialist - Geology

Joel S. Mooney, P.E., L.S.P.
Principal | Senior Vice President

HALEY ALDRICH

Attachments:

Table I – Summary of Groundwater Quality Data
Figure 1 – Site Locus
Figure 2 – Site and Subsurface Location Plan
Figure 3 – BWSC Plan
Figure 4 – Proposed Treatment System Schematic

Appendix A – NOI for RGP
Appendix B – National Register of Historic Places and Massachusetts Historical Commission Documentation
Appendix C – Endangered Species Act Documentation
Appendix D – BWSC Permit Application
Appendix E – Laboratory Data Reports
Appendix F – Contractor Dewatering Submittal

c: Gregg Snyder, Boston University

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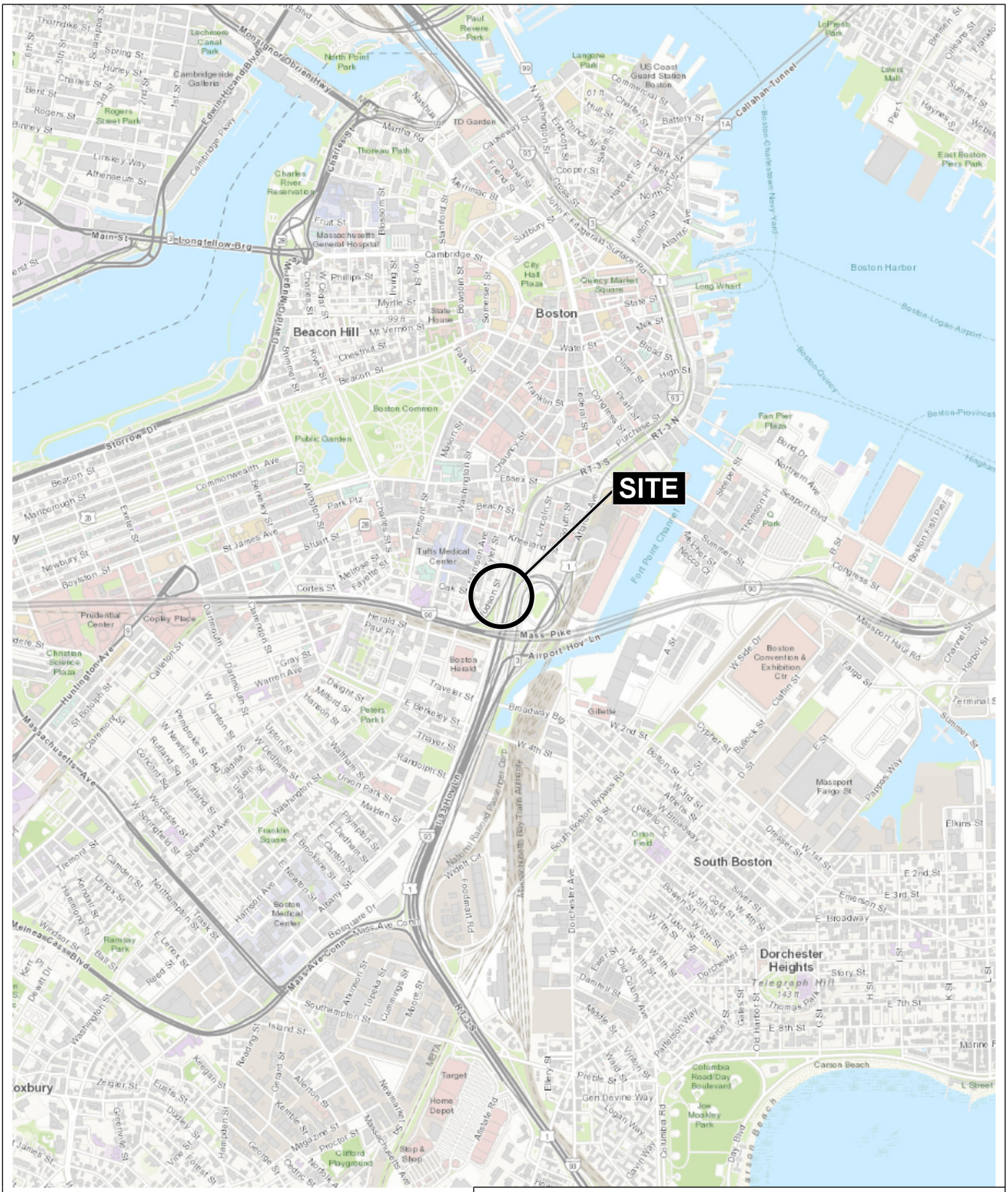
TABLE I
SUMMARY OF WATER QUALITY DATA
BU SCHOOL OF DENTAL MEDICINE
BOSTON, MA
FILE NO. 128553-002

Location Sample Name Sample Date Lab Sample ID	2017 NPDES RGP Effluent Limits (mg/l)	Site Source Water Sample HA17-B9 23-OCT-17 L1738448-01	Receiving Water Sample HA17-BUSS 23-OCT-17 L1738447-01
Volatile Organic Compounds (mg/L)			
Total VOCs by GC/MS	NA	ND	-
Total BTEX	0.1	ND	-
Semi-Volatile Organic Compounds (mg/L)			
Total SVOCs by GC/MS	NA	ND	-
Total Phthalates	0.19	ND	-
Semi-Volatile Organic Compounds (SIM) (mg/L)			
Total Group I PAHs	0.001	ND	-
Total Group II PAHs	0.1	ND	-
Total Petroleum Hydrocarbons (mg/L)			
TPH, SGT-HEM	5	ND(2)	-
Total Metals (mg/L)			
Antimony, Total	0.206	ND(0.002)	-
Arsenic, Total	0.104	0.00354	-
Cadmium, Total	0.0102	ND(0.0001)	-
Chromium, Total	0.323	ND(0.0005)	-
Copper, Total	0.242	ND(0.0005)	-
Iron, Total	5	1.81	-
Lead, Total	0.16	ND(0.00025)	-
Mercury, Total	0.000739	ND(0.0001)	-
Nickel, Total	1.45	ND(0.001)	-
Selenium, Total	0.2358	ND(0.0025)	-
Silver, Total	0.0351	ND(0.0002)	-
Zinc, Total	0.42	ND(0.005)	-
PCBs (mg/L)			
Total PCBs	0.0005+	ND	-
Other (mg/L)			
Chlorine, Total Residual	0.05+	ND(0.01)	-
Chromium, Hexavalent	323	ND(0.005)	-
Chromium, Trivalent	323	ND(0.005)	-
Cyanide, Total	178	ND(0.0025)	-
Nitrogen, Ammonia	Report Only	0.986	0.191
Phenolics, Total	NA	ND(0.015)	-
Temperature (°C)	30	19.37	16.5
pH	6.5-8.5	6.98	7.6
Solids, Total Suspended	30	ND(2.5)	-
Chloride	Report Only	2580	-
Hardness	NA	564	-
Salinity	NA	4.2	28

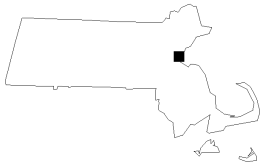
ABBREVIATIONS:
- : Not analyzed
mg/L: milligram per liter
NA: Not Applicable
ND (2.5): Result not detected above reporting limit (shown in parentheses)

NOTES:
1. Analytes detected in at least one sample are reported herein. For a complete list of analytes see the laboratory data sheets.
2. +: Indicates compliance limits are equal to the minimum level (ML) of the test method (0.0005 for Method 608).
3. pH and Temperature are collected in the field.



MAP SOURCE: ESRI

SITE COORDINATES: 42°20'53"N, 71°3'38"W



HALEY ALDRICH

BU SCHOOL OF DENTAL MEDICINE
100 EAST NEWTON STREET
BOSTON, MASSACHUSETTS

PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
DECEMBER 2017

FIGURE 1

128553-002_1_LOCUS.PDF

BENCH MARK:
CORNER OF WALL
ELEVATION=21.37 (BCB)
FIELD BOOK 635 PAGE 11
SET ON 2-12-2016

N/F
UNIVERSITY HOSPITAL INC.
CERT. 92708

FIRE ESCAPE

13.8' OVERHANG TO PROP. LINE

CONCRETE WALKWAY UNDER OVERHANG

OVERHANG

CATV VENT SHAFT

EAST NEWTON STREET
(PUBLIC - 50' WIDE)
ASPHALT ROADWAY

HA17-B1
HA17-B2
HA17-B3
HA17-B4
HA17-B5
HA17-B6
HA17-B7
HA17-B8
HA17-B9
HA17-B10

N/F
TRUSTEES OF BOSTON UNIVERSITY
AREA = 25,491 S.F.±
CERT. 86493
CERT. 76676

HARRY M. GOLDMAN SCHOOL
OF DENTAL MEDICINE
7 STORY BUILDING
100 EAST NEWTON STREET

1 STORY BUILDING

METAL GRATE OVER VENT

BRICK & CONCRETE

BRICK RAMP

CONCRETE WALL

CONCRETE PAD

METAL LOADING DOCK

BUS STOP

L.C.C. 35118[A]
L.C.C.32830[B]

BENCH MARK:
CORNER OF LIGHT POLE BASE
ELEVATION=19.42 (BCB)
FIELD BOOK 635 PAGE 12
SET ON 2-12-2016

N/F
UNIVERSITY HOSPITAL INC.
BOOK 8273 PAGE 649

ALBANY STREET
(PUBLIC - 80' WIDE)
ASPHALT ROADWAY

LEGEND

HA17-B5 — DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY NEW ENGLAND BORING CONTRACTORS DURING 18 SEPTEMBER TO 9 OCTOBER 2017

HA17-B1 — DESIGNATION AND APPROXIMATE LOCATION OF GEOPROBE DRILLED BY NEW ENGLAND BORING CONTRACTORS DURING 18 TO 21 SEPTEMBER 2017

NOTE

1. BASE PLAN TAKEN FROM A DRAWING TITLED "EXISTING CONDITIONS SURVEY, EX-1", PREPARED BY NITSCH ENGINEERING, INC., DATED 25 FEBRUARY 2016 REVISED 17 OCTOBER 2017.

0 30 60
SCALE IN FEET

HALEY ALDRICH

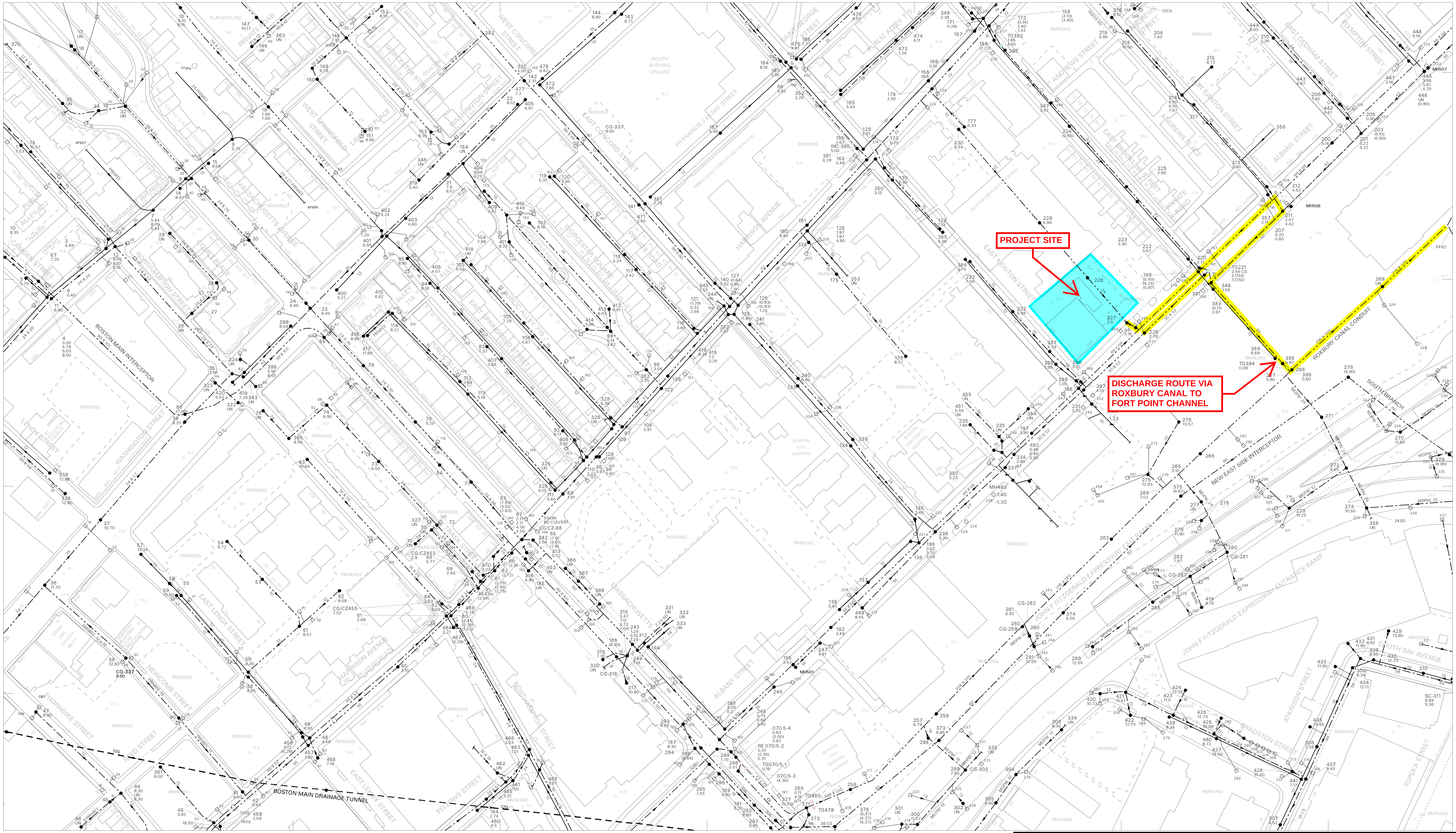
BU DENTAL SCHOOL
BOSTON, MASSACHUSETTS

SITE AND SUBSURFACE EXPLORATION LOCATION PLAN

SCALE: AS SHOWN
DECEMBER 2017

FIGURE 2

ERVIN, DAYNA Printed: 10/27/2017 1:49 PM Layout: B004
J:\GRAPHICS\128553\128553-002-B004.DWG



19J

SCALE IN FEET

NOTE: Spot Elevations shown are plotted in Boston City Base

500 FOOT GRID BASED ON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NAD 83

DATE OF PHOTOGRAPHY - MARCH 30, APRIL 1 & 17, 1995
VERTICAL DATUM BASED ON THE BOSTON CITY BASE

THE LANDBASE ON THIS MAP WAS COMPILED TO MEET THE ASPRS STANDARD FOR CLASS 1 MAP ACCURACY

Date Produced
June 29, 2001

BOSTON WATER AND SEWER COMMISSION

HALEY ALDRICH

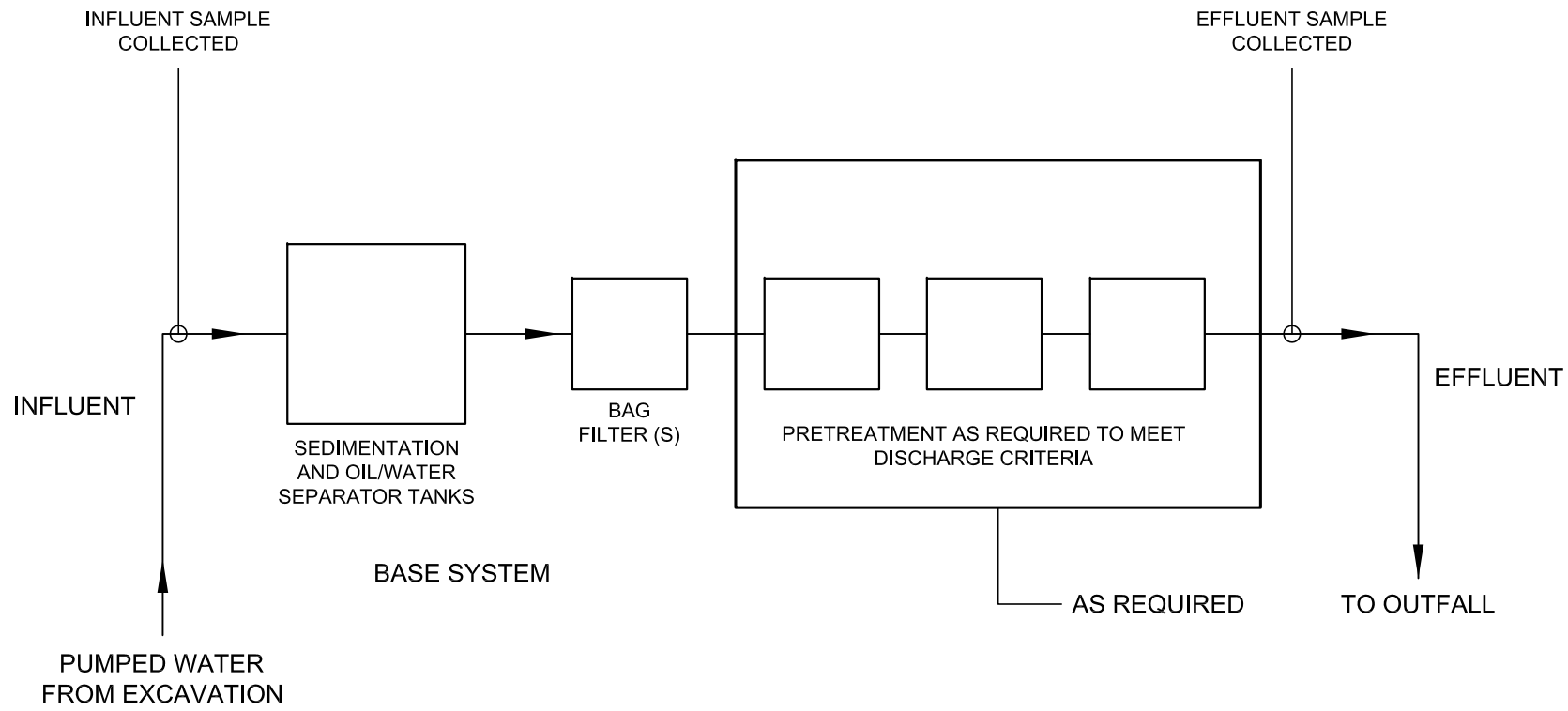
BOSTON UNIVERSITY DENTAL SCHOOL
BOSOTN, MASSACHUSETTS

BWSC PLAN

SCALE AS SHOWN
DECEMBER 2017

FIGURE 3

G:\38625\NPDES\FIGURES\COPY-A142.DWG



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

BU DENTAL BUILDING
BOSTON, MASSACHUSETTS

PROPOSED TREATMENT SYSTEM SCHEMATIC

SCALE: NONE
DECEMBER 2017

FIGURE 4

APPENDIX A

NOI for RGP

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

A. General site information:

1. Name of site: Boston University – Goldman School of Dental Medicine	Site address: Street: 100 East Newton Street		
	City: Boston	State: MA	Zip: 02118
2. Site owner Boston University	Contact Person: Gregg Snyder		
	Telephone: 617-353-6529	Email: gmsnyder@bu.edu	
	Mailing address: Street: 120 Ashford Street		
Owner is (check one): ☐ Federal ☐ State/Tribal ☒ Private ☐ Other; if so, specify:	City: Boston	State: MA	Zip: 02215
3. Site operator, if different than owner Shawmut Design and Construction	Contact Person: Dan O'Sullivan, Senior Project Manager		
	Telephone: 617-622-7335	Email: dosullivan@shawmut.com	
	Mailing address: Street: 560 Harrison Ave		
	City: Boston	State: MA	Zip: 02118
4. NPDES permit number assigned by EPA: N/A NPDES permit is (check all that apply: ☒ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	5. Other regulatory program(s) that apply to the site (check all that apply): ☒ MA Chapter 21e; list RTN(s): Not yet assigned by MassDEP ☐ NH Groundwater Management Permit or Groundwater Release Detection Permit: ☐ CERCLA ☐ UIC Program ☐ POTW Pretreatment ☐ CWA Section 404		

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Fort Point Channel	MA70-02	SB

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. No

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

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

2. Source water contaminants: None above RGP effluent limits	
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): CSO071	Outfall location(s): (Latitude, Longitude) 42 20 35 71 03 39
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ☒ Indirect discharge, if so, specify: ☐ A private storm sewer system ☒ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ☒ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ☒ No, if so, explain, with an estimated timeframe for obtaining permission: BWSC permit application being submitted concurrently with this NOI 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): February 2018 - August 2019 Indicate if the discharge is expected to occur over a duration of: ☐ less than 12 months ☒ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ☒ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="4">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
☒ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

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

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

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia		X	1	4500NH3-BH	75	986	986	Report mg/L	---
Chloride		X	1	300.0	25000	2580000	2580000	Report µg/l	---
Total Residual Chlorine	X		1	4500CL	20	ND	ND	0.2 mg/L	**7.5 ug/L**
Total Suspended Solids	X		1	2540D	5000	ND	ND	30 mg/L	—
Antimony Total	X		1	6020A	4	ND	ND	206 µg/L	640
Arsenic Total		X	1	6020A	1	3.54	3.54	104 µg/L	36
Cadmium Total	X		1	6020A	0.2	ND	ND	10.2 µg/L	8.9
Chromium III	X		1	6020A	1	ND	ND	323 µg/L	100
Chromium VI	X		1	3500CR	10	ND	ND	323 µg/L	50
Copper Total	X		1	6020A	1	ND	ND	242 µg/L	3.7
Iron Total		X	1	200.7	50	1810	1800	5,000 µg/L	
Lead Total	X		1	6020A	0.5	ND	ND	160 µg/L	8.5
Mercury Total	X		1	245.1	0.2	ND	ND	0.739 µg/L	1.11
Nickel Total	X		1	6020A	2	ND	ND	1,450 µg/L	8.3
Selenium Total	X		1	6020A	5	ND	ND	235.8 µg/L	71
Silver Total	X		1	6020A	0.4	ND	ND	35.1 µg/L	2.2
Zinc Total	X		1	6020A	10	ND	ND	420 µg/L	86
Cyanide Total	X		1	4500CN	5	ND	ND	178 mg/L	1.0
B. Non-Halogenated VOCs									
Total BTEX	X		1	8260C	NA	ND	ND	100 µg/L	---
Benzene	X		1	8260C	0.5	ND	ND	5.0 µg/L	---
1,4 Dioxane	X		1	8260C-SIM	3.0	ND	ND	200 µg/L	---
Acetone	X		1	8260C	5.0	ND	ND	7.97 mg/L	---
Phenol	X		1	8270D	5.0	ND	ND	1,080 µg/L	300

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	X		1	8260C	0.5	ND	ND	4.4 µg/L	1.6
1,2 Dichlorobenzene	X		1	8260C	2.5	ND	ND	600 µg/L	---
1,3 Dichlorobenzene	X		1	8260C	2.5	ND	ND	320 µg/L	---
1,4 Dichlorobenzene	X		1	8260C	2.5	ND	ND	5.0 µg/L	---
Total dichlorobenzene	X		1	8260C	NA	NA	NA	763 µg/L in NH	---
1,1 Dichloroethane	X		1	8260C	0.5	ND	ND	70 µg/L	---
1,2 Dichloroethane	X		1	8260C	0.75	ND	ND	5.0 µg/L	---
1,1 Dichloroethylene	X		1	8260C	0.5	ND	ND	3.2 µg/L	---
Ethylene Dibromide	X		1	8260C	2.0	ND	ND	0.05 µg/L	---
Methylene Chloride	X		1	8260C	3.0	ND	ND	4.6 µg/L	---
1,1,1 Trichloroethane	X		1	8260C	0.5	ND	ND	200 µg/L	---
1,1,2 Trichloroethane	X		1	8260C	0.75	ND	ND	5.0 µg/L	---
Trichloroethylene	X		1	8260C	0.5	ND	ND	5.0 µg/L	---
Tetrachloroethylene	X		1	8260C	0.5	ND	ND	5.0 µg/L	3.3
cis-1,2 Dichloroethylene	X		1	8260C	0.5	ND	ND	70 µg/L	---
Vinyl Chloride	X		1	8260C	1.0	ND	ND	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	X		1	8270D	NA	ND	ND	190 µg/L	
Diethylhexyl phthalate	X		1	8270D	5.0	ND	ND	101 µg/L	2.2
Total Group I PAHs	X		1	8270D	NA	ND	ND	1.0 µg/L	---
Benzo(a)anthracene	X		1	8270D	0.1	ND	ND	As Total PAHs	0.0038
Benzo(a)pyrene	X		1	8270D	0.1	ND	ND		0.0038
Benzo(b)fluoranthene	X		1	8270D	0.1	ND	ND		0.0038
Benzo(k)fluoranthene	X		1	8270D	0.1	ND	ND		0.0038
Chrysene	X		1	8270D	0.1	ND	ND		0.0038
Dibenzo(a,h)anthracene	X		1	8270D	0.1	ND	ND		0.0038
Indeno(1,2,3-cd)pyrene	X		1	8270D	0.1	ND	ND		0.0038

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs	X		1	8270D	NA	ND	ND	100 µg/L	---
Naphthalene	X		1	8260C	2.5	ND	ND	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	X		1	608	NA	ND	ND	0.000064 µg/L	---
Pentachlorophenol	X		1	8270D	0.8	ND	ND	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	X		1	1664A	4000	ND	ND	5.0 mg/L	---
Ethanol								Report mg/L	---
Methyl-tert-Butyl Ether	X		1	8260C	1.0	ND	ND	70 µg/L	
tert-Butyl Alcohol	X		1	8260C	10	ND	ND	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	X		1	8260C	2	ND	ND	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:									
Hardness		X	1	200.7	0.660	564	564		
Salinity		X	1	2520B	2	4.2	4.2		
pH		X	1			6.98	6.98		
See Attached Table 1									

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: Treatment as required to meet discharge criteria

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 sedimentation tank and a bag filter and other necessary treatment components (potentially: Ion exchange, GAC, oil/water seperator), to remove suspended solids and undissolved chemical constituents, as shown on Figure 3 of the NPDES permit application.

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

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

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

☐ Chlorination ☐ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: 150 gpm Is use of a flow meter feasible? (check one): ☒ Yes ☐ No, if so, provide justification:	
Provide the proposed maximum effluent flow in gpm. 100 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:	

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

F. Chemical and additive information

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

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

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

a. Product name, chemical formula, and manufacturer of the chemical/additive; See attached manufacturers cut sheets and SDSs
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 ☒ N/A

I. Supplemental information

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

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

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

J. Certification requirement

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

BMPP certification statement: A BMPP meeting the requirements of this general permit will be implemented upon initiation of discharge.	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ☐ No ☐ N/A
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ☒ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ☒ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☒ No ☐ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ☒
Signature:	Date: 12/21/17
Print Name and Title: Shawmut Design and Construction	DAN O'SULLIVAN

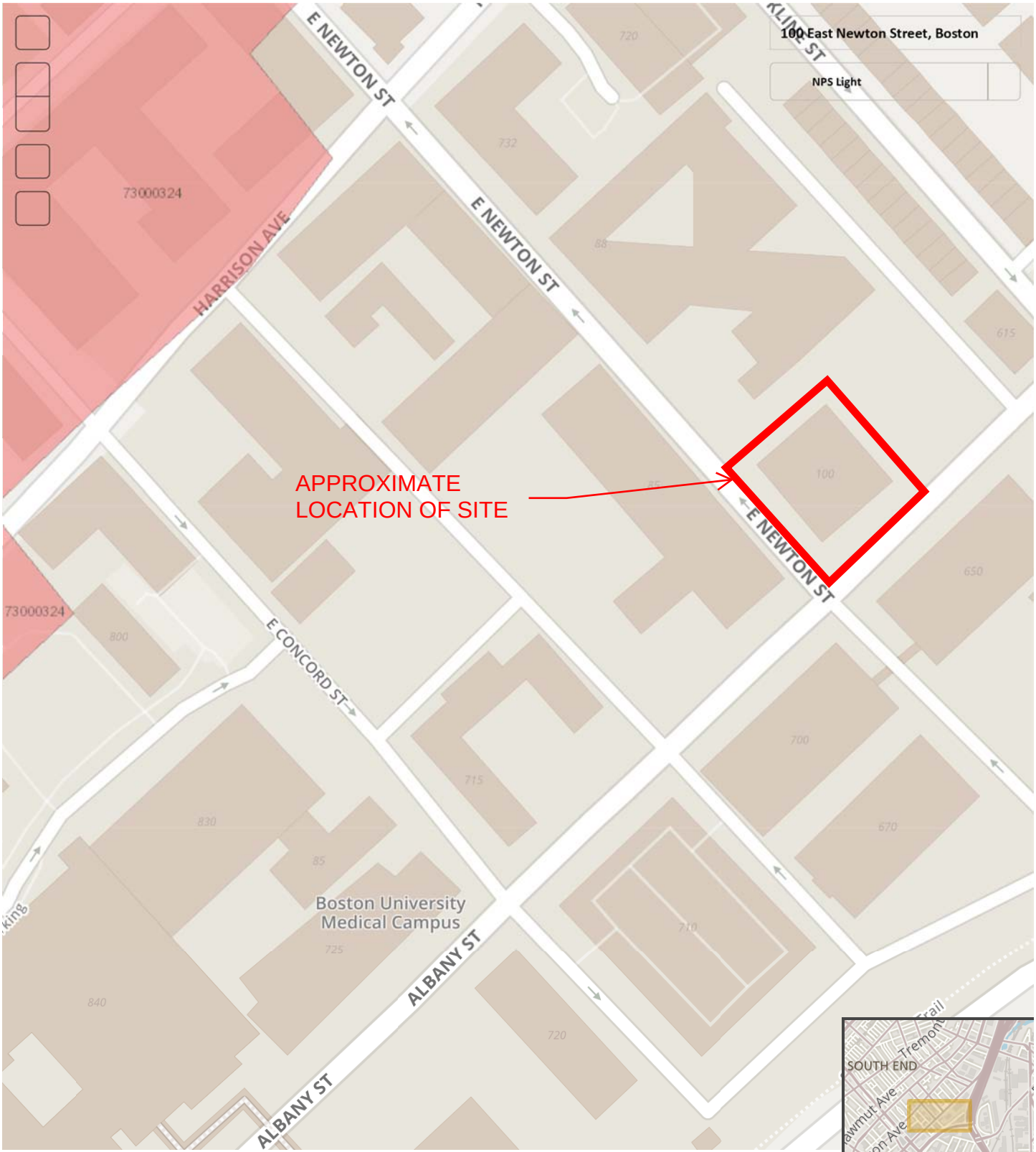
APPENDIX B

National Register of Historic Places and
Massachusetts Historical Commission Documentation

National Register of Historic Plac...

National Park Service
U.S. Department of the Interior

Public, non-restricted data depicting National Register spatial data processed by the Cul...



National Register of Historic Places: Listed Properties
As of July 2015

Note: Not all properties are digitized

Reference Number	State	County	City	Resource Name	Address	Listed Date	Text Click me	Photos Cl;ick me
83000601	MASSACHUSETTS	Suffolk	Boston	Charles Street African Methodist Episcopal Church	551 Warren St.	19830901	Text	Photos
83000602	MASSACHUSETTS	Suffolk	Boston	Codman Square District	Norfolk, Talbot, Epping, Lithgow, Cer	19830623	Text	Photos
83000603	MASSACHUSETTS	Suffolk	Boston	Gardner, Isabella Stewart, Museum	280 The Fenway	19830127	Text	Photos
83000605	MASSACHUSETTS	Suffolk	Boston	Harvard Avenue Fire Station	16 Harvard Ave.	19830331	Text	Photos
83000606	MASSACHUSETTS	Suffolk	Boston	Lawrence Model Lodging Houses	79, 89, 99 and 109 E. Canton St.	19830922	Text	Photos
83000607	MASSACHUSETTS	Suffolk	Boston	Newspaper Row	322-328 Washington St., 5-23 Milk St	19830707	Text	Photos
82000486	MASSACHUSETTS	Suffolk	Boston	Wigglesworth Building	89-83 Franklin St.	19821021	Text	Photos
83004098	MASSACHUSETTS	Suffolk	Boston	Leather District	Roughly bounded by Atlantic Ave., K	19831221	Text	Photos
83004285	MASSACHUSETTS	Suffolk	Boston	Baker, Sarah J., School	33 Perrin St.	19830707	Text	Photos
79000370	MASSACHUSETTS	Suffolk	Boston	Washington Street Theatre District	511-559 Washington St.	19790319	Text	Photos
85000318	MASSACHUSETTS	Suffolk	Boston	Dorchester Pottery Works	101-105 Victory Rd.	19850221	Text	Photos
79000368	MASSACHUSETTS	Suffolk	Boston	Bedford Building	89-103 Bedford St.	19790821	Text	Photos
80000442	MASSACHUSETTS	Suffolk	Boston	Wirth, Jacob, Buildings	31-39 Stuart St.	19801209	Text	Photos
80000445	MASSACHUSETTS	Suffolk	Boston	Metropolitan Theatre	252-272 Tremont St.	19801209	Text	Photos
80000446	MASSACHUSETTS	Suffolk	Boston	Hayden Building	681-683 Washington St.	19801209	Text	Photos
80000448	MASSACHUSETTS	Suffolk	Boston	Dill Building	11-25 Stuart St.	19801209	Text	Photos
80000450	MASSACHUSETTS	Suffolk	Boston	Boylston Building	2-22 Boylston St.	19801209	Text	Photos
80000451	MASSACHUSETTS	Suffolk	Boston	Boston Young Men's Christian Union	48 Boylston St.	19801209	Text	Photos
80000453	MASSACHUSETTS	Suffolk	Boston	Boston Edison Electric Illuminating Company	25-39 Boylston St.	19801209	Text	Photos
80000455	MASSACHUSETTS	Suffolk	Boston	West Street District	West St.	19801209	Text	Photos
80000460	MASSACHUSETTS	Suffolk	Boston	Liberty Tree District	Roughly bounded by Harrison Ave., \	19801209	Text	Photos
80000462	MASSACHUSETTS	Suffolk	Boston	Beach-Knapp District	Roughly bounded by Harrison Ave., \	19801209	Text	Photos
80000465	MASSACHUSETTS	Suffolk	Boston	Oak Square School	35 Nonantum St.	19801110	Text	Photos
66000127	MASSACHUSETTS	Suffolk	Boston	Arnold Arboretum	22 Divinity Ave.	19661015	Text	Photos
73000313	MASSACHUSETTS	Suffolk	Boston	Arlington Street Church	Arlington and Boylston Sts.	19730504	Text	Photos
73000322	MASSACHUSETTS	Suffolk	Boston	Old Corner Bookstore	NW corner of Washington and Schoc	19730411	Text	Photos
75000299	MASSACHUSETTS	Suffolk	Boston	South Station Headhouse	Atlantic Ave. and Summer St.	19750213	Text	Photos
74000392	MASSACHUSETTS	Suffolk	Boston	Winthrop Building	7 Water St.	19740418	Text	Photos
80000668	MASSACHUSETTS	Suffolk	Boston	United Shoe Machinery Corporation Building	138-164 Federal St.	19800819	Text	Photos
75000300	MASSACHUSETTS	Suffolk	Boston	St. Stephen's Church	Hanover St. between Clark and Harri	19750414	Text	Photos
80000669	MASSACHUSETTS	Suffolk	Boston	Union Wharf	295-353 Commercial St.	19800622	Text	Photos
80000670	MASSACHUSETTS	Suffolk	Boston	Suffolk County Jail	215 Charles St.	19800423	Text	Photos
80000674	MASSACHUSETTS	Suffolk	Boston	Garrison, William Lloyd, School	20 Hutchings St.	19800416	Text	Photos
80001683	MASSACHUSETTS	Suffolk	Boston	Dillaway School	16-20 Kenilworth St.	19800409	Text	Photos
66000366	MASSACHUSETTS	Suffolk	Boston	Ether Dome, Massachusetts General Hospital	Fruit St.	19661015	Text	Photos
70000539	MASSACHUSETTS	Suffolk	Boston	Otis, (First) Harrison Gray, House	141 Cambridge St.	19701230	Text	Photos
73000314	MASSACHUSETTS	Suffolk	Boston	Armory of the First Corps of Cadets	97-105 Arlington St. and 130 Columb	19730522	Text	Photos
73000315	MASSACHUSETTS	Suffolk	Boston	Blackstone Block Historic District	Area bound by Union, Hanover, Blac	19730526	Text	Photos
72000145	MASSACHUSETTS	Suffolk	Boston	Crowninshield House	164 Marlborough St.	19720223	Text	Photos
72000146	MASSACHUSETTS	Suffolk	Boston	First Baptist Church	Commonwealth Ave. and Clarendon	19720223	Text	Photos
74000391	MASSACHUSETTS	Suffolk	Boston	John Adams Courthouse	Pemberton Sq.	19740508	Text	Photos
72000150	MASSACHUSETTS	Suffolk	Boston	Trinity Rectory	Clarendon and Newbury Sts.	19720223	Text	Photos
74000385	MASSACHUSETTS	Suffolk	Boston	Copp's Hill Burial Ground	Charter, Snowhill, and Hull Sts.	19740418	Text	Photos
74000393	MASSACHUSETTS	Suffolk	Boston	Youth's Companion Building	209 Columbus Ave.	19740502	Text	Photos
66000764	MASSACHUSETTS	Suffolk	Boston	Harding, Chester, House	16 Beacon St.	19661015	Text	Photos
74002044	MASSACHUSETTS	Suffolk	Boston	Howe, Samuel Gridley and Julia Ward, House	13 Chestnut St.	19740913	Text	Photos
74002045	MASSACHUSETTS	Suffolk	Boston	King's Chapel	Tremont and School Sts.	19740502	Text	Photos
70000682	MASSACHUSETTS	Suffolk	Boston	Massachusetts General Hospital	Fruit Street	19701230	Text	Photos
80000678	MASSACHUSETTS	Suffolk	Boston	All Saints' Church	211 Ashmont St.	19800616	Text	Photos
81000620	MASSACHUSETTS	Suffolk	Boston	Fields Corner Municipal Building	1 Arcadia St., 195 Adams St.	19811112	Text	Photos
66000770	MASSACHUSETTS	Suffolk	Boston	Massachusetts Historical Society Building	1154 Boylston St.	19661015	Text	Photos
66000771	MASSACHUSETTS	Suffolk	Boston	Massachusetts Statehouse	Beacon Hill	19661015	Text	Photos
76001979	MASSACHUSETTS	Suffolk	Boston	Nell, William C., House	3 Smith Ct.	19760511	Text	Photos
70000687	MASSACHUSETTS	Suffolk	Boston	Old City Hall	School and Providence Sts.	19701230	Text	Photos
70000690	MASSACHUSETTS	Suffolk	Boston	Old South Church in Boston	645 Boylston St.	19701230	Text	Photos
70000691	MASSACHUSETTS	Suffolk	Boston	Old West Church	131 Cambridge St.	19701230	Text	Photos
66000782	MASSACHUSETTS	Suffolk	Boston	Parkman, Francis, House	50 Chestnut St.	19661015	Text	Photos
80000444	MASSACHUSETTS	Suffolk	Boston	Shubert, Sam S., Theatre	263-265 Tremont St.	19801209	Text	Photos
80000458	MASSACHUSETTS	Suffolk	Boston	Piano Row District	Boston Common, Park Sq., Boylston	19801209	Text	Photos
80000443	MASSACHUSETTS	Suffolk	Boston	Wilbur Theatre	244-250 Tremont St.	19801209	Text	Photos
66000765	MASSACHUSETTS	Suffolk	Boston	Headquarters House	55 Beacon St.	19661015	Text	Photos
68000042	MASSACHUSETTS	Suffolk	Boston	Pierce-Hichborn House	29 North Sq.	19681124	Text	Photos
66000784	MASSACHUSETTS	Suffolk	Boston	Quincy Market	S. Market St.	19661113	Text	Photos

70000730	MASSACHUSETTS	Suffolk	Boston	St. Paul's Church	136 Tremont St.	19701230	Text	Photos
70000731	MASSACHUSETTS	Suffolk	Boston	Sears, David, House	42 Beacon St.	19701230	Text	Photos
73001953	MASSACHUSETTS	Suffolk	Boston	Sumner, Charles, House	20 Hancock St.	19731107	Text	Photos
66000130	MASSACHUSETTS	Suffolk	Boston	Beacon Hill Historic District	Bounded by Beacon St., the Charles I	19661015	Text	Photos
73001955	MASSACHUSETTS	Suffolk	Boston	Otis, (Second) Harrison Gray, House	85 Mt. Vernon St.	19730727	Text	Photos
66000768	MASSACHUSETTS	Suffolk	Boston	Long Wharf and Customhouse Block	Foot of State St.	19661113	Text	Photos
66000132	MASSACHUSETTS	Suffolk	Boston	Boston Athenaeum	10 1/2 Beacon St.	19661015	Text	Photos
66000788	MASSACHUSETTS	Suffolk	Boston	Tremont Street Subway	Beneath Tremont, Boylston, and Wa	19661015	Text	Photos
70000733	MASSACHUSETTS	Suffolk	Boston	Trinity Church	Copley Sq.	19700701	Text	Photos
82004456	MASSACHUSETTS	Suffolk	Boston	Adams-Nervine Asylum	990-1020 Centre St.	19820601	Text	Photos
79000369	MASSACHUSETTS	Suffolk	Boston	International Trust Company Building	39-47 Milk St.	19790910	Text	Photos
74000388	MASSACHUSETTS	Suffolk	Boston	Eliot Burying Ground	Eustis and Washington Sts.	19740625	Text	Photos
80000463	MASSACHUSETTS	Suffolk	Boston	Russia Wharf Buildings	518-540 Atlantic Ave., 270 Congress	19801202	Text	Photos
71000087	MASSACHUSETTS	Suffolk	Boston	African Meetinghouse	8 Smith St.	19711007	Text	Photos
85002015	MASSACHUSETTS	Suffolk	Boston	Building at 138--142 Portland Street	138--142 Portland St.	19850905	Text	Photos
84000421	MASSACHUSETTS	Suffolk	Boston	Vermont Building	6-12 Thacher St.	19841113	Text	Photos
75000301	MASSACHUSETTS	Suffolk	Boston	Symphony and Horticultural Halls	Massachusetts and Huntington Aves	19750530	Text	Photos
73000324	MASSACHUSETTS	Suffolk	Boston	South End District	South Bay area between Huntington	19730508	Text	Photos
74000390	MASSACHUSETTS	Suffolk	Boston	Park Street District	Tremont, Park, and Beacon Sts.	19740501	Text	Photos
73000319	MASSACHUSETTS	Suffolk	Boston	Fulton-Commercial Streets District	Fulton, Commercial, Mercantile, Lew	19730321	Text	Photos
84002875	MASSACHUSETTS	Suffolk	Boston	Fenway-Boylston Street District	Fenway, Boylston, Westland, and He	19840904	Text	Photos
78000473	MASSACHUSETTS	Suffolk	Boston	Fenway Studios	30 Ipswich St.	19780913	Text	Photos
73000318	MASSACHUSETTS	Suffolk	Boston	Cyclorama Building	543-547 Tremont St.	19730413	Text	Photos
83004097	MASSACHUSETTS	Suffolk	Boston	Codman Building	55 Kilby St.	19831019	Text	Photos
80000676	MASSACHUSETTS	Suffolk	Boston	Charles Playhouse	74-78 Warenton St.	19800616	Text	Photos
74000382	MASSACHUSETTS	Suffolk	Boston	Ames Building	1 Court St.	19740426	Text	Photos
77001541	MASSACHUSETTS	Suffolk	Boston	Appleton, Nathan, Residence	39-40 Beacon St.	19771222	Text	Photos
66000134	MASSACHUSETTS	Suffolk	Boston	Boston Naval Shipyard	E of Chelsea St., Charlestown	19661115	Text	Photos
66000050	MASSACHUSETTS	Suffolk	Boston	Dorchester Heights National Historic Site	South Boston	19661015	Text	Photos
74002222	MASSACHUSETTS	Suffolk	Boston	Boston National Historical Park	Inner harbor at mouth of Charles Riv	19741026	Text	Photos
66000785	MASSACHUSETTS	Suffolk	Boston	Revere, Paul, House	19 North Sq.	19661015	Text	Photos
66000776	MASSACHUSETTS	Suffolk	Boston	Old North Church	193 Salem St.	19661015	Text	Photos
66000778	MASSACHUSETTS	Suffolk	Boston	Old South Meetinghouse	Milk and Washington Sts.	19661015	Text	Photos
66000368	MASSACHUSETTS	Suffolk	Boston	Faneuil Hall	Dock Sq.	19661015	Text	Photos
66000779	MASSACHUSETTS	Suffolk	Boston	Old State House	Washington and State Sts.	19661015	Text	Photos
85003074	MASSACHUSETTS	Suffolk	Boston	Dudley Station Historic District	Washington, Warren, and Dudley Sts	19851205	Text	Photos
86000140	MASSACHUSETTS	Suffolk	Boston	Christ Church	1220 River Rd.	19860130	Text	Photos
73000317	MASSACHUSETTS	Suffolk	Boston	Boston Public Library	Copley Sq.	19730506	Text	Photos
86001909	MASSACHUSETTS	Suffolk	Boston	Filene's Department Store	426 Washington St.	19860724	Text	Photos
86001913	MASSACHUSETTS	Suffolk	Boston	Second Brazer Building	25--29 State St.	19860724	Text	Photos
86001486	MASSACHUSETTS	Suffolk	Boston	Sears' Crescent and Sears' Block	38--68 and 70--72 Cornhill	19860809	Text	Photos
86001504	MASSACHUSETTS	Suffolk	Boston	Richardson Block	113--151 Pearl and 109--119 High Sts	19860809	Text	Photos
85003375	MASSACHUSETTS	Suffolk	Boston	Engine House No. 34	444 Western Ave.	19851024	Text	Photos
80000671	MASSACHUSETTS	Suffolk	Boston	Stearns, R. H., House	140 Tremont St.	19800616	Text	Photos
86001911	MASSACHUSETTS	Suffolk	Boston	Locke--Ober Restaurant	3--4 Winter Pl.	19860724	Text	Photos
80000677	MASSACHUSETTS	Suffolk	Boston	Berger Factory	37 Williams St.	19800409	Text	Photos
85000316	MASSACHUSETTS	Suffolk	Boston	Bigelow School	350 W. 4th St.	19850221	Text	Photos
84002890	MASSACHUSETTS	Suffolk	Boston	Moreland Street Historic District	Roughly bounded by Kearsarge, Blue	19840329	Text	Photos
70000921	MASSACHUSETTS	Suffolk	Boston	Fort Independence	Castle Island	19701015	Text	Photos
86000375	MASSACHUSETTS	Suffolk	Boston	Harriswood Crescent	60--88 Harold St.	19860313	Text	Photos
66000789	MASSACHUSETTS	Suffolk	Boston	U.S.S. CONSTITUTION	Boston Naval Shipyard	19661015	Text	Photos
87000757	MASSACHUSETTS	Suffolk	Boston	Harvard Stadium	60 N. Harvard St.	19870227	Text	Photos
72000144	MASSACHUSETTS	Suffolk	Boston	Boston Common and Public Garden	Beacon, Park, Tremont, Boylston, an	19720712	Text	Photos
87000760	MASSACHUSETTS	Suffolk	Boston	Boston Common	Beacon, Park, Tremont, Boylston, an	19870227	Text	Photos
87000761	MASSACHUSETTS	Suffolk	Boston	Boston Public Garden	Beacon, Charles, Boylston, and Arling	19870227	Text	Photos
87001128	MASSACHUSETTS	Suffolk	Boston	Monument Square Historic District	Monument Sq.	19870602	Text	Photos
66000138	MASSACHUSETTS	Suffolk	Boston	Bunker Hill Monument	Breed's Hill	19661015	Text	Photos
86000274	MASSACHUSETTS	Suffolk	Boston	Bulfinch Triangle Historic District	Roughly bounded by Canal, Market,	19860227	Text	Photos
80000675	MASSACHUSETTS	Suffolk	Boston	Dorchester-Milton Lower Mills Industrial District	Both sides of Neponset River	19800402	Text	Photos
86000084	MASSACHUSETTS	Suffolk	Boston	USS CASSIN YOUNG (destroyer)	Charlestown Navy Yard	19860114	Text	Photos
66000133	MASSACHUSETTS	Suffolk	Boston	Boston Light	Little Brewster Island, Boston Harbo	19661015	Text	Photos
87001481	MASSACHUSETTS	Suffolk	Boston	Long Island Head Light	Long Island	19870615	Text	Photos
87001394	MASSACHUSETTS	Suffolk	Boston	New Riding Club	52 Hemenway St.	19870820	Text	Photos
87001396	MASSACHUSETTS	Suffolk	Boston	Congress Street Fire Station	344 Congress St.	19870903	Text	Photos
87000885	MASSACHUSETTS	Suffolk	Boston	Abbotsford	300 Walnut Ave.	19870916	Text	Photos
87001889	MASSACHUSETTS	Suffolk	Boston	Sumner Hill Historic District	Roughly bounded by Seaverns Ave.,	19871022	Text	Photos
87001771	MASSACHUSETTS	Suffolk	Boston	Bunker Hill School	65 Baldwin St.	19871015	Text	Photos
87001398	MASSACHUSETTS	Suffolk	Boston	House at 17 Cranston Street	17 Cranston St.	19871120	Text	Photos
87001399	MASSACHUSETTS	Suffolk	Boston	Hoxie, Timothy, House	135 Hillside St.	19871120	Text	Photos
87001495	MASSACHUSETTS	Suffolk	Boston	Saint Augustine Chapel and Cemetery	Dorchester St. between W. Sixth and	19870918	Text	Photos

87002549	MASSACHUSETTS	Suffolk	Boston	District 13 Police Station	28 Seaverns Ave.	19880210	Text	Photos
85003323	MASSACHUSETTS	Suffolk	Boston	Boston Harbor Islands Archeological District	Address Restricted	19851221	Text	Photos
82004448	MASSACHUSETTS	Suffolk	Boston	Roughan Hall	15-18 City Sq.	19820415	Text	Photos
82004450	MASSACHUSETTS	Suffolk	Boston	McKay, Donald, House	78-80 White St.	19820602	Text	Photos
82004453	MASSACHUSETTS	Suffolk	Boston	Haffenreffer Brewery	Germania St.	19820502	Text	Photos
73000850	MASSACHUSETTS	Suffolk	Boston	Town Hill District	Bounded roughly by Rutherford Ave.	19730511	Text	Photos
74000907	MASSACHUSETTS	Suffolk	Boston	Phipps Street Burying Ground	Phipps St.	19740514	Text	Photos
74000911	MASSACHUSETTS	Suffolk	Boston	Clapp Houses	199 and 195 Boston St.	19740502	Text	Photos
74000915	MASSACHUSETTS	Suffolk	Boston	Dorchester North Burying Ground	Stroughton St. and Columbia Rd.	19740418	Text	Photos
80004396	MASSACHUSETTS	Suffolk	Boston	Boston African American National Historic Site	Museum of Afro American History, I	19801010	Text	Photos
66000141	MASSACHUSETTS	Suffolk	Boston	Brook Farm	670 Baker St.	19661015	Text	Photos
73000856	MASSACHUSETTS	Suffolk	Boston	Roxbury High Fort	Beech Glen St. at Fort Ave.	19730423	Text	Photos
73000855	MASSACHUSETTS	Suffolk	Boston	Kittredge, Alvah, House	12 Linwood St.	19730508	Text	Photos
73000854	MASSACHUSETTS	Suffolk	Boston	John Eliot Square District	John Eliot Sq.	19730423	Text	Photos
66000653	MASSACHUSETTS	Suffolk	Boston	Garrison, William Lloyd, House	125 Highland St.	19661015	Text	Photos
72000544	MASSACHUSETTS	Suffolk	Boston	Loring-Greenough House	12 South St.	19720426	Text	Photos
74000917	MASSACHUSETTS	Suffolk	Boston	Pierce House	24 Oakton Ave.	19740426	Text	Photos
70000540	MASSACHUSETTS	Suffolk	Boston	Fort Warren	Georges Island, Boston Harbor	19700829	Text	Photos
74002350	MASSACHUSETTS	Suffolk	Boston	Blake, James, House	735 Columbia Rd.	19740501	Text	Photos
83000604	MASSACHUSETTS	Suffolk	Boston	Loring, Harrison, House	789 E. Broadway St.	19830901	Text	Photos
88000908	MASSACHUSETTS	Suffolk	Boston	Goodwin, Ozias, House	7 Jackson Ave.	19880623	Text	Photos
88000957	MASSACHUSETTS	Suffolk	Boston	Greek Orthodox Cathedral of New England	520 Parker St.	19880630	Text	Photos
88000427	MASSACHUSETTS	Suffolk	Boston	Temple Place Historic District	11--55, 26--58 Temple Pl.	19880726	Text	Photos
88000959	MASSACHUSETTS	Suffolk	Boston	Eliot Hall	7A Eliot St.	19880715	Text	Photos
87001478	MASSACHUSETTS	Suffolk	Boston	Austin, Francis B., House	58 High St.	19881021	Text	Photos
89000004	MASSACHUSETTS	Suffolk	Boston	Mount Pleasant Historic District	Roughly bounded by Forest St. and M	19890209	Text	Photos
89000147	MASSACHUSETTS	Suffolk	Boston	Roxbury Highlands Historic District	Roughly bounded by Dudley St., Was	19890222	Text	Photos
73000325	MASSACHUSETTS	Suffolk	Boston	Hale, Edward Everett, House	12 Morley St.	19790321	Text	Photos
83004099	MASSACHUSETTS	Suffolk	Boston	LUNA (tugboat)	NDC Pier, Charles River	19831006	Text	Photos
89000974	MASSACHUSETTS	Suffolk	Boston	Massachusetts School of Art	364 Brookline Ave.	19890803	Text	Photos
89001747	MASSACHUSETTS	Suffolk	Boston	Mission Hill Triangle Historic District	Roughly bounded by Smith St., Wort	19891106	Text	Photos
89002169	MASSACHUSETTS	Suffolk	Boston	St. Joseph's Roman Catholic Church Complex	Bounded by Circuit, Regent, Hulbert,	19891228	Text	Photos
89002251	MASSACHUSETTS	Suffolk	Boston	Bellevue Standpipe	On Bellevue Hill at Washington St. ar	19900118	Text	Photos
88000955	MASSACHUSETTS	Suffolk	Boston	First Church of Jamaica Plain	6 Eliot St.	19880715	Text	Photos
90000631	MASSACHUSETTS	Suffolk	Boston	Copp's Hill Terrace	Between Commercial and Charter St	19900419	Text	Photos
89002271	MASSACHUSETTS	Suffolk	Boston	Chestnut Hill Reservoir Historic District	Beacon St. and Commonwealth Ave.	19900118	Text	Photos
90001095	MASSACHUSETTS	Suffolk	Boston	Calf Pasture Pumping Station Complex	435 Mount Vernon St.	19900802	Text	Photos
90001145	MASSACHUSETTS	Suffolk	Boston	Bowditch School	80--82 Greene St.	19900803	Text	Photos
90001536	MASSACHUSETTS	Suffolk	Boston	Monument Square Historic District	Roughly bounded by Jamaicaway, Pc	19901011	Text	Photos
90001537	MASSACHUSETTS	Suffolk	Boston	Upham's Corner Market	600 Columbia Rd.	19901011	Text	Photos
89002125	MASSACHUSETTS	Suffolk	Boston	Roxbury Presbyterian Church	328 Warren St.	19910315	Text	Photos
90001992	MASSACHUSETTS	Suffolk	Boston	Sears Roebuck and Company Mail Order Store	309 Park Dr. and 201 Brookline Ave.	19910115	Text	Photos
92000356	MASSACHUSETTS	Suffolk	Boston	Trinity Neighborhood House	406 Meridian St.	19920414	Text	Photos
73001948	MASSACHUSETTS	Suffolk	Boston	Back Bay Historic District	Roughly bounded by the Charles Rive	19730814	Text	Photos
90001757	MASSACHUSETTS	Suffolk	Boston	Textile District	Roughly, Essex St. from Phillips Sq. to	19901129	Text	Photos
93001489	MASSACHUSETTS	Suffolk	Boston	Massachusetts Mental Health Center	74 Fenwood Rd.	19940121	Text	Photos
93001573	MASSACHUSETTS	Suffolk	Boston	House at 1 Bay Street	1 Bay St.	19940209	Text	Photos
93001587	MASSACHUSETTS	Suffolk	Boston	Eliot Congregational Church	56 Dale St., corner 118--120 Walnut S	19940209	Text	Photos
85000317	MASSACHUSETTS	Suffolk	Boston	Dimock Community Health Center Complex	41 and 55 Dimock St.	19850221	Text	Photos
80000672	MASSACHUSETTS	Suffolk	Boston	New England Conservatory of Music	290 Huntington Ave.	19800514	Text	Photos
94001494	MASSACHUSETTS	Suffolk	Boston	Lower Roxbury Historic District	Roughly, area surrounding Coventry,	19941209	Text	Photos
94001492	MASSACHUSETTS	Suffolk	Boston	Faneuil, Peter, School	60 Joy St.	19941216	Text	Photos
95001450	MASSACHUSETTS	Suffolk	Boston	Riviera, The	270 Huntington Ave.	19951207	Text	Photos
73000321	MASSACHUSETTS	Suffolk	Boston	Custom House District	Between J.F.K. Expwy. and Kirby St. a	19730511	Text	Photos
96001063	MASSACHUSETTS	Suffolk	Boston	Douglass, Frederick, Square Historic District	Roughly bounded by Hammond St., (	19961003	Text	Photos
97000969	MASSACHUSETTS	Suffolk	Boston	Charlestown Heights	Roughly bounded by St. Martin, Bunl	19980108	Text	Photos
97000920	MASSACHUSETTS	Suffolk	Boston	Brighton Evangelical Congregational Church	404-410 Washington St.	19970821	Text	Photos
97000970	MASSACHUSETTS	Suffolk	Boston	Students House	96 The Fenway	19970911	Text	Photos
97000971	MASSACHUSETTS	Suffolk	Boston	North Terminal Garage	600 Commercial St.	19970911	Text	Photos
97001239	MASSACHUSETTS	Suffolk	Boston	Dorchester Temple Baptist Church	670 Washington St.	19980116	Text	Photos
97001377	MASSACHUSETTS	Suffolk	Boston	Allston Congregational Church	31-41 Quint Ave.	19971107	Text	Photos
97001472	MASSACHUSETTS	Suffolk	Boston	St. Luke's and St. Margaret's Church	5-7 St. Luke's Rd.	19971112	Text	Photos
98000149	MASSACHUSETTS	Suffolk	Boston	Eagle Hill Historic District	Roughly bounded by Border, Lexingt	19980226	Text	Photos
98001082	MASSACHUSETTS	Suffolk	Boston	Boston Young Men's Christian Association	312-320 Huntington Ave.	19980820	Text	Photos
97001278	MASSACHUSETTS	Suffolk	Boston	ROSEWAY (schooner)	Boston Harbor	19970925	Text	Photos
98001292	MASSACHUSETTS	Suffolk	Boston	St. Mary's Episcopal Church	14-16 Cushing Ave.	19981030	Text	Photos
98001330	MASSACHUSETTS	Suffolk	Boston	Roslindale Baptist Church	52 Cummins Hwy.	19981105	Text	Photos
98001361	MASSACHUSETTS	Suffolk	Boston	Cathedral of St. George Historic District	517-523-525 E. Broadway	19981125	Text	Photos
98001381	MASSACHUSETTS	Suffolk	Boston	Baker Congregational Church	760 Saratoga St.	19981119	Text	Photos
99000593	MASSACHUSETTS	Suffolk	Boston	Woodbourne Historic District	Roughly bounded by Walk Hill, Good	19990604	Text	Photos

99000633	MASSACHUSETTS	Suffolk	Boston	Symphony Hall	301 Massachusetts Avenue	19990120	Text	Photos
99001302	MASSACHUSETTS	Suffolk	Boston	Mariner's House	11 North Square	19991112	Text	Photos
99001304	MASSACHUSETTS	Suffolk	Boston	Congregation Adath Jeshurun	397 Blue Hill Ave.	19991112	Text	Photos
99001308	MASSACHUSETTS	Suffolk	Boston	First Congregational Church of Hyde Park	6 Webster St.	19991112	Text	Photos
99001614	MASSACHUSETTS	Suffolk	Boston	Church Green Buildings Historic District	101-113 Summer St.	19991230	Text	Photos
00000160	MASSACHUSETTS	Suffolk	Boston	Fulton-Commercial Streets Historic District (Boundary Incre	81-95 Richmond St.	20000303	Text	Photos
00000415	MASSACHUSETTS	Suffolk	Boston	Harvard Avenue Historic District	Roughly bounded by Linden St., Com	20000428	Text	Photos
00000871	MASSACHUSETTS	Suffolk	Boston	Dearborn School	25 Ambrose St.	20000802	Text	Photos
01000088	MASSACHUSETTS	Suffolk	Boston	Brighton Center Historic District	Academy Hill R., Chestnut Hill Ave., D	20010220	Text	Photos
01000872	MASSACHUSETTS	Suffolk	Boston	Peabody, The	195-197 Ashmont St.	20010808	Text	Photos
01001048	MASSACHUSETTS	Suffolk	Boston	Gibson House	137 Beacon St.	20010807	Text	Photos
01001557	MASSACHUSETTS	Suffolk	Boston	Boston Consumptives Hospital	249 River St.	20020207	Text	Photos
02000081	MASSACHUSETTS	Suffolk	Boston	Frances and Isabella Apartments	430-432 and 434-436 Dudley St.	20020222	Text	Photos
02000154	MASSACHUSETTS	Suffolk	Boston	Greenwood Memorial United Methodist Church	378A-380 Washington St.	20020308	Text	Photos
02000548	MASSACHUSETTS	Suffolk	Boston	Bennington Street Burying Ground	Bennington St., bet. Swift and harmo	20020522	Text	Photos
02001039	MASSACHUSETTS	Suffolk	Boston	Paine Furniture Building	75-81 Arlington St.	20020912	Text	Photos
02001190	MASSACHUSETTS	Suffolk	Boston	Harrison Square Historic District	Bounded by MBTA Braintree line em	20021022	Text	Photos
03000385	MASSACHUSETTS	Suffolk	Boston	Savin Hill Historic District	Roughly bounded by Savin Hill Ave.,	20030509	Text	Photos
03000645	MASSACHUSETTS	Suffolk	Boston	Union Oyster House	41-43 Union Street	20030527	Text	Photos
03000781	MASSACHUSETTS	Suffolk	Boston	Publicity Building	40-44 Bromfield St.	20030820	Text	Photos
04000023	MASSACHUSETTS	Suffolk	Boston	Benedict Fenwick School	150 Magnolia St.	20040211	Text	Photos
04000085	MASSACHUSETTS	Suffolk	Boston	Haskell, Edward H., Home for Nurses	220 Fisther Ave., 63 Parker Hill Ave.	20040226	Text	Photos
04000119	MASSACHUSETTS	Suffolk	Boston	YWCA Boston	140 Clarendon St.	20040303	Text	Photos
04000189	MASSACHUSETTS	Suffolk	Boston	Nix's Mate Daybeacon	Nubble Channel, The Narrows, Bosto	20040318	Text	Photos
04000426	MASSACHUSETTS	Suffolk	Boston	Nazing Court Apartments	224-236 Seaver St. and 1-8 Nazing Co	20040512	Text	Photos
04000534	MASSACHUSETTS	Suffolk	Boston	Hibernian Hall	182-186 Dudley St.	20040602	Text	Photos
04000959	MASSACHUSETTS	Suffolk	Boston	Fort Point Channel Historic District	Necco Court, Thomson Place, A, Binfo	20040910	Text	Photos
04001219	MASSACHUSETTS	Suffolk	Boston	Forest Hills Cemetery	95 Forest Hills Ave.	20041117	Text	Photos
04001430	MASSACHUSETTS	Suffolk	Boston	Truman Parkway--Metropolitan Park System of Greater Bos	Truman Parkway	20050105	Text	Photos
04001432	MASSACHUSETTS	Suffolk	Boston	VFW Parkway, Metropolitan Park System of Greater Bostor	VFW Parkway, bet. Spring And Centr	20050105	Text	Photos
04001572	MASSACHUSETTS	Suffolk	Boston	Morton Street, Metropolitan Park System of Greater Bosto	Morton St.	20050124	Text	Photos
04001573	MASSACHUSETTS	Suffolk	Boston	Neponset Valley Parkway, Metorpolitan Park System of Gre	Neponset Valley Parkway	20050124	Text	Photos
05000459	MASSACHUSETTS	Suffolk	Boston	Ayer, Frederick, Mansion	395 Commonwealth Avenue	20050405	Text	Photos
05000559	MASSACHUSETTS	Suffolk	Boston	Collins Building	213-217 Washington St.	20050608	Text	Photos
05000879	MASSACHUSETTS	Suffolk	Boston	Home for Aged Couples	409, 419 Walnut Ave. and 2055 Colu	20050811	Text	Photos
05000936	MASSACHUSETTS	Suffolk	Boston	South Boston Boat Clubs Historic District	1793-1849 William J. Day Blvd.	20050901	Text	Photos
05001509	MASSACHUSETTS	Suffolk	Boston	Stony Brook Reservation Parkways, Metropolitan Park Syst	Dedham, Enneking, Turtle Pond Park	20060103	Text	Photos
06000127	MASSACHUSETTS	Suffolk	Boston	East Boston High School, Old	127 Marion St.	20060315	Text	Photos
01000304	MASSACHUSETTS	Suffolk	Boston	Dorchester--Milton Lower Mills Industrial District (Boundar	Roughly: Adams, River, Medway Sts.,	20010406	Text	Photos
07000510	MASSACHUSETTS	Suffolk	Boston	Goldsmith Block	41 Ruggles St., 746-750 Shawmut Ave	20070605	Text	Photos
07000861	MASSACHUSETTS	Suffolk	Boston	Boston Transit Commission Building	15 Beacon St.	20070831	Text	Photos
08000089	MASSACHUSETTS	Suffolk	Boston	Dorchester Park	Bounded by Dorchester Ave., Richmo	20080220	Text	Photos
08000693	MASSACHUSETTS	Suffolk	Boston	Old Harbor Reservation Parkways, Metropolitan Park Syste	William J. Day Blvd., Columbia Rd. be	20080724	Text	Photos
08000793	MASSACHUSETTS	Suffolk	Boston	Joshua Bates School	731 Harrison Ave.	20080822	Text	Photos
08000795	MASSACHUSETTS	Suffolk	Boston	Ohabei Shalom Cemetery	147 Wordsworth St.	20080819	Text	Photos
08001284	MASSACHUSETTS	Suffolk	Boston	Compton Building	159, 161-175 Devonshire St., 18-20 A	20081231	Text	Photos
09000612	MASSACHUSETTS	Suffolk	Boston	Evergreen Cemetery	2060 Commonwealth Ave.	20090814	Text	Photos
09000717	MASSACHUSETTS	Suffolk	Boston	Fairview Cemetery	45 Fairview Ave.	20090916	Text	Photos
09000767	MASSACHUSETTS	Suffolk	Boston	Mount Hope Cemetery	355 Walk Hill St.	20090924	Text	Photos
10000039	MASSACHUSETTS	Suffolk	Boston	EDNA G. shipwreck (Eastern Rig dragger)	Address Restricted	20101122	Text	Photos
10000300	MASSACHUSETTS	Suffolk	Boston	Highland Spring Brewery Bottling and Storage Buildings	154-166 Terrace St	20100528	Text	Photos
10000391	MASSACHUSETTS	Suffolk	Boston	Second Church in Boston	874, 876, 880 Beacon St	20100624	Text	Photos
10000506	MASSACHUSETTS	Suffolk	Boston	Charles River Reservation (Speedway)--Upper Basin Headq	1420-1440 Soldiers Field Rd	20100719	Text	Photos
10001066	MASSACHUSETTS	Suffolk	Boston	Egleston Substation	3025 Washington St	20101227	Text	Photos
11000160	MASSACHUSETTS	Suffolk	Boston	United State Post Office, Courthouse, and Federal Building	5 Post Office Square	20110408	Text	Photos
12000069	MASSACHUSETTS	Suffolk	Boston	Fenway Park	24, & 2-4 Yawkey Wy., 64-76 Brookli	20120307	Text	Photos
12000099	MASSACHUSETTS	Suffolk	Boston	Terminal Storage Warehouse District	267-281 Medford St., 40 & 50 Termir	20120312	Text	Photos
12000783	MASSACHUSETTS	Suffolk	Boston	Saint Mark's Episcopal Church	73 Columbia Rd.	20140703	Text	Photos
12000978	MASSACHUSETTS	Suffolk	Boston	Sherman Apartments Historic District	544-546 Washington, 4-6, 12-14, 18 I	20121128	Text	Photos
12001012	MASSACHUSETTS	Suffolk	Boston	Central Congregational Church	67 Newbury St.	20121016	Text	Photos
12001162	MASSACHUSETTS	Suffolk	Boston	Commonwealth Pier Five	165 Northern Ave.	19791010	Text	Photos
13000621	MASSACHUSETTS	Suffolk	Boston	Roslindale Substation	4228 Washington St.	20130827	Text	Photos
13000928	MASSACHUSETTS	Suffolk	Boston	Davidson, Sarah, Apartment Block	3 Gaylord St.	20131218	Text	Photos
13000929	MASSACHUSETTS	Suffolk	Boston	Pilgrim Congregational Church	540-544 Columbia Rd.	20131218	Text	Photos
13000930	MASSACHUSETTS	Suffolk	Boston	Walton and Roslin Halls	702-708 & 710-726 Washington St., 3	20131218	Text	Photos
14000272	MASSACHUSETTS	Suffolk	Boston	Blake and Amory Building	59 Temple Pl.	20140602	Text	Photos
14000365	MASSACHUSETTS	Suffolk	Boston	Dorchester South Burying Ground	2095 Dorchester Ave.	20140627	Text	Photos
14000561	MASSACHUSETTS	Suffolk	Boston	Buildings at 825--829 Blue Hill Avenue	825-829 Blue Hill Ave.	20140910	Text	Photos
14000698	MASSACHUSETTS	Suffolk	Boston	Almont Apartments	1439-1443 & 1447-1451 Blue Hill Ave	20140922	Text	Photos
14000974	MASSACHUSETTS	Suffolk	Boston	Gridley Street Historic District	Bounded by Congress, High, Pearl &	20141203	Text	Photos

14000975	MASSACHUSETTS	Suffolk	Boston	Lyman, Theodore, School	30 Gove St.	20141202	Text	Photos
14001095	MASSACHUSETTS	Suffolk	Boston	South End District (Boundary Increase)	200-224 Northampton St.	20141229	Text	Photos
15000048	MASSACHUSETTS	Suffolk	Boston	Boston Police Station Number One--Traffic Tunnel Adminis	128, 150 North & 130 -140 Richmonc	20150303	Text	Photos
15000195	MASSACHUSETTS	Suffolk	Boston	Boston National Historical Park	Charlestown Navy Yard	20150505	Text	Photos
86001378	MASSACHUSETTS	Suffolk	South Bosto	US Post Office Garage	135 A St.	19860626	Text	Photos

Massachusetts Historical Commission

William Francis Galvin, Secretary of the Commonwealth

Massachusetts Cultural Resource Information System

MACRIS

Scanned forms and photos now available for selected towns!

The Massachusetts Cultural Resource Information System (MACRIS) allows you to search the Massachusetts Historical Commission database for information on historic properties and areas in the Commonwealth.

Users of the database should keep in mind that it does not include information on all historic properties and areas in Massachusetts, nor does it reflect all the information on file on historic properties and areas at the Massachusetts Historical Commission.

Click here to begin your search of the MACRIS database.

MACRIS MAPS 2.0 beta

About || Help || Disclaimer

Address or MHC# Search

Bing MassDOT Street View

Available Layers

- Base Layer
- Inventory Layers
- MassGIS Layers

Legend

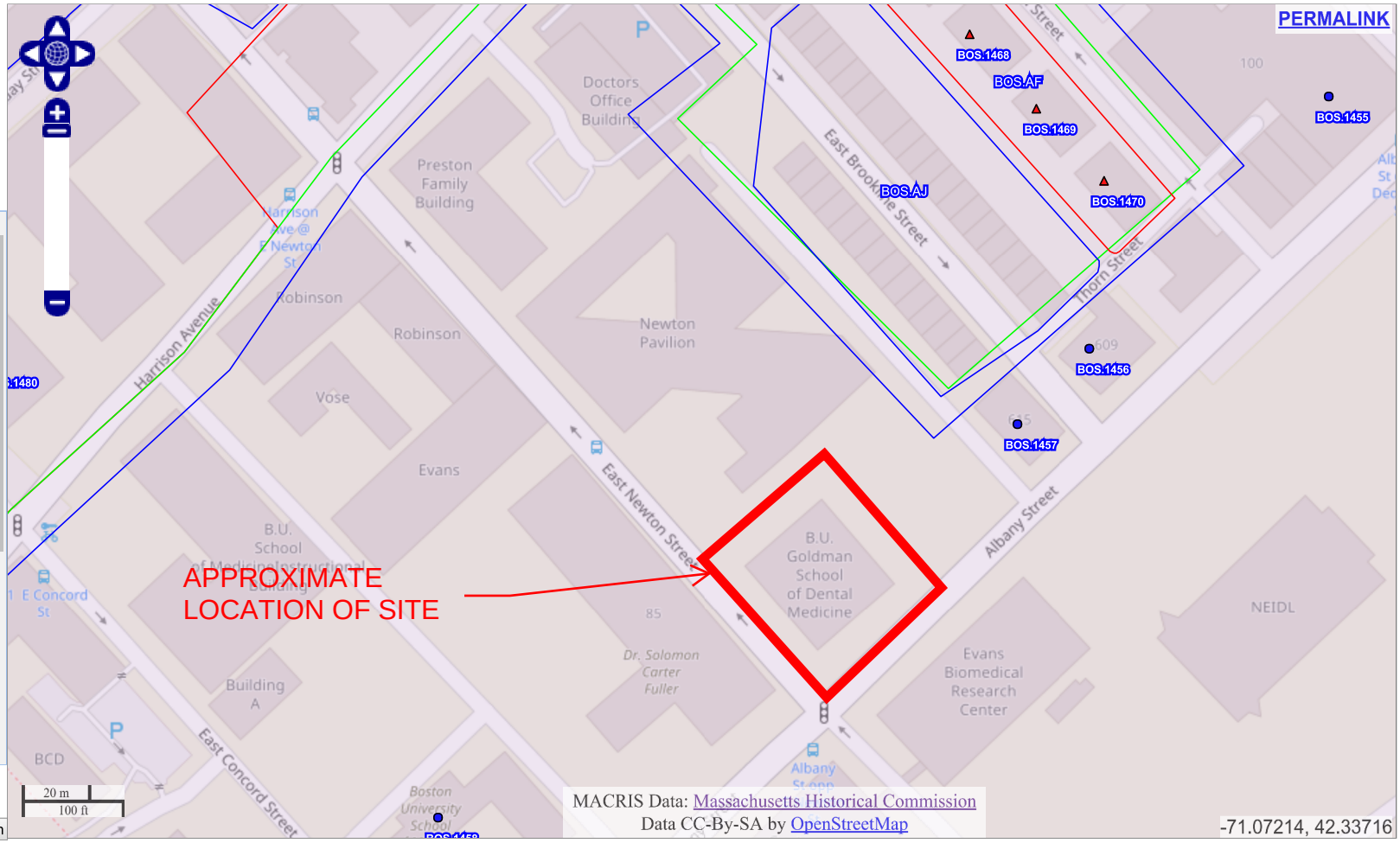
MHC Inventory Points

- Nat'l Register of Historic Places
- Preservation Restriction
- Local Historic District
- NRHP and LHD
- Inventoried Property

Archaeology Login

Username:

Password: Login



MACRIS Maps Last Updated 10/19/2017

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Boston; Street No: 100; Street Name: East Newton; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year

APPENDIX C

ESA Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

January 20, 2017

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm (accessed January 2017)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Maria Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

United States Department of the Interior

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

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-0494
Event Code: 05E1NE00-2018-E-01135
Project Name: BU Dental School

December 08, 2017

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2018-SLI-0494

Event Code: 05E1NE00-2018-E-01135

Project Name: BU Dental School

Project Type: DEVELOPMENT

Project Description: Construction dewatering

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.33637530539205N71.07012380866553W

Counties: Suffolk, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Birds

NAME	STATUS
Red Knot *Calidris canutus rufa*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/1864

Critical habitats

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

IPaC Information for Planning and Consultation **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.

Location

Suffolk 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] are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service.

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.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS

Red Knot Calidris canutus rufa — Threatened

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/1864

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

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

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service[3]. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and 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.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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 USFWS Birds of Conservation Concern that might be affected by activities in this location. The list does not contain every bird you may find in this location, nor is it guaranteed that all of the birds on the list will be found on or near this location. To get a better idea of the specific locations where certain species have been reported and their level of

occurrence, please refer to resources such as the E-bird data mapping tool (year-round bird sightings by birders and the general public) and Breeding Bird Survey (relative abundance maps for breeding birds). Although it is important to try to avoid and minimize impacts to all birds, special attention should be given to the birds on the list below. To get a list of all birds potentially present in your project area, visit the E-bird Explore Data Tool.

NAME	BREEDING SEASON
American Oystercatcher Haematopus palliatus https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Black Skimmer Rynchops niger https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Black-billed Cuckoo Coccyzus erythropthalmus https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus	Breeds May 20 to Jul 31
Buff-breasted Sandpiper Tryngites subruficollis	Breeds elsewhere
Canada Warbler Wilsonia canadensis	Breeds May 20 to Aug 10
Cerulean Warbler Dendroica cerulea https://ecos.fws.gov/ecp/species/2974	Breeds Aug 20 to Jul 20
Dunlin Calidris alpina hudsonia	Breeds elsewhere
Eastern Whip-poor-will Antrostomus vociferus	Breeds May 1 to Aug 20
Evening Grosbeak Coccothraustes vespertinus	Breeds elsewhere
Hudsonian Godwit Limosa haemastica	Breeds elsewhere
Kentucky Warbler Oporornis formosus	Breeds Apr 20 to Aug 20
King Rail Rallus elegans https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Least Tern Sterna antillarum	Breeds Apr 20 to Sep 10

Lesser Yellowlegs Tringa flavipes https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Long-eared Owl asio otus https://ecos.fws.gov/ecp/species/3631	Breeds elsewhere
Nelson's Sparrow Ammodramus nelsoni	Breeds May 15 to Sep 5
Prairie Warbler Dendroica discolor	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea	Breeds Apr 1 to Jul 31
Purple Sandpiper Calidris maritima	Breeds elsewhere
Red-headed Woodpecker Melanerpes erythrocephalus	Breeds May 10 to Sep 10
Red-throated Loon Gavia stellata	Breeds elsewhere
Ruddy Turnstone Arenaria interpres morinella	Breeds elsewhere
Rusty Blackbird Euphagus carolinus	Breeds elsewhere
Saltmarsh Sparrow Ammodramus caudacutus	Breeds May 15 to Sep 5
Seaside Sparrow Ammodramus maritimus	Breeds May 10 to Aug 20
Semipalmated Sandpiper Calidris pusilla	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Snowy Owl Bubo scandiacus	Breeds elsewhere
Whimbrel Numenius phaeopus https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Willet Tringa semipalmata	Breeds Apr 20 to Aug 5

Wood Thrush Hylocichla mustelina

Breeds May 10 to Aug 31

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.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in your project's counties 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 when the bird breeds in the Bird Conservation Region(s) in which your project lies. 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 counties of your project area. 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.

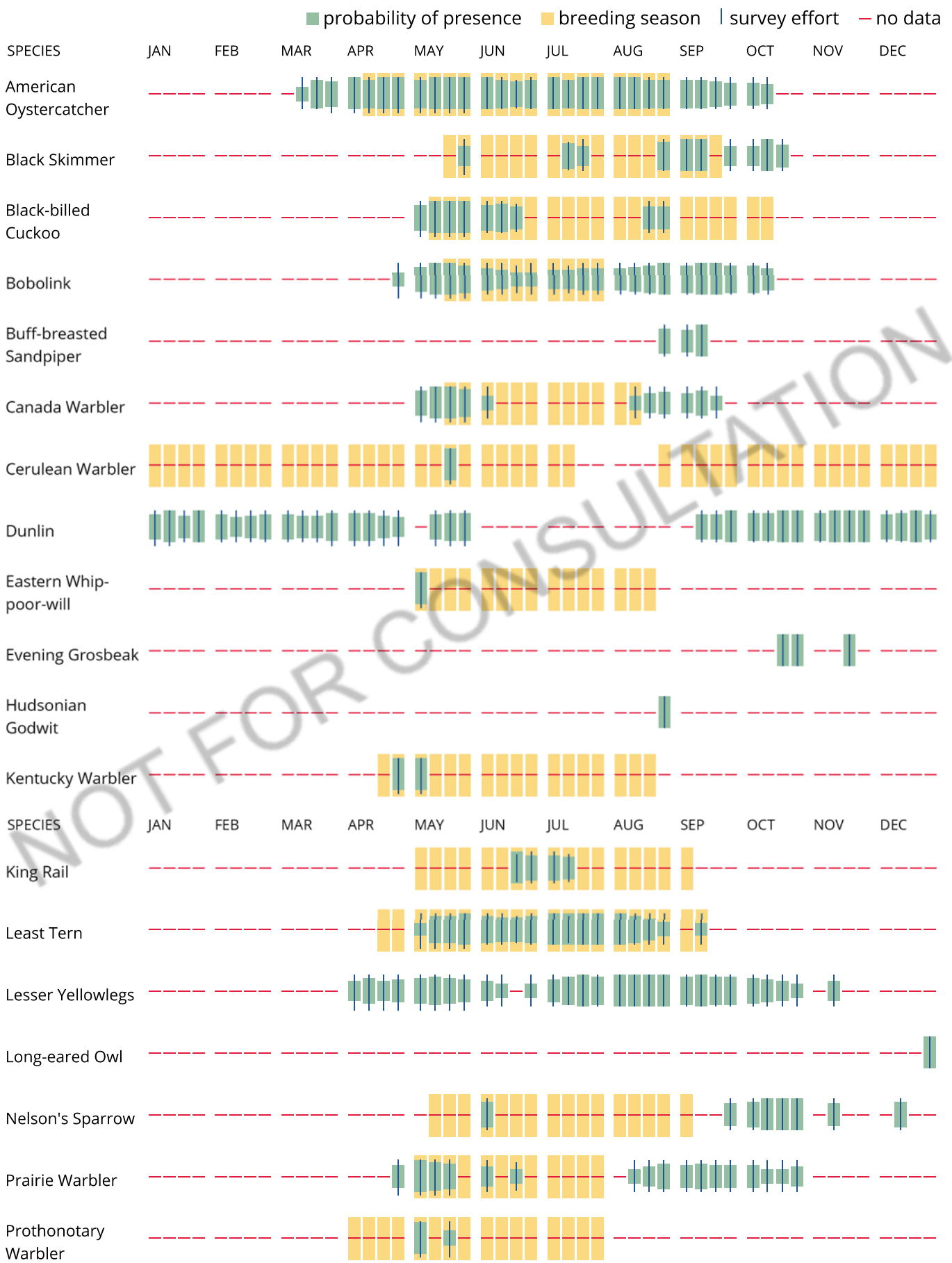
No Data (–)

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.



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. Such measures are particularly important when birds are most likely to occur in the project area. To see when birds are most likely to occur in your project area, view the Probability of Presence Summary. Special attention should be made to look for nests and avoid nest destruction during the breeding season. The best information about when birds are breeding can be found in Birds of North America (BNA) Online under the "Breeding Phenology" section of each species profile. Note that accessing this information may require a subscription. Additional measures and/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.

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) that might be affected by activities in your project location. These birds are of priority concern because it has been determined that without additional conservation actions, they are likely to become candidates for listing

under the Endangered Species Act (ESA).

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. The AKN list represents all birds reported to be occurring at some level throughout the year in the counties in which your project lies. That list is then narrowed to only the Birds of Conservation Concern for your project area.

Again, the Migratory Bird Resource list only includes species of particular priority concern, and is not representative of all birds that may occur in your project area. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data 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.

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 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 entry on your migratory bird species list indicates a breeding season, it is probable the bird breeds in your project's counties at some point within the time-frame specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

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.

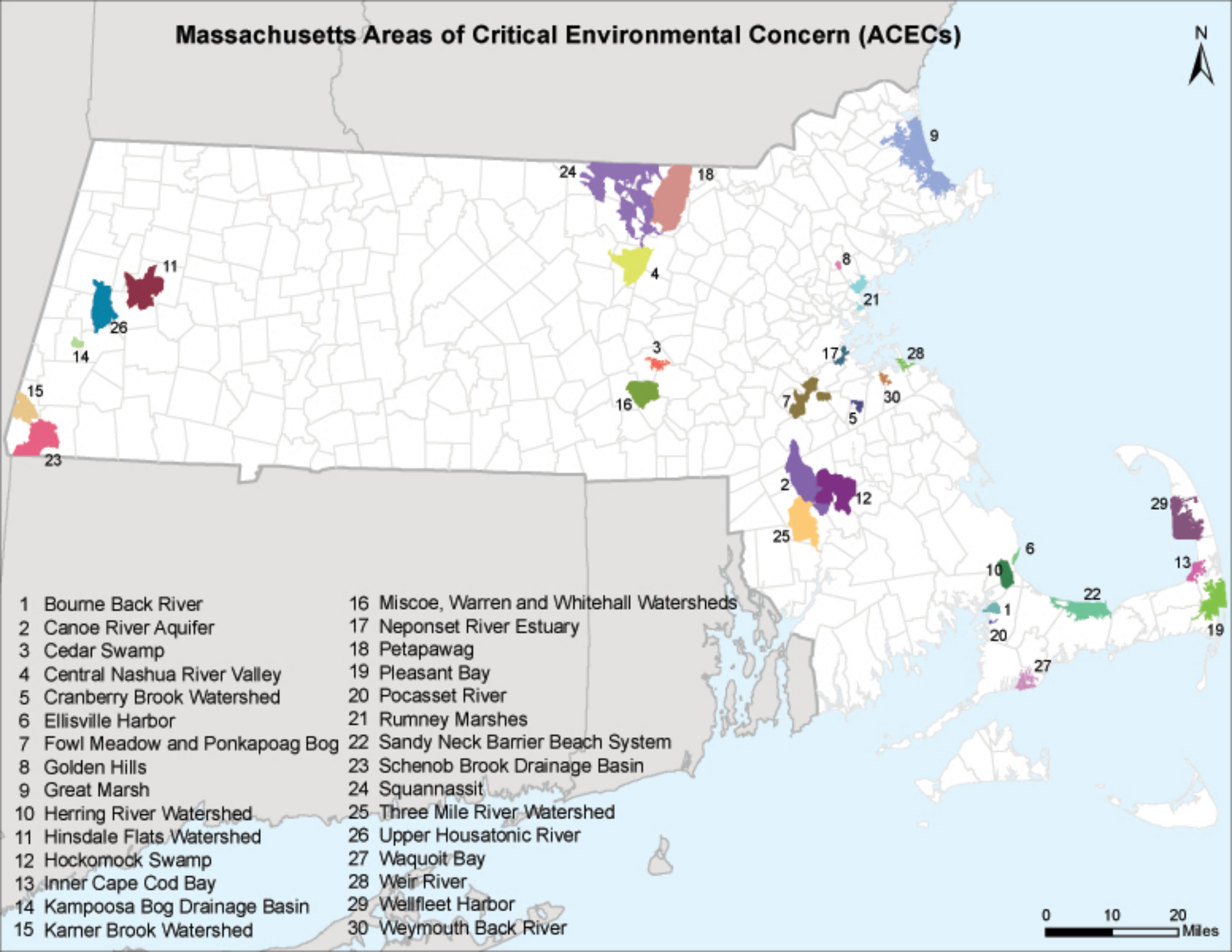
Data exclusions

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.

Massachusetts Areas of Critical Environmental Concern (ACECs)



1 Bourne Back River
2 Canoe River Aquifer
3 Cedar Swamp
4 Central Nashua River Valley
5 Cranberry Brook Watershed
6 Ellisville Harbor
7 Fowl Meadow and Ponkapoag Bog
8 Golden Hills
9 Great Marsh
10 Herring River Watershed
11 Hinsdale Flats Watershed
12 Hockomock Swamp
13 Inner Cape Cod Bay
14 Kampoosa Bog Drainage Basin
15 Karner Brook Watershed
16 Miscoe, Warren and Whitehall Watersheds
17 Neponset River Estuary
18 Petapawag
19 Pleasant Bay
20 Pocasset River
21 Rumney Marshes
22 Sandy Neck Barrier Beach System
23 Schenob Brook Drainage Basin
24 Squannassit
25 Three Mile River Watershed
26 Upper Housatonic River
27 Waquoit Bay
28 Weir River
29 Wellfleet Harbor
30 Weymouth Back River

MASSACHUSETTS AREAS OF CRITICAL ENVIRONMENTAL CONCERN
November 2010

Total Approximate Acreage: 268,000 acres
Approximate acreage and designation date follow ACEC names below.

Bourne Back River
(1,850 acres, 1989) Bourne

Canoe River Aquifer and Associated Areas (17,200 acres, 1991) Easton, Foxborough, Mansfield, Norton, Sharon, and Taunton

Cedar Swamp
(1,650 acres, 1975) Hopkinton and Westborough

Central Nashua River Valley
(12,900 acres, 1996) Bolton, Harvard, Lancaster, and Leominster

Cranberry Brook Watershed
(1,050 acres, 1983) Braintree and Holbrook

Ellisville Harbor
(600 acres, 1980) Plymouth

Fowl Meadow and Ponkapoag Bog
(8,350 acres, 1992) Boston, Canton, Dedham, Milton, Norwood, Randolph, Sharon, and Westwood

Golden Hills
(500 acres, 1987) Melrose, Saugus, and Wakefield

Great Marsh (originally designated as Parker River/Essex Bay)
(25,500 acres, 1979) Essex, Gloucester, Ipswich, Newbury, and Rowley

Herring River Watershed
(4,450 acres, 1991) Bourne and Plymouth

Hinsdale Flats Watershed
(14,500 acres, 1992) Dalton, Hinsdale, Peru, and Washington

Hockomock Swamp
(16,950 acres, 1990) Bridgewater, Easton, Norton, Raynham, Taunton, and West Bridgewater

Inner Cape Cod Bay
(2,600 acres, 1985) Brewster, Eastham, and Orleans

Kampoosa Bog Drainage Basin
(1,350 acres, 1995) Lee and Stockbridge

Karner Brook Watershed
(7,000 acres, 1992) Egremont and Mount Washington

Miscoe, Warren, and Whitehall Watersheds
(8,700 acres, 2000) Grafton, Hopkinton, and Upton

Neponset River Estuary
(1,300 acres, 1995) Boston, Milton, and Quincy

Petapawag
(25,680 acres, 2002) Ayer, Dunstable, Groton, Pepperell, and Tyngsborough

Pleasant Bay
(9,240 acres, 1987) Brewster, Chatham, Harwich, and Orleans

Pocasset River
(160 acres, 1980) Bourne

Rumney Marshes
(2,800 acres, 1988) Boston, Lynn, Revere, Saugus, and Winthrop

Sandy Neck Barrier Beach System
(9,130 acres, 1978) Barnstable and Sandwich

Schenob Brook Drainage Basin
(13,750 acres, 1990) Mount Washington and Sheffield

Squannassit
(37,420 acres, 2002) Ashby, Ayer, Groton, Harvard, Lancaster, Lunenburg, Pepperell, Shirley, and Townsend

Three Mile River Watershed
(14,280 acres, 2008) Dighton, Norton, Taunton

Upper Housatonic River
(12,280 acres, 2009) Lee, Lenox, Pittsfield, Washington

Waquoit Bay
(2,580 acres, 1979) Falmouth and Mashpee

Weir River
(950 acres, 1986) Cohasset, Hingham, and Hull

Wellfleet Harbor
(12,480 acres, 1989) Eastham, Truro, and Wellfleet

Weymouth Back River
(800 acres, 1982) Hingham and Weymouth

ACEC acreages above are based on MassGIS calculations and may differ from numbers originally presented in designation documents and other ACEC publications due to improvements in accuracy of GIS data and boundary clarifications. Listed acreages have been rounded to the nearest 50 or 10 depending on whether boundary clarification has occurred. For more information please see, http://www.mass.gov/dcr/stewardship/acec/aboutMaps.htm.

Towns with ACECs within their Boundaries — November 2010

TOWN	ACEC
Ashby	Squannassit
Ayer	Petapawag
	Squannassit
Barnstable	Sandy Neck Barrier Beach System
Bolton	Central Nashua River Valley
Boston	Rumney Marshes
	Fowl Meadow and Ponkapoag Bog
	Neponset River Estuary
Bourne	Pocasset River
	Bourne Back River
	Herring River Watershed
Braintree	Cranberry Brook Watershed
Brewster	Pleasant Bay
	Inner Cape Cod Bay
Bridgewater	Hockomock Swamp
Canton	Fowl Meadow and Ponkapoag Bog
Chatham	Pleasant Bay
Cohasset	Weir River
Dalton	Hinsdale Flats Watershed
Dedham	Fowl Meadow and Ponkapoag Bog
Dighton	Three Mile River Watershed
Dunstable	Petapawag
Eastham	Inner Cape Cod Bay
	Wellfleet Harbor
Easton	Canoe River Aquifer
	Hockomock Swamp
Egremont	Karner Brook Watershed
Essex	Great Marsh
Falmouth	Waquoit Bay
Foxborough	Canoe River Aquifer
Gloucester	Great Marsh
Grafton	Miscoe-Warren-Whitehall Watersheds
Groton	Petapawag
	Squannassit
Harvard	Central Nashua River Valley
	Squannassit
Harwich	Pleasant Bay
Hingham	Weir River
	Weymouth Back River
Hinsdale	Hinsdale Flats Watershed
Holbrook	Cranberry Brook Watershed
Hopkinton	Miscoe-Warren-Whitehall Watersheds
	Cedar Swamp
Hull	Weir River
Ipswich	Great Marsh
Lancaster	Central Nashua River Valley
	Squannassit
Lee	Kampoosa Bog Drainage Basin
	Upper Housatonic River
Lenox	Upper Housatonic River
Leominster	Central Nashua River Valley
Lunenburg	Squannassit
Lynn	Rumney Marshes
Mansfield	Canoe River Aquifer
Mashpee	Waquoit Bay
Melrose	Golden Hills
Milton	Fowl Meadow and Ponkapoag Bog
	Neponset River Estuary
Mt. Washington	Karner Brook Watershed
	Schenob Brook
Newbury	Great Marsh
Norton	Hockomock Swamp
	Canoe River Aquifer
	Three Mile River Watershed
Norwood	Fowl Meadow and Ponkapoag Bog
Orleans	Inner Cape Cod Bay
	Pleasant Bay
Pepperell	Petapawag
	Squannassit
Peru	Hinsdale Flats Watershed
Pittsfield	Upper Housatonic River
Plymouth	Herring River Watershed
	Ellisville Harbor
Quincy	Neponset River Estuary
Randolph	Fowl Meadow and Ponkapoag Bog
Raynham	Hockomock Swamp
Revere	Rumney Marshes
Rowley	Great Marsh
Sandwich	Sandy Neck Barrier Beach System
Saugus	Rumney Marshes
	Golden Hills
Sharon	Canoe River Aquifer
	Fowl Meadow and Ponkapoag Bog
Sheffield	Schenob Brook
Shirley	Squannassit
Stockbridge	Kampoosa Bog Drainage Basin
Taunton	Hockomock Swamp
	Canoe River Aquifer
	Three Mile River Watershed
Truro	Wellfleet Harbor
Townsend	Squannassit
Tyngsborough	Petapawag
Upton	Miscoe-Warren-Whitehall Watersheds
Wakefield	Golden Hills
Washington	Hinsdale Flats Watershed
	Upper Housatonic River
Wellfleet	Wellfleet Harbor
W Bridgewater	Hockomock Swamp
Westborough	Cedar Swamp
Westwood	Fowl Meadow and Ponkapoag Bog
Weymouth	Weymouth Back River
Winthrop	Rumney Marshes

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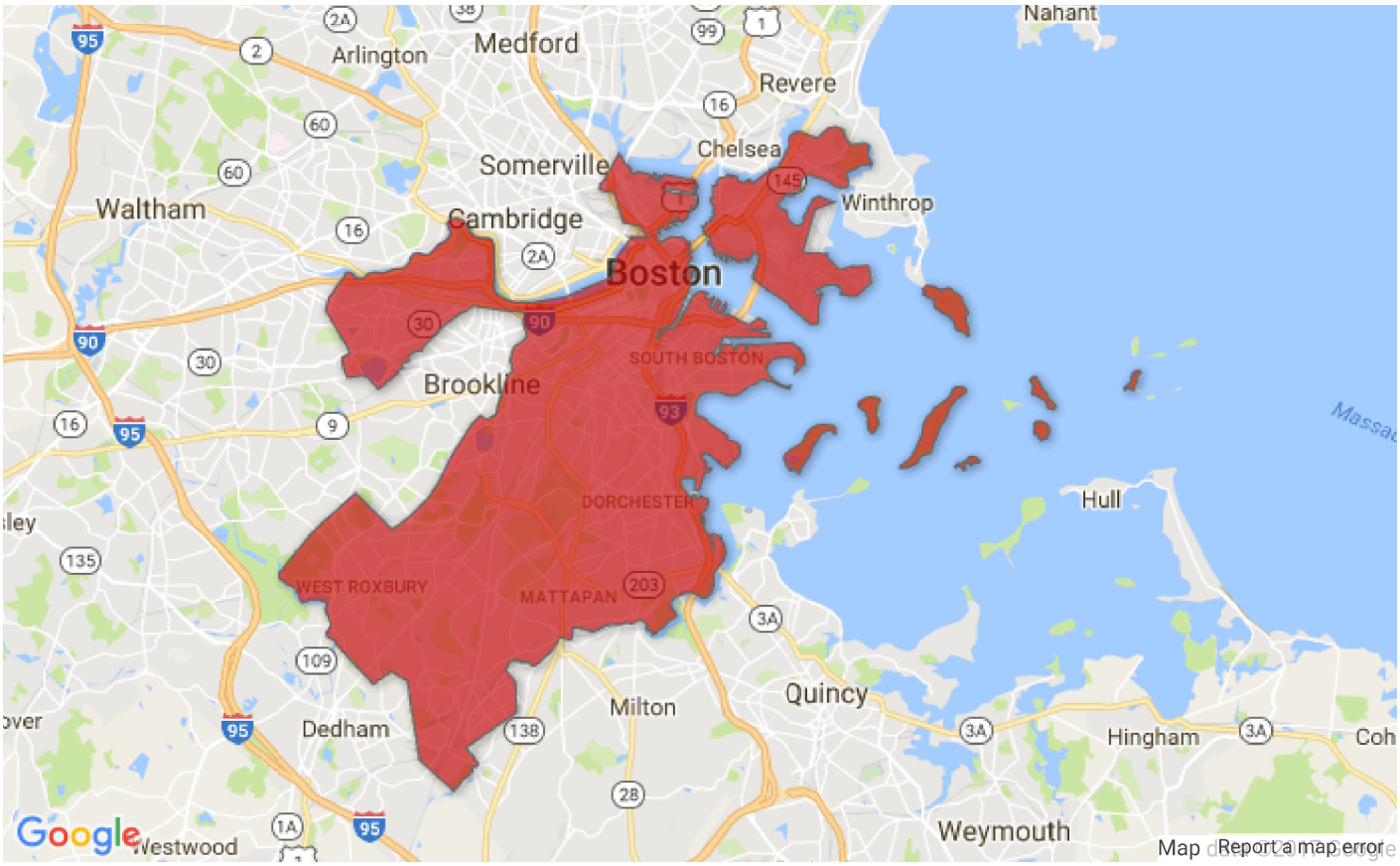
The Natural Heritage & Endangered Species Program maintains a list of all documented MESA-listed species observations in the Commonwealth. Please select a town if you would like to see a table showing which listed species have been observed in that town. The selected town will also be highlighted on the map. Alternatively you can specify either the Common Name or Scientific Name of a species to see it's distribution on the map and table showing the towns it has been observed in. Clicking on a column header in the table will sort the column. Clicking again on the same column heading will reverse the sort order.

The Town List and Species Viewer will be updated at regular intervals as new data is accepted and entered into the NHESP database.

Town: BOSTON or Species (Common Name): or Species (Scientific Name):



Showing 1 to 46 of 46 entries Search:

First Previous 1 Next Last

Town	Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Obs
BOSTON	Butterfly/Moth	Abagrotis nefascia	Coastal Heathland Cutworm	SC	2001
BOSTON	Vascular Plant	Ageratina aromatica	Lesser Snakeroot	E	1896
BOSTON	Amphibian	Ambystoma laterale	Blue-spotted Salamander	SC	2015
BOSTON	Bird	Ammodramus savannarum	Grasshopper Sparrow	T	1993
BOSTON	Butterfly/Moth	Apodrepanulatrix liberaria	New Jersey Tea Inchworm	E	Historic
BOSTON	Vascular Plant	Aristida purpurascens	Purple Needlegrass	T	Historic
BOSTON	Vascular Plant	Aristida tuberculosa	Seabeach Needlegrass	T	1877

Town	Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Obs
BOSTON	Vascular Plant	Asclepias verticillata	Linear-leaved Milkweed	T	1878
BOSTON	Bird	Bartramia longicauda	Upland Sandpiper	E	1993
BOSTON	Vascular Plant	Boechera missouriensis	Green Rock-cress	T	1930
BOSTON	Vascular Plant	Carex striata	Walter's Sedge	E	Historic
BOSTON	Bird	Charadrius melodus	Piping Plover	T	2016
BOSTON	Beetle	Cicindela duodecimguttata	Twelve-spotted Tiger Beetle	SC	1910
BOSTON	Beetle	Cicindela purpurea	Cow Path Tiger Beetle	SC	1928
BOSTON	Beetle	Cicindela rufiventris hentzii	Eastern Red-bellied Tiger Beetle	T	1927
BOSTON	Vascular Plant	Desmodium cuspidatum	Large-bracted Tick-trefoil	T	1896
BOSTON	Vascular Plant	Eriophorum gracile	Slender Cottongrass	T	1885
BOSTON	Bird	Falco peregrinus	Peregrine Falcon	T	2014
BOSTON	Fish	Gasterosteus aculeatus	Threespine Stickleback	T	2014
BOSTON	Bird	Gavia immer	Common Loon	SC	1824
BOSTON	Vascular Plant	Houstonia longifolia	Long-leaved Bluet	E	1918
BOSTON	Vascular Plant	Liatris scariosa var. novae-angliae	New England Blazing Star	SC	1933
BOSTON	Mussel	Ligumia nasuta	Eastern Pondmussel	SC	1841
BOSTON	Vascular Plant	Linum medium var. texanum	Rigid Flax	T	1909
BOSTON	Vascular Plant	Lycopus rubellus	Gypsywort	E	1896
BOSTON	Vascular Plant	Malaxis unifolia	Green Adder's Mouth	T	1883
BOSTON	Butterfly/Moth	Metarranthis apiciaria	Barrens Metarranthis	E	1934
BOSTON	Vascular Plant	Myriophyllum alterniflorum	Alternate-flowered Water-milfoil	E	Historic
BOSTON	Vascular Plant	Ophioglossum pusillum	Adder's-tongue Fern	T	1884
BOSTON	Vascular Plant	Platanthera flava var. herbiola	Pale Green Orchis	T	1908
BOSTON	Bird	Pooecetes gramineus	Vesper Sparrow	T	1985
BOSTON	Butterfly/Moth	Pyrrhia aurantiago	Orange Sallow Moth	SC	1988
BOSTON	Vascular Plant	Ranunculus micranthus	Tiny-flowered Buttercup	E	1891
BOSTON	Vascular Plant	Rumex pallidus	Seabeach Dock	T	1984
BOSTON	Vascular Plant	Sanicula odorata	Long-styled Sanicle	T	Historic
BOSTON	Amphibian	Scaphiopus holbrookii	Eastern Spadefoot	T	1932
BOSTON	Vascular Plant	Scirpus longii	Long's Bulrush	T	1907
BOSTON	Vascular Plant	Setaria parviflora	Bristly Foxtail	SC	2001
BOSTON	Dragonfly/Damselfly	Somatochlora linearis	Mocha Emerald	SC	2009
BOSTON	Bird	Sterna hirundo	Common Tern	SC	2013
BOSTON	Bird	Sternula antillarum	Least Tern	SC	2014
BOSTON	Vascular Plant	Suaeda calceoliformis	American Sea-blite	SC	1909
BOSTON	Reptile	Terrapene carolina	Eastern Box Turtle	SC	1939
BOSTON	Bird	Tyto alba	Barn Owl	SC	1989
BOSTON	Bird	Vermivora chrysoptera	Golden-winged Warbler	E	Historic
BOSTON	Vascular Plant	Viola brittoniana	Britton's Violet	T	1909

Show 100 ▼ entries

Show Additional Info

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Barnstable	Piping Plover	Threatened	Coastal Beaches	All Towns
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Chatham
	Sandplain gerardia	Endangered	Open areas with sandy soils.	Sandwich and Falmouth.
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Bourne (north of the Cape Cod Canal)
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Berkshire	Bog Turtle	Threatened	Wetlands	Egremont and Sheffield
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Bristol	Piping Plover	Threatened	Coastal Beaches	Fairhaven, Dartmouth, Westport
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Fairhaven, New Bedford, Dartmouth, Westport
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Taunton
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Dukes	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Piping Plover	Threatened	Coastal Beaches	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Aquinnah and Chilmark
	Sandplain gerardia	Endangered	Open areas with sandy soils.	West Tisbury
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

Updated 02/05/2016

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Franklin	Northeastern bulrush	Endangered	Wetlands	Montague, Warwick
	Dwarf wedgemussel	Endangered	Mill River	Whately
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampshire	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Hadley
	Puritan tiger beetle	Threatened	Sandy beaches along the Connecticut River	Northampton and Hadley
	Dwarf wedgemussel	Endangered	Rivers and Streams.	Hatfield, Amherst and Northampton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Nantucket	Piping Plover	Threatened	Coastal Beaches	Nantucket
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Nantucket
	American burying beetle	Endangered	Upland grassy meadows	Nantucket
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

Updated 02/05/2016

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Plymouth	Piping Plover	Threatened	Coastal Beaches	Scituate, Marshfield, Duxbury, Plymouth, Wareham and Mattapoisett
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Kingston, Middleborough, Carver, Plymouth, Bourne, Wareham, Halifax, and Pembroke
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Plymouth, Marion, Wareham, and Mattapoisett.
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Suffolk	Piping Plover	Threatened	Coastal Beaches	Revere, Winthrop
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Worcester	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Leominster
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

[1]Migratory only, scattered along the coast in small numbers

-Eastern cougar and gray wolf are considered extirpated in Massachusetts.
-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.
-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

Updated 02/05/2016

MassDEP - Bureau of Waste Site Cleanup

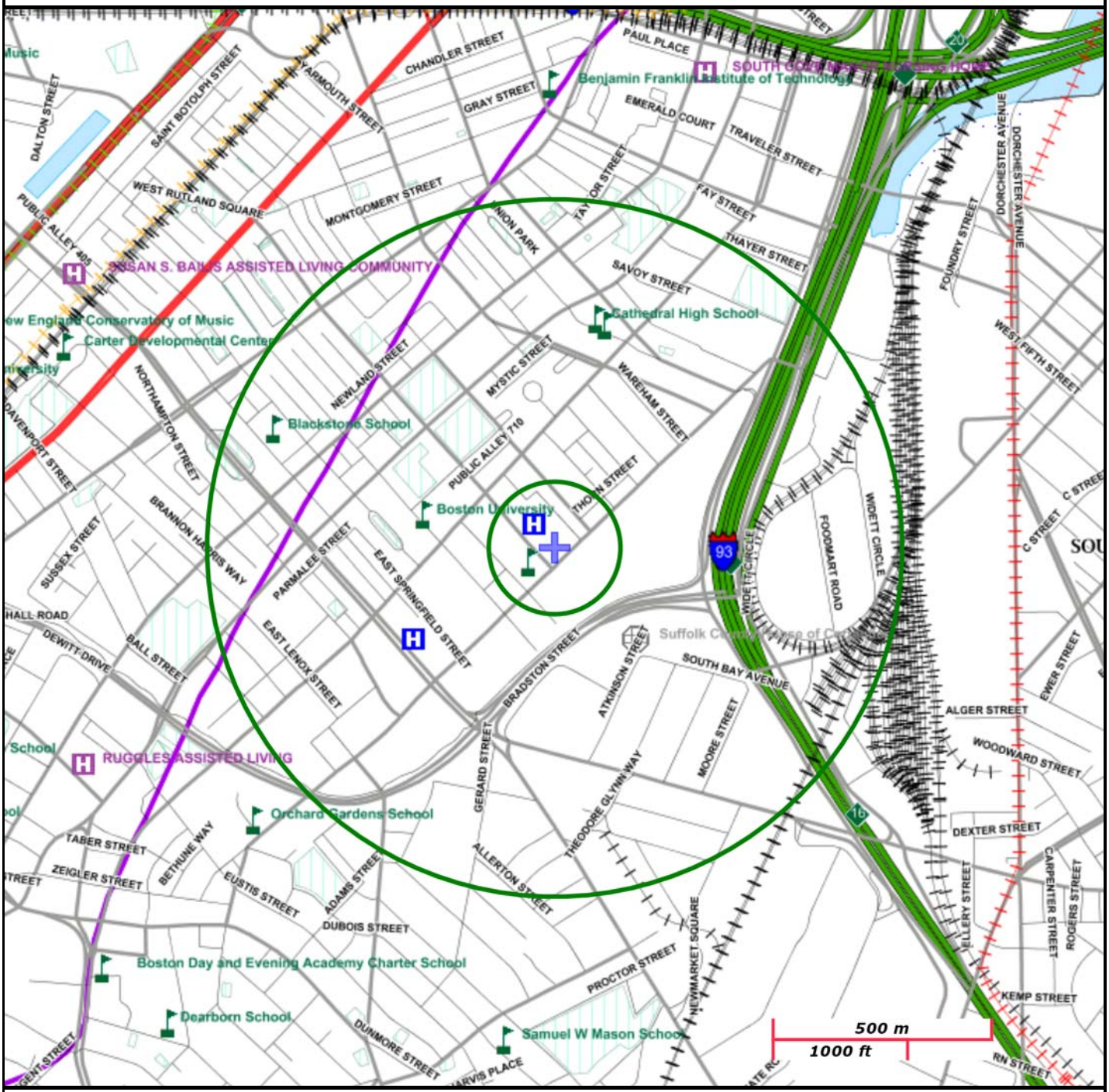
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
BU DENTAL BUILDING
100 EAST NEWTON STREET BOSTON, MA

NAD83 UTM Meters:
4689198mN , 329468mE (Zone: 19)
December 6, 2017

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

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



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

APPENDIX D

BWSC PERMIT

Haley & Aldrich, Inc.
465 Medford Street, Suite 2200
Boston, MA 02129
617.886.7400

21 December 2017
File No. 128553-002

Boston Water and Sewer Commission
Engineering Customer Services
900 Harrison Avenue
Boston, MA 02119

Attention: Matthew Tuttle

Subject: Request for Approval of Temporary Construction Dewatering
Boston University – Goldman School of Dental Medicine
100 East Newton Street
Boston, Massachusetts

Dear Mr. Tuttle:

On behalf of our client, Boston University (BU), this letter submits the Dewatering Discharge Permit Application in support of the proposed BU – Goldman School of Dental Medicine site located at 100 East Newton Street in Boston, Massachusetts.

Dewatering is necessary to enable construction excavations in-the-dry, and is anticipated to begin in February 2018 and continue for up to 18 months. Prior to discharge, collected water will be routed through a sedimentation tank and bag filter at minimum to remove suspended solids and un-dissolved chemical constituents. The proposed dewatering discharge route and BWSC outfall locations are shown on Figure 1.

A submittal was provided to USEPA for discharge of the dewatering effluent under the Remediation General Permit (RGP). A copy of the submitted RGP application is attached. If you have any questions, please feel free to contact the undersigned at 617-886-7400.

Sincerely yours,
HALEY & ALDRICH, INC.

Joel S. Mooney, P.E., L.S.P.
Principal | Senior Vice President

Attachments:
Dewatering Discharge Permit Application
Figure 1 – Proposed Discharge Route
Copy of NPDES RGP Permit Application

Boston Water and Sewer Commission
980 Harrison Avenue
Boston, MA 02119-2540

DEWATERING DISCHARGE PERMIT APPLICATION

OWNER / AUTHORIZED APPLICANT PROVIDE INFORMATION HERE:

Company Name: Boston University Address: 120 Ashford Street, Boston, MA 02215

Phone Number: 617-353-6529 Fax number: _____

Contact person name: Gregg Snyder Title: Director, Special Projects & Strategic Initiatives

Cell number: 617-921-0365 Email address: gmsnyder@bu.edu

Permit Request (check one): ☒ New Application ☐ Permit Extension ☐ Other (Specify):_____

Owner's Information (if different from above):

Owner of property being dewatered: _____

Owner's mailing address: _____ Phone number: _____

Location of Discharge & Proposed Treatment System(s):

Street number and name: 100 East Newton Street Neighborhood South End Boston

Discharge is to a: ☐ Sanitary Sewer ☐ Combined Sewer ☒ Storm Drain ☐ Other (specify):_____

Describe Proposed Pre-Treatment System(s): Sedimentation Tank, Bag Filter, and any other components as necessary (refer to attached RGP Application)

BWSC Outfall No. CSO071 Receiving Waters Boston Inner Harbor/Fort Point Channel

---

Temporary Discharges (Provide Anticipated Dates of Discharge): From February 2018 To April 2019

☐ Groundwater Remediation	☐ Tank Removal/Installation	☒ Foundation Excavation
☐ Utility/Manhole Pumping	☐ Test Pipe	☒ Trench Excavation
☒ Accumulated Surface Water	☐ Hydrogeologic Testing	☐ Other _____

Permanent Discharges

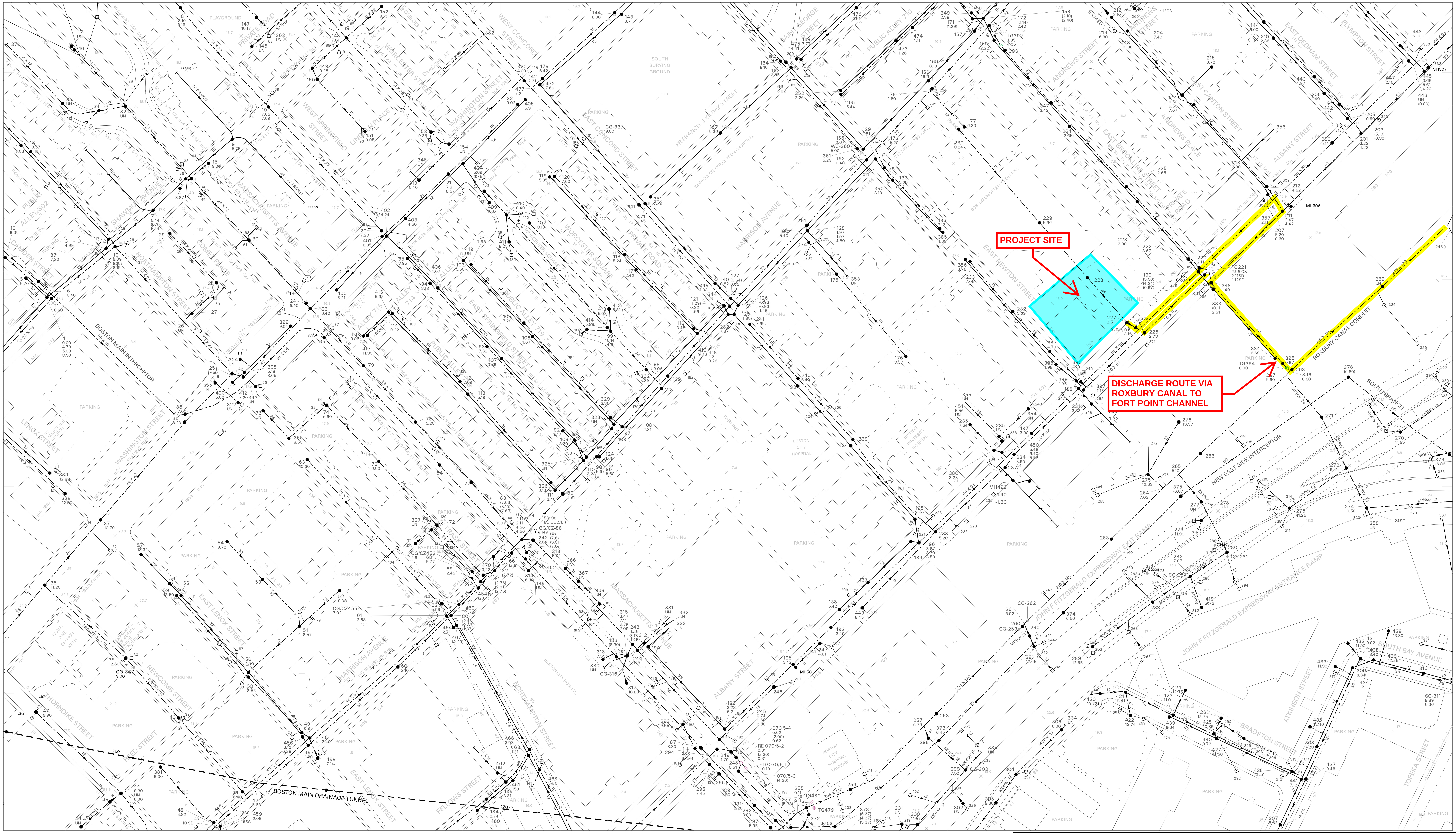
☐ Foundation Drainage	☐ Crawl Space/Footing Drain
☐ Accumulated Surface Water	☐ Non-contact/Uncontaminated Cooling
☐ Non-contact/Uncontaminated Process	☐ Other; _____

---

1. Attach a Site Plan showing the source of the discharge and the location of the point of discharge (i.e. the sewer pipe or catch basin). Include meter type, meter number, size, make and start reading. Note. All discharges to the Commission's sewer system will be assessed current sewer charges.
2. If discharging to a sanitary or combined sewer, attach a copy of MWRA's Sewer Use Discharge permit or application.
3. If discharging to a separate storm drain, attach a copy of EPA's NPDES Permit or NOI application, or NPDES Permit exclusion letter for the discharge, as well as other relevant information.
4. Dewatering Drainage Permit will be denied or revoked if applicant fails to obtain the necessary permits from MWRA or EPA.

Submit Completed Application to: Boston Water and Sewer Commission
Engineering Customer Services
980 Harrison Avenue, Boston, MA 02119
Attn: Matthew Tuttle, Engineering Customer Service
E-mail: tuttlemp@bwsc.org
Phone: 617-989-7204 Fax: 617-989-7716

Signature of Authorized Representative for Property Owner: _____ Date: 12-20-17



19J

NOTE: Spot Elevations shown are plotted in Boston City Base

500 FOOT GRID BASED ON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NAD 83

DATE OF PHOTOGRAPHY - MARCH 30, APRIL 1 & 17, 1995
VERTICAL DATUM BASED ON THE BOSTON CITY BASE

THE LANDBASE ON THIS MAP WAS COMPILED TO MEET THE ASPRS STANDARD FOR CLASS 1 MAP ACCURACY

Date Produced
June 29, 2001

BOSTON WATER AND SEWER COMMISSION

HALEY ALDRICH

BOSTON UNIVERSITY DENTAL SCHOOL
BOSOTN, MASSACHUSETTS

BWSC PLAN

SCALE AS SHOWN
DECEMBER 2017

FIGURE 3

APPENDIX E

Laboratory Data Reports

ANALYTICAL REPORT

Lab Number:	L1738447
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Andrew Chan
Phone:	(617) 886-7400
Project Name:	BU DENTAL BUILDING
Project Number:	125883-002
Report Date:	10/27/17

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

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

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738447
Report Date: 10/27/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1738447-01	HA17-BUSS	WATER	ALBANY STREET, BOSTON, MA	10/23/17 13:20	10/23/17

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738447
Report Date: 10/27/17

Case Narrative

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

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

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

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

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

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

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: Cristin Walker

Title: Technical Director/Representative Date: 10/27/17

INORGANICS
&
MISCELLANEOUS

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738447
Report Date: 10/27/17

SAMPLE RESULTS

Lab ID: L1738447-01
Client ID: HA17-BUSS
Sample Location: ALBANY STREET, BOSTON, MA
Matrix: Water

Date Collected: 10/23/17 13:20
Date Received: 10/23/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
SALINITY	28		SU	2.0	--	1	-	10/26/17 18:37	121,2520B	AS
pH (H)	7.6		SU	-	NA	1	-	10/23/17 23:44	121,4500H+-B	AS
Nitrogen, Ammonia	0.191		mg/l	0.075	--	1	10/24/17 02:15	10/24/17 21:13	121,4500NH3-BH	AT

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738447
Report Date: 10/27/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1055463-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	10/24/17 02:15	10/24/17 20:57	121,4500NH3-BH	AT

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738447

Report Date: 10/27/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1055450-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1055463-2								
Nitrogen, Ammonia	92		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1056756-1								
SALINITY	106		-			-		

Matrix Spike Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738447
Report Date: 10/27/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055463-6 QC Sample: L1737982-01 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	3.61	90		-	-		80-120	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738447
Report Date: 10/27/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055450-2 QC Sample: L1738423-01 Client ID: DUP Sample						
pH	7.1	7.1	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055463-5 QC Sample: L1737982-01 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1056756-2 QC Sample: L1738448-01 Client ID: DUP Sample						
SALINITY	4.2	4.2	SU	0		

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738447
Report Date: 10/27/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1738447-01A	Plastic 250ml HNO3 preserved	A	<2	<2	4.2	Y	Absent		HOLD-METAL(180)
L1738447-01B	Amber 120ml unpreserved	A	7	7	4.2	Y	Absent		SALINITY(28)
L1738447-01C	Plastic 250ml unpreserved	A	7	7	4.2	Y	Absent		PH-4500(.01)
L1738447-01D	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-4500(28)

*Values in parentheses indicate holding time in days

Project Name:	BU DENTAL BUILDING	**Lab Number:**	L1738447
Project Number:	125883-002	**Report Date:**	10/27/17

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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.

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.

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 Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	BU DENTAL BUILDING	**Lab Number:**	L1738447
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Data Qualifiers

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.

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

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

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

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

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

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

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

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name:	BU DENTAL BUILDING	**Lab Number:**	L1738447
Project Number:	125883-002	**Report Date:**	10/27/17

REFERENCES

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

LIMITATION OF LIABILITIES

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

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

Certification Information

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

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

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

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

Westborough Facility:

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

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

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

ALPHA

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: 10/23/17

ALPHA Job #: L1738447

Project Information	
Project Name:	BU Dental Building
Project Location:	Albany Street, Boston, MA
Project #	125883-002
(Use Project name as Project #)	☐
Project Manager:	A. Chan
ALPHAQuote #:	

H&A Information	
H&A Client:	Boston University
H&A Address	465 Medford St, Boston, MA 02129-1400
H&A Phone:	617-886-7400
H&A Fax:	
H&A Email:	Kalepidis, Lhoward

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

Billing Information: ☑ Same as Client Info PO #

Regulatory Requirements (Program/Criteria): MA 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:

Turn-Around Time: Standard ☑ Due Date: (only if pre approved) ☐ # of Days: 5 Day

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:
Analyze using the EPA 2017 RGP Approved Testing Methods and Miminum Detection Levels. pH and Temperature readings to additionally be collected in the field

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

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Ammonia	pH	Salinity	Sample Specific Comments	Total Bottles
38447-01	HA17-BUSS	10/23/17	1320	AQ		X	X	X		4
Container Type						P	P	P		
Preservative										

Preservative Code	Container Code
A = None	P = Plastic
B = HCl	A = Amber Glass
C = HNO_3	V = Vial
D = H_2SO_4	G = Glass
E = NaOH	B = Bacteria Cup
F = MeOH	C = Cube
G = $NaHSO_4$	O = Other
H = $Na_2S_2O_3$	E = Encore
K/E = Zn Ac/NaOH	D = BOD Bottle
O = Other	

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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	10/23/17	M. [signature]	10/23/17 1630
M. [signature]	10/23/17 1830	[signature] AAL	10/23/17 1630
[signature]	10/23/17 1830	[signature]	10/23/17 1830

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)

ANALYTICAL REPORT

Lab Number:	L1738448
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Andrew Chan
Phone:	(617) 886-7400
Project Name:	BU DENTAL BUILDING
Project Number:	125883-002
Report Date:	10/30/17

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

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

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1738448-01	HA17-B9	WATER	ALBANY STREET, BOSTON, MA	10/23/17 11:40	10/23/17

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Case Narrative

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

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

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

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

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

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

Project Name:	BU DENTAL BUILDING	**Lab Number:**	L1738448
Project Number:	125883-002	**Report Date:**	10/30/17

Case Narrative (continued)

Semivolatile Organics

The WG1055559-2/-3 LCS/LCSD recoveries, associated with L1738448-01 (HA17-B9), are below the acceptance criteria for benzidine (4%/3%); however, it has been identified as a "difficult" analyte. The results of the associated sample are reported.

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

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 10/30/17

ORGANICS

VOLATILES

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01
Client ID: HA17-B9
Sample Location: ALBANY STREET, BOSTON, MA
Date Collected: 10/23/17 11:40
Date Received: 10/23/17
Field Prep: None

Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 10/27/17 06:57
Analyst: MM

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

Project Name: BU DENTAL BUILDING **Lab Number:** L1738448

Project Number: 125883-002 **Report Date:** 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01 Date Collected: 10/23/17 11:40

Client ID: HA17-B9 Date Received: 10/23/17

Sample Location: ALBANY STREET, BOSTON, MA Field Prep: None

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	--	1
1,4-Dichlorobenzene	ND		ug/l	2.5	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	5.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	5.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	5.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	5.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.5	--	1
Tetrahydrofuran	ND		ug/l	5.0	--	1
2,2-Dichloropropane	ND		ug/l	2.5	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.5	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	2.5	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	2.5	--	1
o-Chlorotoluene	ND		ug/l	2.5	--	1
p-Chlorotoluene	ND		ug/l	2.5	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	2.5	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--	1

Project Name: BU DENTAL BUILDING **Lab Number:** L1738448

Project Number: 125883-002 **Report Date:** 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01 Date Collected: 10/23/17 11:40

Client ID: HA17-B9 Date Received: 10/23/17

Sample Location: ALBANY STREET, BOSTON, MA Field Prep: None

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	101		70-130

Project Name: BU DENTAL BUILDING
Lab Number: L1738448
Project Number: 125883-002
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01
Client ID: HA17-B9
Sample Location: ALBANY STREET, BOSTON, MA

Date Collected: 10/23/17 11:40
Date Received: 10/23/17
Field Prep: None

Matrix: Water
Analytical Method: 1,8260C-SIM(M)
Analytical Date: 10/27/17 06:57
Analyst: MM

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

Project Name: BU DENTAL BUILDING
Lab Number: L1738448
Project Number: 125883-002
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01
Client ID: HA17-B9
Sample Location: ALBANY STREET, BOSTON, MA

Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 10/24/17 13:27
Analyst: NS

Date Collected: 10/23/17 11:40
Date Received: 10/23/17
Field Prep: None
Extraction Method: EPA 504.1
Extraction Date: 10/24/17 10:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.011	--	1	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.011	--	1	A

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
Analytical Date: 10/24/17 12:07
Analyst: NS

Extraction Method: EPA 504.1
Extraction Date: 10/24/17 10:39

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG1055691-1						
1,2-Dibromoethane	ND		ug/l	0.010	--	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	--	A

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C-SIM(M)
Analytical Date: 10/27/17 05:41
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1056886-5					
1,4-Dioxane	ND		ug/l	3.0	--

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/27/17 05:41
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1056892-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.8	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	2.5	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	2.5	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.5	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
1,2-Dichloroethene, Total	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/27/17 05:41
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1056892-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	--
1,3-Dichlorobenzene	ND		ug/l	2.5	--
1,4-Dichlorobenzene	ND		ug/l	2.5	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	5.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	5.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	5.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	5.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.5	--
Tetrahydrofuran	ND		ug/l	5.0	--
2,2-Dichloropropane	ND		ug/l	2.5	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.5	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	2.5	--
n-Butylbenzene	ND		ug/l	0.50	--

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/27/17 05:41
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1056892-5					
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	2.5	--
o-Chlorotoluene	ND		ug/l	2.5	--
p-Chlorotoluene	ND		ug/l	2.5	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	2.5	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--
1,2,4-Trichlorobenzene	ND		ug/l	2.5	--
1,3,5-Trimethylbenzene	ND		ug/l	2.5	--
1,2,4-Trimethylbenzene	ND		ug/l	2.5	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	2.5	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--

Tentatively Identified Compounds

No Tentatively Identified Compounds ND ug/l

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/27/17 05:41
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1056892-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01 Batch: WG1055691-2									
1,2-Dibromoethane	112		-		80-120	-			A
1,2-Dibromo-3-chloropropane	103		-		80-120	-			A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1056886-3 WG1056886-4								
1,4-Dioxane	94		83		70-130	12		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1056892-3 WG1056892-4								
Methylene chloride	100		98		70-130	2		20
1,1-Dichloroethane	100		100		70-130	0		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	100		100		63-132	0		20
1,2-Dichloropropane	98		97		70-130	1		20
Dibromochloromethane	95		96		63-130	1		20
1,1,2-Trichloroethane	99		96		70-130	3		20
Tetrachloroethene	110		100		70-130	10		20
Chlorobenzene	97		95		75-130	2		25
Trichlorofluoromethane	110		110		62-150	0		20
1,2-Dichloroethane	110		110		70-130	0		20
1,1,1-Trichloroethane	110		100		67-130	10		20
Bromodichloromethane	93		93		67-130	0		20
trans-1,3-Dichloropropene	95		96		70-130	1		20
cis-1,3-Dichloropropene	100		100		70-130	0		20
1,1-Dichloropropene	110		100		70-130	10		20
Bromoform	86		89		54-136	3		20
1,1,2,2-Tetrachloroethane	96		97		67-130	1		20
Benzene	100		100		70-130	0		25
Toluene	100		96		70-130	4		25
Ethylbenzene	92		89		70-130	3		20
Chloromethane	90		93		64-130	3		20
Bromomethane	110		90		39-139	20		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1056892-3 WG1056892-4								
Vinyl chloride	110		110		55-140	0		20
Chloroethane	110		100		55-138	10		20
1,1-Dichloroethene	110		110		61-145	0		25
Trichloroethene	97		95		70-130	2		25
1,2-Dichlorobenzene	94		92		70-130	2		20
1,3-Dichlorobenzene	94		94		70-130	0		20
1,4-Dichlorobenzene	94		94		70-130	0		20
Methyl tert butyl ether	91		92		63-130	1		20
p/m-Xylene	100		95		70-130	5		20
o-Xylene	95		95		70-130	0		20
cis-1,2-Dichloroethene	99		97		70-130	2		20
Dibromomethane	95		97		70-130	2		20
1,4-Dichlorobutane	96		99		70-130	3		20
1,2,3-Trichloropropane	92		96		64-130	4		20
Styrene	95		95		70-130	0		20
Dichlorodifluoromethane	100		100		36-147	0		20
Acetone	96		100		58-148	4		20
Carbon disulfide	120		110		51-130	9		20
2-Butanone	93		96		63-138	3		20
Vinyl acetate	100		100		70-130	0		20
4-Methyl-2-pentanone	85		88		59-130	3		20
2-Hexanone	77		80		57-130	4		20
Ethyl methacrylate	83		85		70-130	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1056892-3 WG1056892-4								
Acrylonitrile	92		95		70-130	3		20
Bromochloromethane	100		110		70-130	10		20
Tetrahydrofuran	90		95		58-130	5		20
2,2-Dichloropropane	110		110		63-133	0		20
1,2-Dibromoethane	94		95		70-130	1		20
1,3-Dichloropropane	96		95		70-130	1		20
1,1,1,2-Tetrachloroethane	97		82		64-130	17		20
Bromobenzene	94		92		70-130	2		20
n-Butylbenzene	100		100		53-136	0		20
sec-Butylbenzene	110		110		70-130	0		20
tert-Butylbenzene	100		100		70-130	0		20
o-Chlorotoluene	100		99		70-130	1		20
p-Chlorotoluene	99		98		70-130	1		20
1,2-Dibromo-3-chloropropane	79		82		41-144	4		20
Hexachlorobutadiene	92		90		63-130	2		20
Isopropylbenzene	100		100		70-130	0		20
p-Isopropyltoluene	100		98		70-130	2		20
Naphthalene	83		85		70-130	2		20
n-Propylbenzene	100		100		69-130	0		20
1,2,3-Trichlorobenzene	85		87		70-130	2		20
1,2,4-Trichlorobenzene	87		87		70-130	0		20
1,3,5-Trimethylbenzene	100		98		64-130	2		20
1,2,4-Trimethylbenzene	98		98		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1056892-3 WG1056892-4								
trans-1,4-Dichloro-2-butene	100		95		70-130	5		20
Ethyl ether	98		97		59-134	1		20
Tert-Butyl Alcohol	84		94		70-130	11		20
Tertiary-Amyl Methyl Ether	98		100		66-130	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		96		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	102		100		70-130
Dibromofluoromethane	97		100		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1055691-3		QC Sample: L1737756-01		Client ID: MS Sample							
1,2-Dibromoethane	ND	0.259	0.219	84		-	-		80-120	-		20	A
1,2-Dibromo-3-chloropropane	ND	0.259	0.200	**77**	Q	-	-		80-120	-		20	A

SEMIVOLATILES

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01
Client ID: HA17-B9
Sample Location: ALBANY STREET, BOSTON, MA

Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 10/27/17 16:32
Analyst: CB

Date Collected: 10/23/17 11:40
Date Received: 10/23/17
Field Prep: None
Extraction Method: EPA 3510C
Extraction Date: 10/24/17 08:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1

Project Name: BU DENTAL BUILDING **Lab Number:** L1738448

Project Number: 125883-002 **Report Date:** 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01 Date Collected: 10/23/17 11:40

Client ID: HA17-B9 Date Received: 10/23/17

Sample Location: ALBANY STREET, BOSTON, MA Field Prep: None

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	43		21-120
Phenol-d6	32		10-120
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	68		15-120
2,4,6-Tribromophenol	71		10-120
4-Terphenyl-d14	71		41-149

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01
Client ID: HA17-B9
Sample Location: ALBANY STREET, BOSTON, MA

Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 10/26/17 17:49
Analyst: DV

Date Collected: 10/23/17 11:40
Date Received: 10/23/17
Field Prep: None
Extraction Method: EPA 3510C
Extraction Date: 10/24/17 08:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

Project Name: BU DENTAL BUILDING **Lab Number:** L1738448

Project Number: 125883-002 **Report Date:** 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01 Date Collected: 10/23/17 11:40

Client ID: HA17-B9 Date Received: 10/23/17

Sample Location: ALBANY STREET, BOSTON, MA Field Prep: None

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	87		15-120
2,4,6-Tribromophenol	118		10-120
4-Terphenyl-d14	111		41-149

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 10/25/17 09:15
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 10/24/17 02:46

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1055494-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
1-Methylnaphthalene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 10/25/17 09:15
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 10/24/17 02:46

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1055494-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		21-120
Phenol-d6	35		10-120
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	64		15-120
2,4,6-Tribromophenol	71		10-120
4-Terphenyl-d14	68		41-149

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/27/17 15:13
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 10/24/17 08:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1055559-1 .					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/27/17 15:13
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 10/24/17 08:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1055559-1 .					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/27/17 15:13
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 10/24/17 08:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1055559-1 .					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	3.5	--
Tentatively Identified Compounds					
No Tentatively Identified Compounds	ND		ug/l		

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/27/17 15:13
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 10/24/17 08:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1055559-1 .					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	39		21-120
Phenol-d6	27		10-120
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	66		15-120
2,4,6-Tribromophenol	80		10-120
4-Terphenyl-d14	79		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1055494-2 WG1055494-3								
Acenaphthene	65		73		37-111	12		40
2-Chloronaphthalene	64		74		40-140	14		40
Fluoranthene	66		70		40-140	6		40
Hexachlorobutadiene	50		61		40-140	20		40
Naphthalene	60		70		40-140	15		40
Benzo(a)anthracene	71		75		40-140	5		40
Benzo(a)pyrene	71		77		40-140	8		40
Benzo(b)fluoranthene	70		77		40-140	10		40
Benzo(k)fluoranthene	74		80		40-140	8		40
Chrysene	68		73		40-140	7		40
Acenaphthylene	70		79		40-140	12		40
Anthracene	71		77		40-140	8		40
Benzo(ghi)perylene	73		80		40-140	9		40
Fluorene	69		77		40-140	11		40
Phenanthrene	66		72		40-140	9		40
Dibenzo(a,h)anthracene	67		74		40-140	10		40
Indeno(1,2,3-cd)pyrene	69		75		40-140	8		40
Pyrene	65		69		26-127	6		40
1-Methylnaphthalene	61		70		40-140	14		40
2-Methylnaphthalene	60		70		40-140	15		40
Pentachlorophenol	69		77		9-103	11		40
Hexachlorobenzene	61		69		40-140	12		40
Hexachloroethane	57		72		40-140	23		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

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

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1055494-2 WG1055494-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	43		50		21-120
Phenol-d6	35		40		10-120
Nitrobenzene-d5	67		79		23-120
2-Fluorobiphenyl	60		69		15-120
2,4,6-Tribromophenol	66		72		10-120
4-Terphenyl-d14	65		67		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1055559-2 WG1055559-3								
Acenaphthene	87		98		37-111	12		30
Benzidine	**4**	Q	**3**	Q	10-75	**36**	Q	30
1,2,4-Trichlorobenzene	70		87		39-98	22		30
Hexachlorobenzene	91		100		40-140	9		30
Bis(2-chloroethyl)ether	89		98		40-140	10		30
2-Chloronaphthalene	86		97		40-140	12		30
1,2-Dichlorobenzene	59		81		40-140	**31**	Q	30
1,3-Dichlorobenzene	54		77		40-140	**35**	Q	30
1,4-Dichlorobenzene	57		79		36-97	**32**	Q	30
3,3'-Dichlorobenzidine	58		69		40-140	17		30
2,4-Dinitrotoluene	96		111		48-143	14		30
2,6-Dinitrotoluene	97		106		40-140	9		30
Azobenzene	86		98		40-140	13		30
Fluoranthene	89		103		40-140	15		30
4-Chlorophenyl phenyl ether	87		97		40-140	11		30
4-Bromophenyl phenyl ether	88		97		40-140	10		30
Bis(2-chloroisopropyl)ether	90		101		40-140	12		30
Bis(2-chloroethoxy)methane	92		103		40-140	11		30
Hexachlorobutadiene	58		82		40-140	**34**	Q	30
Hexachlorocyclopentadiene	52		66		40-140	24		30
Hexachloroethane	50		78		40-140	**44**	Q	30
Isophorone	95		104		40-140	9		30
Naphthalene	76		92		40-140	19		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1055559-2 WG1055559-3								
Nitrobenzene	91		100		40-140	9		30
NDPA/DPA	84		98		40-140	15		30
n-Nitrosodi-n-propylamine	98		109		29-132	11		30
Bis(2-ethylhexyl)phthalate	106		126		40-140	17		30
Butyl benzyl phthalate	90		118		40-140	27		30
Di-n-butylphthalate	101		120		40-140	17		30
Di-n-octylphthalate	104		120		40-140	14		30
Diethyl phthalate	92		103		40-140	11		30
Dimethyl phthalate	92		101		40-140	9		30
Benzo(a)anthracene	95		107		40-140	12		30
Benzo(a)pyrene	94		111		40-140	17		30
Benzo(b)fluoranthene	96		118		40-140	21		30
Benzo(k)fluoranthene	103		109		40-140	6		30
Chrysene	92		106		40-140	14		30
Acenaphthylene	89		99		45-123	11		30
Anthracene	92		107		40-140	15		30
Benzo(ghi)perylene	95		108		40-140	13		30
Fluorene	87		96		40-140	10		30
Phenanthrene	88		103		40-140	16		30
Dibenzo(a,h)anthracene	99		110		40-140	11		30
Indeno(1,2,3-cd)pyrene	105		116		40-140	10		30
Pyrene	85		99		26-127	15		30
Biphenyl	73		80		40-140	9		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1055559-2 WG1055559-3								
Aniline	52		59		40-140	13		30
4-Chloroaniline	67		76		40-140	13		30
1-Methylnaphthalene	84		94		41-103	11		30
2-Nitroaniline	101		112		52-143	10		30
3-Nitroaniline	77		86		25-145	11		30
4-Nitroaniline	80		90		51-143	12		30
Dibenzofuran	86		98		40-140	13		30
2-Methylnaphthalene	77		93		40-140	19		30
n-Nitrosodimethylamine	58		64		22-74	10		30
2,4,6-Trichlorophenol	95		105		30-130	10		30
p-Chloro-m-cresol	91		**107**	Q	23-97	16		30
2-Chlorophenol	89		100		27-123	12		30
2,4-Dichlorophenol	94		104		30-130	10		30
2,4-Dimethylphenol	85		90		30-130	6		30
2-Nitrophenol	96		106		30-130	10		30
4-Nitrophenol	50		59		10-80	17		30
2,4-Dinitrophenol	82		98		20-130	18		30
4,6-Dinitro-o-cresol	87		103		20-164	17		30
Pentachlorophenol	77		85		9-103	10		30
Phenol	49		56		12-110	13		30
2-Methylphenol	81		92		30-130	13		30
3-Methylphenol/4-Methylphenol	76		87		30-130	13		30
2,4,5-Trichlorophenol	91		103		30-130	12		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1055559-2 WG1055559-3								
Benzoic Acid	34		38		10-164	11		30
Benzyl Alcohol	84		94		26-116	11		30
Carbazole	91		107		55-144	16		30
Pyridine	37		43		10-66	15		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	53		55		21-120
Phenol-d6	37		40		10-120
Nitrobenzene-d5	79		82		23-120
2-Fluorobiphenyl	74		76		15-120
2,4,6-Tribromophenol	83		85		10-120
4-Terphenyl-d14	72		77		41-149

PCBS

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01
Client ID: HA17-B9
Sample Location: ALBANY STREET, BOSTON, MA

Matrix: Water
Analytical Method: 5,608
Analytical Date: 10/27/17 23:03
Analyst: HT

Date Collected: 10/23/17 11:40
Date Received: 10/23/17
Field Prep: None
Extraction Method: EPA 608
Extraction Date: 10/26/17 05:49
Cleanup Method: EPA 3665A
Cleanup Date: 10/27/17
Cleanup Method: EPA 3660B
Cleanup Date: 10/27/17

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	87		30-150	A
Decachlorobiphenyl	74		30-150	A

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,608
Analytical Date: 10/27/17 23:52
Analyst: HT

Extraction Method: EPA 608
Extraction Date: 10/26/17 05:49
Cleanup Method: EPA 3665A
Cleanup Date: 10/27/17
Cleanup Method: EPA 3660B
Cleanup Date: 10/27/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG1056441-1						
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	71		30-150	A
Decachlorobiphenyl	74		30-150	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG1056441-2									
Aroclor 1016	107		-		30-150	-		30	A
Aroclor 1260	101		-		30-150	-		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78				30-150	A
Decachlorobiphenyl	79				30-150	A

Matrix Spike Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1056441-3 QC Sample: L1700010-116 Client ID: MS Sample													
Aroclor 1016	ND	3.12	3.33	107		-	-		40-126	-		30	A
Aroclor 1260	ND	3.12	3.12	100		-	-		40-127	-		30	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	77				30-150	A
Decachlorobiphenyl	76				30-150	A

Lab Duplicate Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits	
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1056441-4 QC Sample: L1700010-116 Client ID: DUP Sample							
Aroclor 1016	ND	ND	ug/l	NC		30	A
Aroclor 1221	ND	ND	ug/l	NC		30	A
Aroclor 1232	ND	ND	ug/l	NC		30	A
Aroclor 1242	ND	ND	ug/l	NC		30	A
Aroclor 1248	ND	ND	ug/l	NC		30	A
Aroclor 1254	ND	ND	ug/l	NC		30	A
Aroclor 1260	ND	ND	ug/l	NC		30	A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	80		72		30-150	A
Decachlorobiphenyl	81		74		30-150	A

METALS

Project Name: BU DENTAL BUILDING
Lab Number: L1738448
Project Number: 125883-002
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01
Client ID: HA17-B9
Sample Location: ALBANY STREET, BOSTON, MA
Matrix: Water

Date Collected: 10/23/17 11:40
Date Received: 10/23/17
Field Prep: None

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	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Arsenic, Total	0.00354		mg/l	0.00100	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Iron, Total	1.81		mg/l	0.050	--	1	10/25/17 10:00	10/26/17 19:09	EPA 3005A	19,200.7	AB
Lead, Total	ND		mg/l	0.00050	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	10/25/17 14:00	10/26/17 13:58	EPA 245.1	3,245.1	MG
Nickel, Total	ND		mg/l	0.00200	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	10/25/17 10:00	10/25/17 14:39	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	564		mg/l	0.660	NA	1	10/25/17 10:00	10/26/17 19:09	EPA 3005A	19,200.7	AB
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		10/25/17 14:39	NA	107,-	

Project Name: BU DENTAL BUILDING **Lab Number:** L1738448

Project Number: 125883-002 **Report Date:** 10/30/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1056011-1										
Antimony, Total	ND		mg/l	0.00400	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Arsenic, Total	ND		mg/l	0.0010	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Lead, Total	ND		mg/l	0.0005	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	10/25/17 10:00	10/25/17 13:36	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1056013-1										
Iron, Total	ND		mg/l	0.050	--	1	10/25/17 10:00	10/26/17 17:48	19,200.7	AB

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 Batch: WG1056013-1										
Hardness	ND		mg/l	0.660	NA	1	10/25/17 10:00	10/26/17 17:48	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1056195-1										
Mercury, Total	ND		mg/l	0.00020	--	1	10/25/17 14:00	10/26/17 13:45	3,245.1	MG

Prep Information

Digestion Method: EPA 245.1

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1056011-2								
Antimony, Total	88		-		85-115	-		
Arsenic, Total	99		-		85-115	-		
Cadmium, Total	103		-		85-115	-		
Chromium, Total	98		-		85-115	-		
Copper, Total	98		-		85-115	-		
Lead, Total	101		-		85-115	-		
Nickel, Total	98		-		85-115	-		
Selenium, Total	104		-		85-115	-		
Silver, Total	94		-		85-115	-		
Zinc, Total	96		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1056013-2								
Iron, Total	102		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1056013-2								
Hardness	103		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1056195-2								
Mercury, Total	109		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056011-3 QC Sample: L1738414-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.5716	114		-	-		70-130	-		20
Arsenic, Total	0.00573	0.12	0.1320	105		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05720	112		-	-		70-130	-		20
Chromium, Total	0.01247	0.2	0.2114	99		-	-		70-130	-		20
Copper, Total	ND	0.25	0.2546	102		-	-		70-130	-		20
Lead, Total	ND	0.51	0.5291	104		-	-		70-130	-		20
Nickel, Total	0.00440	0.5	0.5088	101		-	-		70-130	-		20
Selenium, Total	0.00500	0.12	0.1310	105		-	-		70-130	-		20
Silver, Total	ND	0.05	0.04851	97		-	-		70-130	-		20
Zinc, Total	ND	0.5	0.5210	104		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056011-5 QC Sample: L1738426-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.4849	97		-	-		70-130	-		20
Arsenic, Total	ND	0.12	0.1215	101		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05367	105		-	-		70-130	-		20
Chromium, Total	ND	0.2	0.1964	98		-	-		70-130	-		20
Copper, Total	0.0053	0.25	0.2477	97		-	-		70-130	-		20
Lead, Total	0.0014	0.51	0.5064	99		-	-		70-130	-		20
Nickel, Total	ND	0.5	0.4946	99		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1235	103		-	-		70-130	-		20
Silver, Total	ND	0.05	0.04788	96		-	-		70-130	-		20
Zinc, Total	ND	0.5	0.4813	96		-	-		70-130	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056013-3 QC Sample: L1738414-01 Client ID: MS Sample										
Iron, Total	237	1	227	**0**	Q	-	-	75-125	-	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056013-3 QC Sample: L1738414-01 Client ID: MS Sample										
Hardness	1650	66.2	1640	**0**	Q	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056195-3 QC Sample: L1738414-01 Client ID: MS Sample										
Mercury, Total	ND	0.005	0.00464	93		-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056195-5 QC Sample: L1738448-01 Client ID: HA17-B9										
Mercury, Total	ND	0.005	0.00458	92		-	-	70-130	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056011-4 QC Sample: L1738414-01 Client ID: DUP Sample						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	0.00573	0.0058	mg/l	1		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.01247	0.01273	mg/l	2		20
Copper, Total	ND	ND	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Nickel, Total	0.00440	0.00437	mg/l	1		20
Selenium, Total	0.00500	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056011-6 QC Sample: L1738426-01 Client ID: DUP Sample						
Arsenic, Total	ND	ND	mg/l	NC		20
Lead, Total	0.0014	0.0015	mg/l	2		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056013-4 QC Sample: L1738414-01 Client ID: DUP Sample						
Iron, Total	237	239	mg/l	1		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056195-4 QC Sample: L1738414-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1056195-6 QC Sample: L1738448-01 Client ID: HA17-B9					
Mercury, Total	ND	ND	mg/l	NC	20

INORGANICS
&
MISCELLANEOUS

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1738448-01
Client ID: HA17-B9
Sample Location: ALBANY STREET, BOSTON, MA
Matrix: Water

Date Collected: 10/23/17 11:40
Date Received: 10/23/17
Field Prep: None

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
SALINITY	4.2		SU	2.0	--	1	-	10/26/17 18:37	121,2520B	AS
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	10/24/17 04:50	121,2540D	VB
Cyanide, Total	ND		mg/l	0.005	--	1	10/24/17 15:35	10/25/17 12:49	121,4500CN-CE	LH
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	10/23/17 21:33	121,4500CL-D	AS
Nitrogen, Ammonia	0.986		mg/l	0.075	--	1	10/24/17 02:15	10/24/17 21:14	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	4.00	--	1	10/25/17 16:30	10/25/17 22:00	74,1664A	ML
Phenolics, Total	ND		mg/l	0.030	--	1	10/24/17 19:00	10/24/17 22:05	4,420.1	ML
Chromium, Hexavalent	ND		mg/l	0.010	--	1	10/23/17 23:55	10/24/17 00:32	1,7196A	JC
Anions by Ion Chromatography - Westborough Lab										
Chloride	2580		mg/l	50.0	--	100	-	10/24/17 20:01	44,300.0	AU

Project Name: BU DENTAL BUILDING
Project Number: 125883-002
Lab Number: L1738448
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1055420-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	10/23/17 21:33	121,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1055463-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	10/24/17 02:15	10/24/17 20:57	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1055464-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	10/23/17 23:55	10/24/17 00:30	1,7196A	JC
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1055481-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	10/24/17 04:50	121,2540D	VB
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1055756-1										
Cyanide, Total	ND		mg/l	0.005	--	1	10/24/17 15:35	10/25/17 12:37	121,4500CN-CE	LH
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1055890-1										
Phenolics, Total	ND		mg/l	0.030	--	1	10/24/17 19:00	10/24/17 21:59	4,420.1	ML
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1056270-1										
TPH, SGT-HEM	ND		mg/l	4.00	--	1	10/25/17 16:30	10/25/17 22:00	74,1664A	ML
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1056326-1										
Chloride	ND		mg/l	0.500	--	1	-	10/24/17 19:13	44,300.0	AU

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1055420-2								
Chlorine, Total Residual	97		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1055463-2								
Nitrogen, Ammonia	92		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1055464-2								
Chromium, Hexavalent	98		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1055756-2								
Cyanide, Total	97		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1055890-2								
Phenolics, Total	94		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1056270-2								
TPH	86		-		64-132	-		34
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1056326-2								
Chloride	105		-		90-110	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: BU DENTAL BUILDING

Project Number: 125883-002

Lab Number: L1738448

Report Date: 10/30/17

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1056756-1					
SALINITY	106	-		-	

Matrix Spike Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055420-4 QC Sample: L1738340-01 Client ID: MS Sample												
Chlorine, Total Residual	ND	0.248	0.21	85		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055463-6 QC Sample: L1737982-01 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	3.61	90		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055464-3 QC Sample: L1738448-01 Client ID: HA17-B9												
Chromium, Hexavalent	ND	0.1	0.095	95		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055756-4 QC Sample: L1738448-01 Client ID: HA17-B9												
Cyanide, Total	ND	0.2	0.189	94		-	-		90-110	-		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055890-4 QC Sample: L1738448-01 Client ID: HA17-B9												
Phenolics, Total	ND	0.4	0.41	102		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1056270-4 QC Sample: L1738498-02 Client ID: MS Sample												
TPH	ND	20	16.1	80		-	-		64-132	-		34
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1056326-3 QC Sample: L1738486-02 Client ID: MS Sample												
Chloride	ND	4	4.18	104		-	-		90-110	-		18

Lab Duplicate Analysis
Batch Quality Control

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055420-3 QC Sample: L1738340-01 Client ID: DUP Sample						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055463-5 QC Sample: L1737982-01 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055464-4 QC Sample: L1738448-01 Client ID: HA17-B9						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055481-2 QC Sample: L1738196-01 Client ID: DUP Sample						
Solids, Total Suspended	2200	1900	mg/l	15		29
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055756-3 QC Sample: L1738114-02 Client ID: DUP Sample						
Cyanide, Total	0.016	0.020	mg/l	24		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1055890-3 QC Sample: L1738448-01 Client ID: HA17-B9						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1056270-3 QC Sample: L1738498-02 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1056326-4 QC Sample: L1738486-02 Client ID: DUP Sample						
Chloride	ND	ND	mg/l	NC		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1056756-2 QC Sample: L1738448-01 Client ID: HA17-B9						
SALINITY	4.2	4.2	SU	0		

Project Name: BU DENTAL BUILDING
Project Number: 125883-002

Lab Number: L1738448
Report Date: 10/30/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1738448-01A	Vial HCl preserved	B	NA		5.2	Y	Absent		8260-SIM(14),8260(14)
L1738448-01B	Vial HCl preserved	B	NA		5.2	Y	Absent		8260-SIM(14),8260(14)
L1738448-01C	Vial HCl preserved	B	NA		5.2	Y	Absent		8260-SIM(14),8260(14)
L1738448-01D	Vial Na2S2O3 preserved	B	NA		5.2	Y	Absent		504(14)
L1738448-01E	Vial Na2S2O3 preserved	B	NA		5.2	Y	Absent		504(14)
L1738448-01F	Plastic 250ml HNO3 preserved	B	<2	<2	5.2	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),HARDU(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L1738448-01G	Plastic 250ml HNO3 preserved	B	7	<2	5.2	N	Absent		HOLD-METAL-DISSOLVED(180)
L1738448-01H	Plastic 950ml unpreserved	B	7	7	5.2	Y	Absent		TSS-2540(7)
L1738448-01I	Plastic 950ml unpreserved	B	7	7	5.2	Y	Absent		CL-300(28),HEXCR-7196(1),HOLD-WETCHEM(),TRC-4500(1)
L1738448-01J	Plastic 500ml H2SO4 preserved	B	<2	<2	5.2	Y	Absent		NH3-4500(28)
L1738448-01K	Amber 950ml H2SO4 preserved	B	<2	<2	5.2	Y	Absent		TPHENOL-420(28)
L1738448-01L	Amber 1000ml HCl preserved	B	NA		5.2	Y	Absent		TPH-1664(28)
L1738448-01M	Amber 1000ml HCl preserved	B	NA		5.2	Y	Absent		TPH-1664(28)
L1738448-01N	Plastic 250ml NaOH preserved	B	>12	>12	5.2	Y	Absent		TCN-4500(14)
L1738448-01N1	Plastic 250ml NaOH preserved	B	>12	>12	5.2	Y	Absent		TCN-4500(14)
L1738448-01O	Amber 1000ml Na2S2O3	B	7	7	5.2	Y	Absent		PCB-608(7)
L1738448-01P	Amber 1000ml Na2S2O3	B	7	7	5.2	Y	Absent		PCB-608(7)
L1738448-01Q	Amber 1000ml unpreserved	B	7	7	5.2	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1738448-01R	Amber 1000ml unpreserved	B	7	7	5.2	Y	Absent		SALINITY(28)

*Values in parentheses indicate holding time in days

Project Name:	BU DENTAL BUILDING	**Lab Number:**	L1738448
Project Number:	125883-002	**Report Date:**	10/30/17

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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.

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.

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 Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	BU DENTAL BUILDING	**Lab Number:**	L1738448
Project Number:	125883-002	**Report Date:**	10/30/17

Data Qualifiers

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.

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

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

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

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

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

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

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

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name:	BU DENTAL BUILDING	**Lab Number:**	L1738448
Project Number:	125883-002	**Report Date:**	10/30/17

REFERENCES

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

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

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

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

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

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

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

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

107 Alpha Analytical - In-house calculation method.

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

LIMITATION OF LIABILITIES

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

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

Certification Information

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

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

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

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

Westborough Facility:

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

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

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

ALPHA ANALYTICAL

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

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

Page 1 of 1

Date Rec'd in Lab: 10/23/17

ALPHA Job #: L1738448

H&A Information

H&A Client: Boston University
H&A Address: 465 Medford St
Boston, MA 02129-1400
H&A Phone: 617-886-7400
H&A Fax:
H&A Email: Kalepidis, Lhoward

Project Information

Project Name: BU Dental Building
Project Location: Albany Street, Boston, MA
Project #: 125883-002
(Use Project name as Project #)
Project Manager: A. Chan
ALPHAQuote #:

Turn-Around Time

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

Deliverables

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

Regulatory Requirements (Program/Criteria)

MA NPDES RGP

Note: Select State from menu & identify criteria.

Billing Information

☑ Same as Client Info
PO #

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:

**Field Filtered
PLEASE RUN FOR FULL 2017 RGP SUITE, MINUS ETHANOL
Analyze using the EPA 2017 RGP Approved Testing Methods

Please specify Metals or TAL.

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TSS-2540, TRC-4500	TCN-4500, 504	8260, 8260-SIM for Dioxane	HEXCR-3500, Trivalent Chromium	8270TCL (also including Diethylhexylphthalate),	8270TCL-SIM	Total Metals: Ag, As, Cd, Cr, Cu, Ni, Pb, Sb, Se, Zn, Fe, Hg	CL-300	Ammonia	Salinity, hardness	TPH-1664, PCB-608, TPHENOL-420	HOLD PACN	HOLD 'ACN'	**HOLD DISSOLVED METALS			Sample Specific Comments	Total Bottles
38448-01	HA17-B9	10/23/17	1140	AQ	AF	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Dissolved metals F.F.	19

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]	10/23/17	[illegible]	10/23/17 16:30
[illegible]	10/23/17 1630	[illegible]	10/23/17 1630
[illegible]	10/23/17 1830	[illegible]	10/23/17 1830

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 (1/26/2016)

APPENDIX F

Contractor Dewatering Submittal

Lockwood Remediation Technologies, LLC

700 Series Floc Logs

Polyacrylamide Sediment and Turbidity Control Applicator Logs

700 Series Floc Logs are a group of soil-specific tailored log-blocks that contain blends of water treatment components and polyacrylamide co-polymer for water clarification. They reduce and prevent fine particles and colloidal clays from suspension in stormwater. There are several types of Floc Logs designed to treat most water and soil types. Contact Applied Polymer Systems, Inc. or your local distributor for free testing and site-specific application information.

Primary Applications

- Mine tailings and waste pile ditches
- Stormwater drainage from construction and building sites
- Road and highway construction runoff ditches
- Ditch and treatment system placement for all forms of highly turbid waters (less than 4% solids)
- Dredging operations as a flocculent

Features and Benefits

- Removes solubilized soils and clay from water
- Prevents colloidal solutions in water within ditch systems
- Binds cationic metals within water, reducing solubilization
- Binds pesticides and fertilizers within runoff water
- Reduces operational and cleanup costs
- Reduces environmental risks and helps meet compliance

Specifications / Compliances

- ANSI/NSF Standard 60 Drinking water treatment chemical additives
- 48h or 96h Acute Toxicity Tests (*D. magna* or *O. mykiss*)
- 7 Day Chronic Toxicity Tests *(P. promealas* or *C. dubia*

Packaging

700 Series Floc Logs are packaged in boxes of four (4)

Technical Information

Appearance - semi-solid block
Biodegradable internal coconut skeleton
Percent Moisture - 40% maximum
pH 0.5% Solution - 6-8
Shelf Life – up to 5 years when stored out of UV rays

Office: 774-450-7177 • Fax: 888-835-0617 89 Crawford Street • Leominster, MA 01453

Placement

Floc Logs are designed for placement within ditches averaging three feet wide by two feet deep. Floc log placement is based on gallon per minute flow rates. Note: actual GPM or dosage will vary based on site criteria and soil/water testing.

Directions for Use

(Water and Floc Log Mixing is Very Important!)

700 Series Floc Logs should be placed within the upper quarter to half of a *stabilized* ditch system or as close as possible to active earth moving activities. Floc Logs have built in ropes with attachment loops which can be looped over stakes to ensure they remain where placed. Mixing is key! If the flow rate is too slow, adding sand bags, cinder blocks, etc., can create the turbulence required for proper mixing. Floc Logs are designed to treat dirty water, not liquid mud; when the water contains heavy solids (exceeding 4%), it will be necessary to create a sediment or grit pit to let the heavy solids settle before treating the water.

Floc Logs must not be placed in areas where heavy erosion would result in the Floc Logs becoming buried. Where there is heavy sedimentation, maintenance will be required.

700 Series Floc Logs can easily be moved to different locations as site conditions change. Water quality will be improved with the addition of a dispersion field or soft armor covered ditch checks below the Floc Log(s) to collect flocculated particulate. Construction of mixing weirs may be required in areas where short ditch lines, swelling clays, heavy particle concentrations, or steep slopes may be encountered.

Cleanup:

Latex or rubber gloves are recommended for handling during usage. Use soap and water to wash hands after handling.

Precautions / Limitations

- 700 Series Floc Logs are extremely slippery when wet.
- Clean up spills quickly. Do not use water unless necessary as extremely slippery conditions will result and if water is necessary, use pressure washer.
- Floc Log will remain viable for up to 5 years when stored out of UV rays.
- 700 Series Floc Logs have been specifically tailored to specific water and soil types and samples must be tested. Testing is necessary and is free.

Updated November 4, 2015

Applied Polymer Systems, Inc.

Safety Data Sheet

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Product Name: APS 703d #3 Floc Log®

Supplied:
Applied Polymer Systems, Inc.
519 Industrial Drive
Woodstock, GA 30189
Tel. 678-494-5998
Fax. 678-494-5298
www.siltstop.com

2. HAZARD IDENTIFICATION

Placement of these materials on wet walking surface will create extreme slipping hazard.

3. COMPOSITION/INFORMAION ON INGREDIENTS

Identification of the preparation: Anionic water-soluble Co-polymer gel

4. FIRST AID MEASURES

Inhalation: None

Skin contact: Contact with wet skin could cause dryness and chapping. Wash with water and soap. Use of gloves recommended.

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids, seek medical attention in case of persistent irritation.

Ingestion: Consult a physician

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water, water spray, foam, carbon dioxide, dry powder.

Special fire-fighting precautions: Floc Logs that become wet render surfaces extremely slippery.

Protective equipment for firefighters: No special equipment required.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: No special precautions required.

Methods for cleaning up: Dry wipe as well as possible, Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Wash hands after handling.

Storage: Keep in a cool, dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: Use dry handling areas only.

Personal protection equipment

Respiratory Protection:	None
Hand protection:	Dry cloth, leather or rubber gloves.
Eye Protection:	Safety glasses with side shields. Do not wear contact lenses.
Skin protection:	No special protective clothing required.
Hygiene measures:	Wash hands before breaks and at end of work day.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Granular semi-solid gel
Color:	Blue
Odor:	None
pH:	7.73
Melting point:	N/A
Flash point:	N/A
Vapor density:	N/A

10. STABILITY AND REACTIVITY

Stability: Product is stable, no hazardous polymerization will occur.

Materials to avoid: Oxidizing agents may cause exothermic reactions.

Hazardous decomposition products: Thermal decomposition may produce nitrogen oxides (NOx), carbon oxides.

11. TOXICOLOGICAL INFORMATION

Acute toxicity (EPA-821-R-02-012)

LC 50 (Survival) / *Ceriodaphnia dubia* / 48h / 673 ppm
NOAEC (Survival) / *Ceriodaphnia dubia* / 48h / 420 ppm
LC 50 / *Oncorhynchus mykiss* / 96h / 2928 ppm

12. ECOLOGICAL INFORMATION

Chronic toxicity (EPA-821-R-02-013)

IC 25 (Survival) / *P. promelas* / 7 day / 77.8 ppm
NOEC (Survival) / *P. promelas* / 7 day / 52.5 ppm

IC 25 (Survival) / *C. dubia* / 7 day / 78.7 ppm
NOEC (Survival) / *C. dubia* / 7 day / 52.7 ppm

IC 25 (Growth) / *P. promelas* / 7 day / 50.1 ppm
NOEC (Growth) / *P. promelas* / 7 day / 52.5 ppm

IC 25 (Reproduction) / *C. dubia* / 7 day / 66.8 ppm
NOEC (Reproduction) / *C. dubia* / 7 day / 52.5 ppm

Bioaccumulation: The product is not expected to bioaccumulate.
Persistence / degradability: Not readily biodegradable: (~85% after 180 days).

13. DISPOSAL CONSIDERATIONS

Waste from residues/unused products.
Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environmental agency for specific rules).

14. TRANSPORT INFORMATION

Not regulated by DOT, RCRA status-Not a hazardous waste

15. REGULATORY INFORMATION

TSCA Chemical Substances Inventory: All components of this product are either listed on the inventory or are exempt from listing.

SARA Section 311 / 312 Hazard Class:	**Not concerned**
RCRA Status:	**Not RCRA hazardous**

16. OTHER INFORMATION

NFPA and HMIS ratings:

NFPA	**Health:**	**1**	**Flammability:**	**0**	**Reactivity:**	**0**
HMIS	**Health**	**1**	**Flammability**	**0**	**Reactivity**	**0**

DATE EDITED: Nov 4th 2015

Updated 1-11-16

Applied Polymer Systems, Inc.

Safety Data Sheet

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Product Name: APS 712 Silt Stop

Supplied:
Applied Polymer Systems Inc.
Woodstock, GA 30189
Tel. 678-494-5998
Fax. 678-494-5298
www.siltstop.com

2. HAZARD IDENTIFICATION

Aqueous solutions and powders that become wet render surfaces extremely slippery.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Identification of the preparation: Anionic water-soluble co-polymer blend

4. FIRST AID MEASURES

Inhalation: Move to fresh air. Wear dust mask while handling.

Skin contact: Contact with wet skin could cause chapping and dryness. Wash with water and soap. In case of persistent skin irritation, consult a physician.

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids, seek medical attention in case of persistent irritation.

Ingestion: Consult a physician

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water, water spray, foam, carbon dioxide, dry powder.
Special fire-fighting precautions: Aqueous solutions or powders that become wet render surfaces extremely slippery.
Protective equipment for firefighters: No special equipment required.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: No special precautions required.

Methods for cleaning up: Do Not flush with water. Clean up promptly by sweeping or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Avoid dust formation. Do not breath dust. Use dust mask during handling. Wash hands after handling.

Storage: Keep in a cool, dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dust.

Personal protection equipment

Respiratory Protection:	Dust safety masks are recommended where dusting may occur.
Hand protection:	Dry cloth, leather or rubber gloves.
Eye Protection:	Safety glasses with side shields or face masks. Do not wear contact lenses.
Skin protection:	No special protective clothing required.
Hygiene measures:	Wash hands before breaks and at end of work day.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Granular solid
Color:	White / Brown
Odor:	None
pH:	7.02
Melting point:	N/A
Flash point:	N/A
Vapor density:	N/A

10. STABILITY AND REACTIVITY

Stability:	Product is stable, no hazardous polymerization will occur.
Materials to avoid:	Oxidizing agents may cause exothermic reactions.
Hazardous decomposition products:	Thermal decomposition may produce nitrogen oxides (NOx), carbon oxides.

11. TOXICOLOGICAL /

Oral:	LD 50 / *Rattus norvegicus* / oral / > 5000 mg / kg
Inhalation:	The product is not expected to be toxic by inhalation. Use dust mask while handling.
Bioaccumulation:	The product is not expected to bioaccumulate.
Persistence / degradability:	Not readily biodegradable: (~40% after 28 days)

Acute toxicity

LC 50 / *Ceriodaphnia dubia* / 48h / 1,617 ppm
LC 50 / *Pimephales promelas* / 48 h / >6,720 ppm
LC 50 / *Pimephales promelas* / 96 h / >6,720 ppm

12. ECOLOGICAL INFORMATION

Chronic toxicity

IC 25 (Survival) / *Ceriodaphnia dubia* / 7day / 122.5 ppm
NOEC (Survival) / *Ceriodaphnia dubia* / 7day / 52.5 ppm

IC 25 (Reproduction) / *Ceriodaphnia dubia* / 7day / 59.3 ppm
NOEC (Reproduction) / *Ceriodaphnia dubia* / 7day / 52.5 ppm

13. DISPOSAL CONSIDERATIONS

Waste from residues/unused products.
Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environmental agency for specific rules).

14. TRANSPORT AND REGULATORY INFORMATION

Not regulated by DOT, **RCRA status-Not a hazardous waste**

15. TRANSPORT AND REGULATORY INFORMATION

TSCA Chemical Substances Inventory:	**All components of this product are either listed on the inventory or are exempt from listing.**
SARA Section 311 / 312 Hazard Class:	**Not concerned**
RCRA Status:	**Not RCRA hazardous**

16. OTHER INFORMATION

NFPA and HMIS ratings:

NFPA	**Health:**	**1**	**Flammability:**	**1**	**Reactivity:**	**0**
HMIS	**Health**	**1**	**Flammability**	**1**	**Reactivity**	**0**

DATE EDITED: Jan 11th 2016

Updated November 4, 2015

Applied Polymer Systems, Inc.

Safety Data Sheet

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Product Name: APS 706b Floc Log ®

Supplied:
519 Industrial Drive
Woodstock, GA 30189
Tel. 678-494-5998
Fax. 678-494-5298
www.siltstop.com

2. HAZARD IDENTIFICATION

Identification of the preparation: Anionic water-soluble Co-polymer gel mix

3. COMPOSITION/INFORMATION ON INGREDIENTS

Placement of these materials on wet walking surface will create extreme slipping hazard.

4. FIRST AID MEASURES

Inhalation: None

Skin contact: Contact with wet skin can cause dryness and chapping. Wash with water and soap.

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids, seek medical attention in case of persistent irritation.

Ingestion: Consult a physician

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water, water spray, foam, carbon dioxide, dry powder.

Special fire-fighting precautions: Floc Logs that become wet render surfaces extremely slippery.

Protective equipment for firefighters: No special equipment required.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: No special precautions required.

Methods for cleaning up: Dry wipe as well as possible, Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Wash hands after handling.

Storage: Keep in a cool, dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: Use dry handling areas only.

Personal protection equipment

Respiratory Protection: None
Hand protection: Dry cloth, leather or rubber gloves.
Eye Protection: Safety glasses with side shields. Do not wear contact lenses.
Skin protection: No special protective clothing required.
Hygiene measures: Wash hands before breaks and at end of work day.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Granular semi-solid gel
Color: Blue
Odor: None
pH: 7.66
Melting point: N/A
Flash point: N/A
Vapor density: N/A

10. STABILITY AND REACTIVITY

Stability: Product is stable, no hazardous polymerization will occur.

Materials to avoid: Oxidizing agents may cause exothermic reactions.

Hazardous decomposition products: Thermal decomposition may produce nitrogen oxides (NOx), carbon oxides.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LC 50 / *Daphnia magna* / 48h / >420mg/L
LC 50 / *Oncorhynchus mykiss* / 96h / 637 ppm

12. ECOLOGICAL INFORMATION

Chronic toxicity

IC 25 (Survival) / P. promelas / 7 day / >1680 ppm
NOEC (Survival) / P. promelas / 7 day / 1680 ppm

IC 25 (Survival) / C. dubia / 7 day / 257.3 ppm
NOEC (Survival) / C. dubia / 7 day / 210 ppm

IC 25 (Growth) / P. promelas / 7 day / >1680 ppm
NOEC (Survival) / P. promelas / 7 day / 1680 ppm

IC 25 (Reproduction) / C. dubia / 7 day / 91.6 ppm
NOEC (Reproduction) / C. dubia / 7 day / 105 ppm

Bioaccumulation: The product is not expected to bioaccumulate.

Persistence / degradability: Not readily biodegradable: (85% after 180 days).

13. DISPOSAL CONSIDERATIONS

Waste from residues/unused products.
Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environmental agency for specific rules).

14. TRANSPORT INFORMATION

Not regulated by DOT, RCRA status-Not a hazardous waste

15. REGULATORY INFORMATION

TSCA Chemical Substances Inventory: **All components of this product are either listed on the inventory or are exempt from listing.**

SARA Section 311 / 312 Hazard Class: **Not concerned**
RCRA Status: **Not RCRA hazardous**

16. OTHER INFORMATION

NFPA and HMIS ratings:

NFPA	**Health:**	**1**	**Flammability:**	**0**	**Reactivity:**	**0**
HMIS	**Health**	**1**	**Flammability**	**0**	**Reactivity**	**0**

DATE EDITED: Nov 4th 2015

Updated 10-29-15

Applied Polymer Systems, Inc.

Safety Data Sheet

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Product Name: APS 705 Silt Stop

Supplied:

Applied Polymer Systems, Inc.
519 Industrial Drive
Woodstock, GA 30189

Tel. 678-494-5998
Fax. 678-494-5298
www.siltstop.com

2. HAZARD IDENTIFICATION

Aqueous solutions or powders that become wet render surfaces extremely slippery.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Identification of the preparation: Anionic water-soluble Co-polymer

4. FIRST AID MEASURES

Inhalation: Move to fresh air. Use dust mask when handling.

Skin contact: Contact with wet skin could cause chapping and dryness. Wash with water and soap. In case of persistent skin irritation, consult a physician.

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids; seek medical attention in case of persistent irritation.

Ingestion: Consult a physician

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water, water spray, foam, carbon dioxide, dry powder.

Special fire-fighting precautions: Aqueous solutions or powders that become wet render surfaces extremely slippery.

Protective equipment for firefighters: No special equipment required.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: No special precautions required.

Methods for cleaning up: Do Not flush with water. Clean up promptly by sweeping or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Avoid dust formation. Do not breath dust. Use dust mask during handling. Wash hands after handling.

Storage: Keep in a cool, dry place. (0-30^0 C)

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dust.
Personal protection equipment
Respiratory Protection: Dust safety masks are recommended where dusting may occur.
Hand protection: Dry cloth, leather or rubber gloves.
Eye Protection: Safety glasses with side shields or face masks. Do not wear contact lenses.
Skin protection: No special protective clothing required.
Hygiene measures: Wash hands before breaks and at end of work day.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Granular solid
Color: White
Odor: None
pH: 7-8
Melting point: N/A
Flash point: N/A
Vapor density: N/A

10. STABILITY AND REACTIVITY

Stability: Product is stable, no hazardous polymerization will occur.
Materials to avoid: Oxidizing agents may cause exothermic reactions.
Hazardous decomposition products: Thermal decomposition may produce nitrogen oxides (NOx), carbon oxides.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: (EPA/600/4-90/027F)

LD 50 / *Rattus norvegicus* / oral / > 5000 mg/kg
LC 50 / *Oncorhynchus mykiss* / 96h / 530 mg/L
LC 50 / *Daphnia magna* / 48h / >420mg/L
EC 50 / *Selenastrum capricornutum* / 96h / >500mg/L

12. ECOLOGICAL INFORMATION

Chronic Toxicity : (EPA/600/R-98/182)

IC_{25} (Survival) / *P. promelas* / 7 day / 358 ppm
NOEC (Survival) / *P. promelas* / 7 day / 840 ppm

IC_{25} (Survival) / *C. dubia* / 7 day / 157.5 ppm
NOEC (Survival) / *C. dubia* / 7 day / 105 ppm

IC_{25} (Growth) / *P. promelas* / 7 day / 94 ppm
NOEC (Growth) / *P. promelas* / 7 day / 105 ppm

IC_{25} (Reproduction) / *C. dubia* / 7 day / 27.7 ppm
NOEC (Reproduction) / *C. dubia* / 7 day / 26.25 ppm

Inhalation: The product is not expected to be toxic by inhalation.

Dermal: The results of testing on rabbits showed no toxicity even at high dose levels.

Bioaccumulation: The product is not expected to bioaccumulate.

Persistence / degradability: Not readily biodegradable: (~40% after 28 days).

Chronic toxicity: A 2 yr feeding study on rats did not reveal adverse health effects.

13. DISPOSAL CONSIDERATIONS

Waste from residues/unused products.
Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environmental agency for specific rules).

14. TRANSPORT INFORMATION

Not regulated by DOT, RCRA status-Not a hazardous waste

15. REGULATORY INFORMATION

TSCA Chemical Substances Inventory: **All components of this product are either listed on the inventory or are exempt from listing.**

SARA Section 311 / 312 Hazard Class: **Not concerned**
RCRA Status: **Not RCRA hazardous**

16. TRANSPORT AND REGULATORY INFORMATION

NFPA and HMIS ratings:

NFPA	**Health:**	**1**	**Flammability:**	**1**	**Reactivity:**	**0**
HMIS	**Health**	**1**	**Flammability**	**1**	**Reactivity**	**0**

DATE EDITED: Oct. 29th 2015

Updated November 4, 2015

Applied Polymer Systems, Inc.

Safety Data Sheet

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Product Name: APS 703d Floc Log®

Supplied:
Applied Polymer Systems, Inc.
519 Industrial Drive
Woodstock, GA 30189
Tel. 678-494-5998
Fax. 678-494-5298
www.siltstop.com

2. HAZARD IDENTIFICATION

Placement of these materials on wet walking surface will create extreme slipping hazard.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Identification of the preparation: Anionic water-soluble Co-polymer gel

4. FIRST AID MEASURES

Inhalation: None

Skin contact: Contact with wet skin could cause dryness and chapping. Wash with water and soap.

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids, seek medical attention in case of persistent irritation.

Ingestion: Consult a physician

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water, water spray, foam, carbon dioxide, dry powder.

Special fire-fighting precautions: Floc Logs that become wet render surfaces extremely slippery.

Protective equipment for firefighters: No special equipment required.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: No special precautions required.

Methods for cleaning up: Dry wipe as well as possible, Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Wash hands after handling.

Storage: Keep in a cool, dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: Use dry handling areas only.

Personal protection equipment

Respiratory Protection:	**None**
Hand protection:	**Dry cloth, leather or rubber gloves.**
Eye Protection:	**Safety glasses with side shields. Do not wear contact lenses.**
Skin protection:	**No special protective clothing required.**
Hygiene measures:	**Wash hands before breaks and at end of work day.**

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	**Granular semi-solid gel**
Color:	**Blue**
Odor:	**None**
pH:	**7.37**
Melting point:	**N/A**
Flash point:	**N/A**
Vapor density:	**N/A**

10. STABILITY AND REACTIVITY

Stability: **Product is stable, no hazardous polymerization will occur.**

Materials to avoid: **Oxidizing agents may cause exothermic reactions.**

Hazardous decomposition products: **Thermal decomposition may produce nitrogen oxides (NOx), carbon oxides.**

11. TOXICOLOGICAL INFORMATION

Acute toxicity (EPA/600/4-90/027F)

LD 50 / *Rattus norvegicus* / oral / > 5000 mg/kg
LC 50 / *Daphnia magna* / 48h / >383mg/L
LC 50 / *Oncorhynchus mykiss* / 96h / 1900 mg/L

Chronic toxicity (EPA/600/4-91/002)

IC 25 (Survival) / *P. promelas* / 7 day / 110 ppm
NOEC (Survival) / *P. promelas* / 7 day/ 105 ppm

IC 25 (Survival) / *C. dubia* / 7 day / 99.8 ppm
NOEC (Survival) / *C. dubia* / 7 day/ 52.5 ppm

IC 25 (Growth) / *P. promelas* / 7 day / 130 ppm
NOEC (Growth) / *P. promelas* / 7 day / 105 ppm

IC 25 (Reproduction) / *C. dubia* / 7 day / 58.2 ppm
NOEC (Reproduction) / *C. dubia* / 7 day / 105 ppm

12. ECOLOGICAL INFORMATION

Fish: LC 50 / *Pimephales promelas* / 96h / >1000 mg/l
Water Flea: LC 50 / *Daphnia magna* / 48h / 383mg/l
Algae: EC 50 / *Selenastrum capricornutum* / 96h / >500mg/l

Bioaccumulation: The product is not expected to bioaccumulate.
Persistence / degradability: Not readily biodegradable: (~85% after 180 days).

13. DISPOSAL INFORMATION

Waste from residues/unused products.
Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environmental agency for specific rules).

14. TRANSPORT INFORMATION

Not regulated by DOT, RCRA status-Not a hazardous waste

15. REGULATORY INFORMATION

TSCA Chemical Substances Inventory: All components of this product are either listed on the inventory or are exempt from listing.

SARA Section 311 / 312 Hazard Class: **Not concerned**
RCRA Status: **Not RCRA hazardous**

16. OTHER INFORMATION

NFPA and HMIS ratings:

NFPA	**Health:**	**1**	**Flammability:**	**0**	**Reactivity:**	**0**
HMIS	**Health**	**1**	**Flammability**	**0**	**Reactivity**	**0**

DATE EDITED: Nov 4th 2015

Technical Guidance for the Use of Polyacrylamides (PAM) and PAM Blends for Soil Erosion Control and Storm Water clarification

(Courtesy of Applied Polymer Systems, Inc.)

Practice Description

PAM is a water-soluble anionic polyacrylamide product used to minimize soil erosion caused by water and wind to decrease soil sealing by binding soil particles, especially clays, to hold them on site. In addition, these types of materials may also be used as a water treatment additive to remove suspended particles from runoff. When PAM is used on construction sites in the Southeast it is typically applied with temporary seeding and or mulching on areas where the timely establishment of temporary erosion control is so critical that seedings and mulching need additional reinforcement. It may be used alone on sites where no disturbances will occur until site work is continued and channel erosion is not a significant potential problem. Permanent grassing applications can be better established using PAM as a tackifier and soil conditioner.

PAMs are manufactured in various forms to be used on specific soil types, and are generally applied at a rate of up to 25 pounds/acre for dry products and 2 ½ gallons/acre of emulsion-liquid products. Using the wrong form of a PAM on a soil will result in some degree of performance failure, and increase the potential for this material to enter surface waters. PAM used alone may not reduce NTU values resulting in non-compliance water quality discharges or poor soil binding conditions. Site-specific soil-PAM testing must be performed. Exceeding the maximum application rates for this product does not increase the effectiveness of the product.

Block or Log forms of PAM and PAM blends are manufactured for specific use in drainage waterways to remove suspended particulates from runoff.

General Components of the Practice

Prior to the start of construction, a qualified professional should design the application of PAM and plans and specifications should be available to field personnel.

The application should conform to the design and specifications provided in the plans. Typical applications include the following components.

- Site Preparation
- Equipment Preparation
- PAM Application

Application

Site Preparation

Prepare site following design and specifications.

Equipment Preparation

If using a liquid application system, pump a surfactant through the injection system before and after injecting concentrated liquid PAM into sprinkler irrigation systems to help prevent valves and tubing from clogging.

PAM used in hydroseeding applications should be added as the last additive to the mix.

After their use, rinse all PAM mixing and application equipment thoroughly with water to avoid formation of PAM residues. Rinse residue should be applied to soil areas to create binding to the soil structure and increase erosion reduction.

PAM Application- Criteria for Land applied PAM Specifications

PAM shall be mixed and/or applied in accordance with all Occupational Safety and Health Administration (OSHA) Material Safety Data Sheet (MSDS) requirements and the manufacturer's recommendations for the specified use conforming to all federal, state and local laws, rules and regulations.

1.) Toxicity

All venders and suppliers of PAM, PAM mix or blends shall present or supply a written toxicity report which verifies that the PAM, PAM mix or blend exhibits acceptable toxicity parameters which meet or exceed the EPA requirements for the state and federal water quality standards. Whole effluent testing does not meet this requirement as primary reactions have occurred and toxic potentials have been reduced. **Cationic forms of PAM, polymers and chitosan are not allowed for use under this guideline due to their high levels of toxicity to aquatic organisms. Emulsions shall never be applied directly to stormwater runoff or riparian waters due to surfactant toxicity.**

2.) Performance

All venders and suppliers of PAM, PAM mix or blends shall supply written "site specific" testing results demonstrating that a performance of 95% or greater reduction of NTU or TSS from stormwater discharges.

Emulsion batches shall be mixed following recommendations of a testing laboratory that determines the proper product and rate to meet site requirements. Application method shall insure uniform coverage to the target area. **(Emulsions shall never be applied directly to stormwater runoff or riparian waters)**

Dry form (powder) may be applied by hand spreader or a mechanical spreader. Mixing with dry silica sand will aid in spreading. Pre-mixing of dry form PAM into fertilizer, seed or other soil amendments is allowed when specified in the design plan. Application method shall insure uniform coverage to the target area.

Block or Log forms shall be applied following site testing results to assure proper placement and performance and shall meet or exceed state and federal water quality requirements.

Common Problems

Consult with a registered design professional for assistance if any of the following occur:

- Problems with application equipment clogging.
- PAM alone may not meet testing requirements for NTU reduction and soil stabilization. Site specific "blends" may be needed to meet these requirements.
- Application specifications for PAM cannot be met; alternatives may be required. Unapproved application techniques could lead to failure.
- Visible erosion occurs after application.

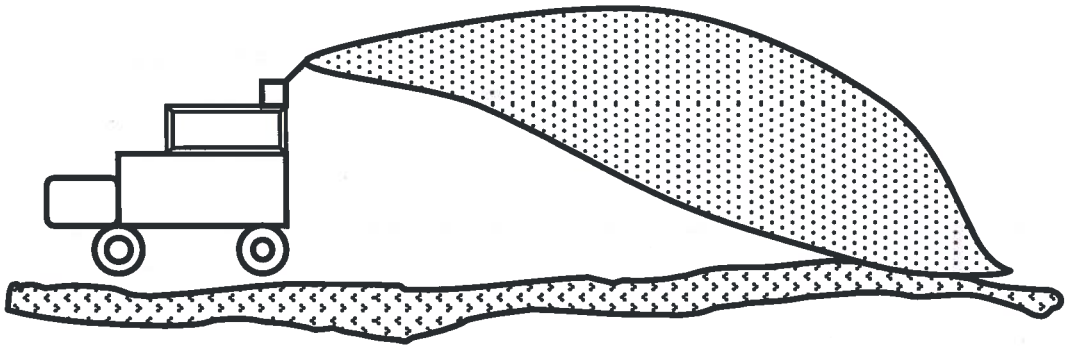
Maintenance

An operation and maintenance plan must be prepared for use by the operator responsible for PAM application. Plan items should include the following items.

- Reapply PAM to disturbed or tilled areas that require continued erosion control.
- Maintain equipment to provide uniform application rates.
- Rinse all PAM mixing and application equipment thoroughly with water to avoid formation of PAM residues and discharge rinse water to soil areas where PAM stabilization may be helpful.
- Downstream deposition from the use of PAM may require periodic sediment removal to maintain normal functions.

PM-H

(Silt Stop Application of Temporary and Permanent Grassing)



Notes:

1) **For use on all slope conditions which are not matted.**

2) **Application rate shall be 1.5 gallons of Silt Stop emulsion/acre or 10 pounds of Silt Stop powder/acre.**

3) **Silt Stop emulsion or powder shall be added to all hydroseeding mixes at a rate of 3000 gallons of mix/acre.**

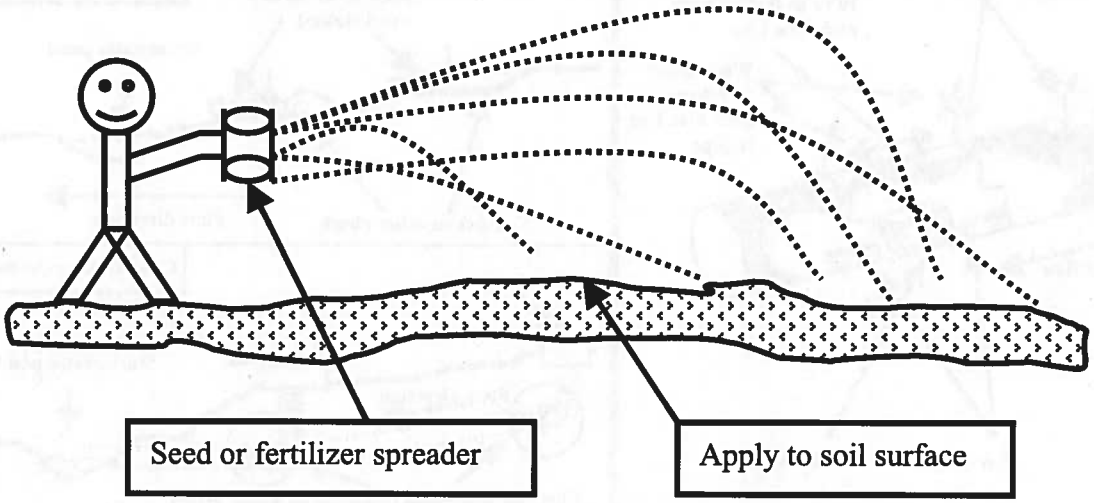
4) **Silt Stop shall be the final additive to the hydroseeding mix.**

5) **Straw cover may be applied over the hydroseeded application.**

(All Silt Stop shall be site specific, soil tested achieving 95% NTU reduction or better and must have acute and chronic toxicity testing reports.)

PM-D

PM (Dry Silt Stop Form)



Notes:

1) **Dry Silt Stop shall be applied using a seed or fertilizer spreader or may be mixed with other dry spread additives.**

2) **Dry Silt Stop shall be covered with straw, mulch, matting or jute.**

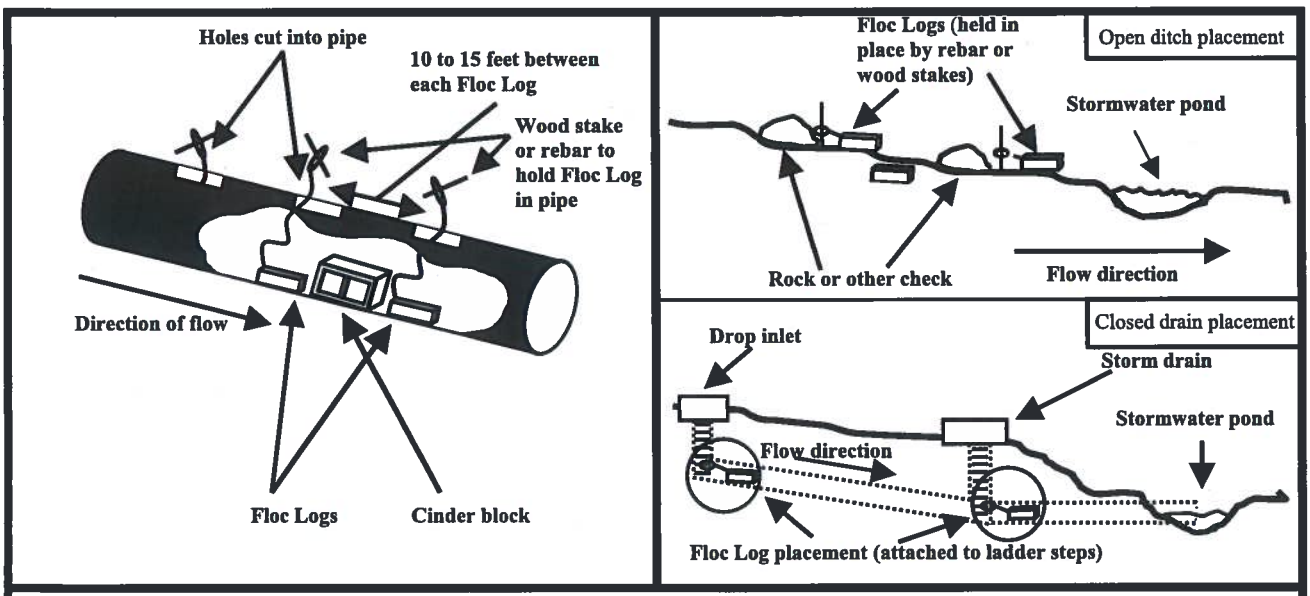
3) **Application rate shall be 10 pounds/acre but not greater than 25 pounds/acre.**

4) **For use on all slope conditions.**

(All Silt Stop shall be site specific, soil tested achieving 95% NTU reduction or better and must have acute and chronic toxicity testing reports.)

PM-F

(Floc Log placement for pipes, ditch and storm drains)



Notes:

1) **Place Floc Logs far enough upstream in turbid flows to allow adequate mixing time. (Mixing time and Floc Log type are determined from the sample analysis.)**

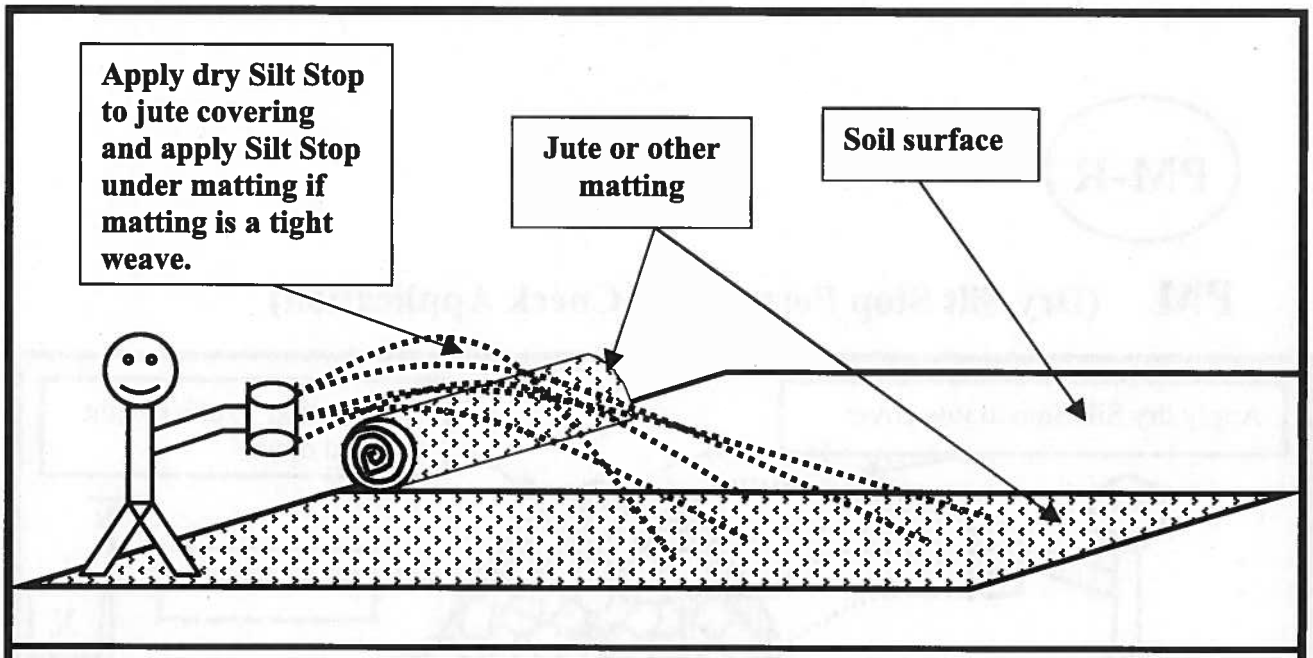
2) **Floc Logs should be placed 10 to 15 feet apart in a row or at points of highest water velocity; whichever is most convenient.**

3) **The number of Floc Logs placed on the site is based on results from the sample analysis. Floc Logs shall be placed in <u>all</u> catch basins and after <u>all</u> downsides of rock checks.**

(All Floc Logs shall be site specific, soil tested achieving 95% NTU reduction or better and must have acute and chronic toxicity testing reports.)

PM-M

(Dry Silt Stop Form Soft Armoring Technique for Matting)



Notes:

1) **For use on all slope conditions.**

2) **One layer of jute or other matting shall be applied to the surface of all exposed soil on 1:1 slopes.**

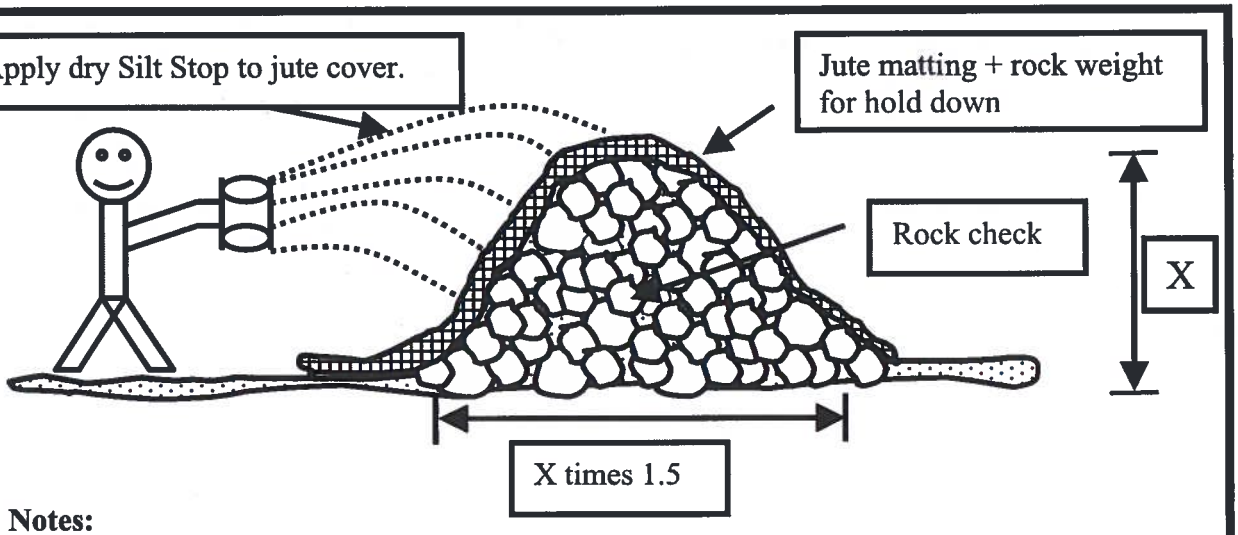
3) **Dry Silt Stop shall be applied to the soil if tight weave matting is used and also to the jute or burlap matting cover using a seed or fertilizer spreader.**

4) **Application rate shall be 10 pounds/acre but not greater than 25 pounds/acre.**

(All Silt Stop shall be site specific, soil tested achieving 95% NTU reduction or better and must have acute and chronic toxicity testing reports.)

PM-R

PM (Dry Silt Stop Form Rock Check Application)



Notes:

1) One layer of jute matting shall be applied to the surface of all rock checks.

2) Dry Silt Stop shall be applied to the jute cover using a seed or fertilizer spreader.

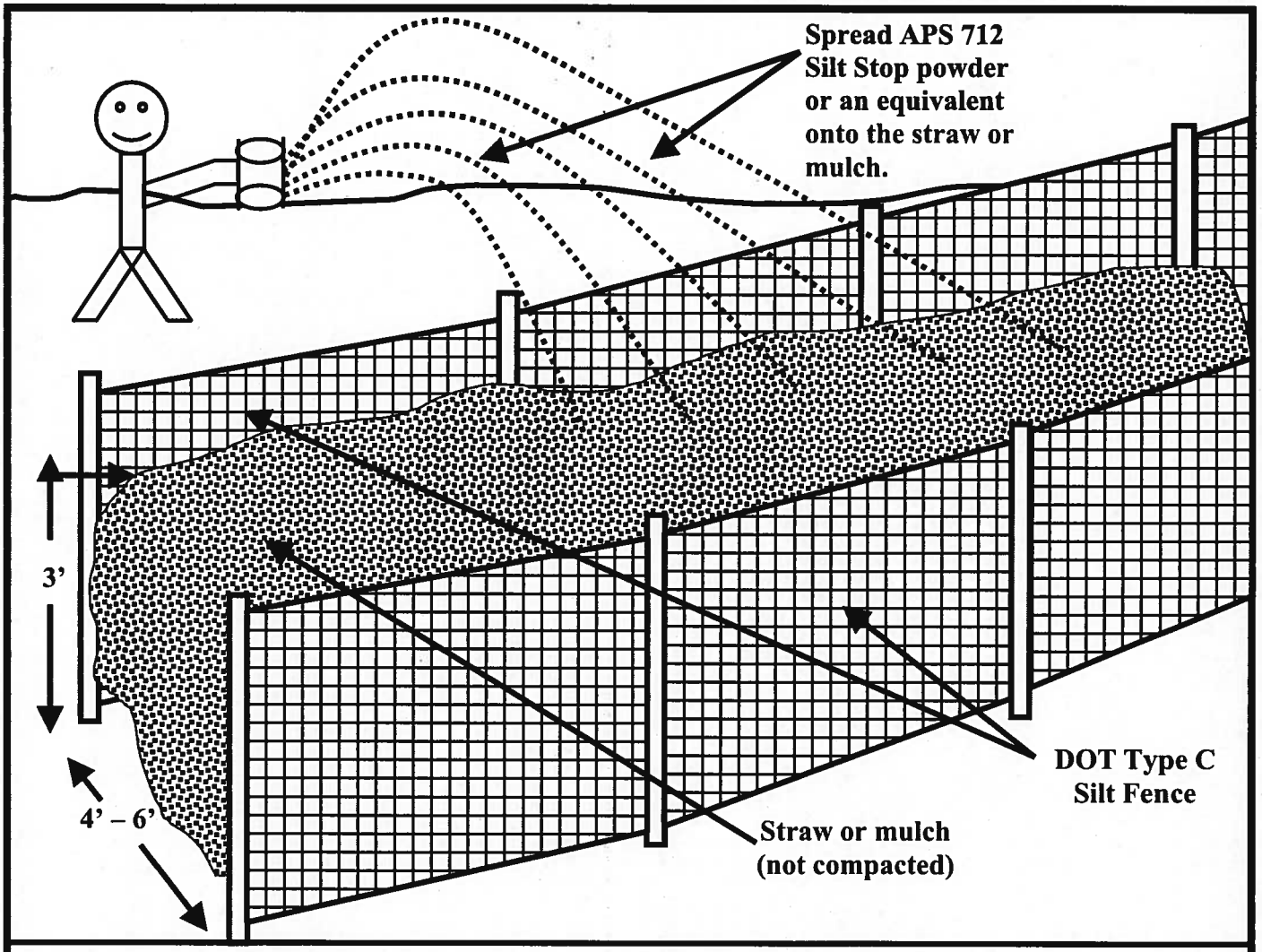
3) Application rate shall be 10 pounds/acre but not greater than 25 pounds/acre.

(All Silt Stop shall be site specific, soil tested achieving 95% NTU reduction or better and must have acute and chronic toxicity testing reports.)

SRB

(SRB) Sediment Retention Barrier

Use for fine sediment retention between silt fences. Install at low areas during grading.



1) Use in all low areas during the grading phase.

2) Place 2 rows of DOT type C silt fence 4 to 6 feet apart. Place straw or mulch 3 feet deep between the silt fences.

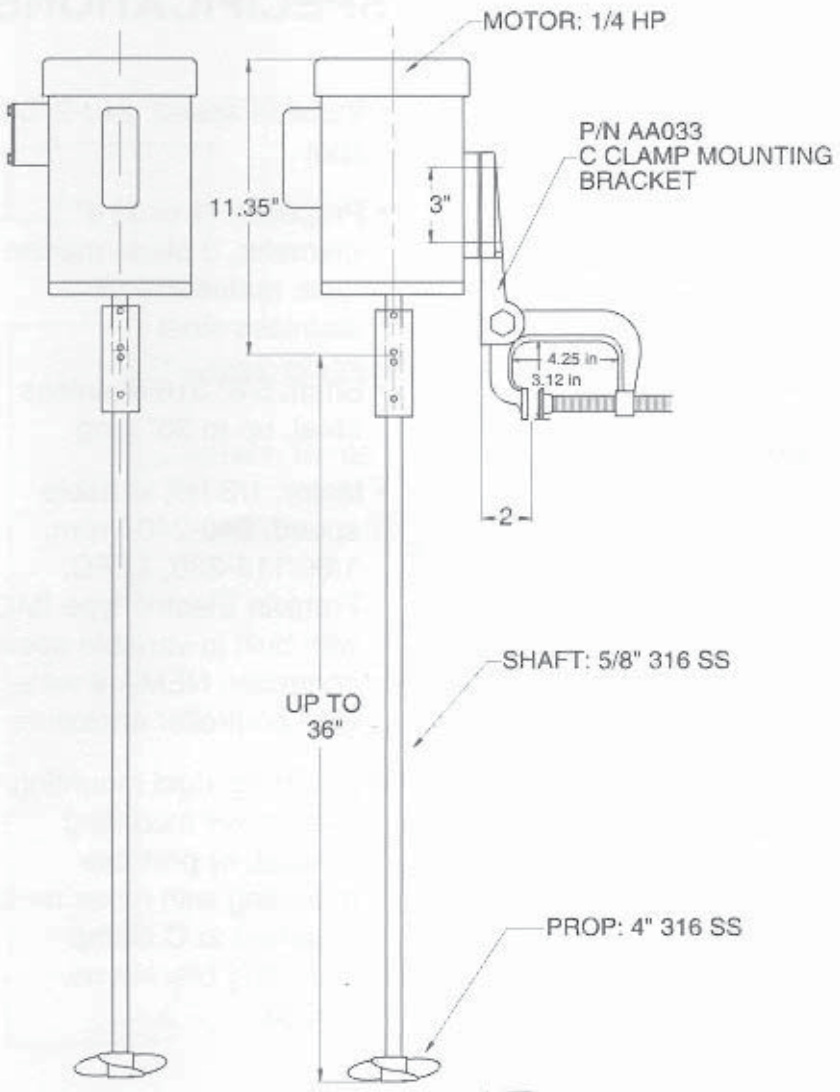
3) Dry Silt Stop powder or an equivalent should be spread throughout the straw or mulch using a seed or fertilizer spreader.

(All Silt Stop shall be site specific, soil tested achieving 95% NTU reduction or better and must have acute and chronic toxicity testing reports.)

pH System Components

MADDEN

MIXER MODEL NO. AA102A



AA102A

SPECIFICATIONS

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

PULSAFEEDER®
An IDEX Water & Wastewater Business

pulsafeeder.com

The Pulsatron Series E Plus offers manual control over stroke length and stroke rate as standard with the option to choose between 4-20mA and external pace inputs for automatic control.

Twenty distinct models are available, having pressure capabilities to 300 PSIG (21 BAR) @ 3 GPD (0.5 lph), and flow capacities to 600 GPD (94.6 lph) @ 30 PSIG (2 BAR), with a turndown ratio of 100:1. Metering performance is reproducible to within ± 2% of maximum capacity.
Please refer to the reverse side for Series E PLUS specifications.

Features

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

Controls

Manual Stroke Rate
- Turn-Down Ratio 10:1

Manual Stroke Length
- Turn-Down Ratio 10:1

4-20mADC Direct or External Pacing with Stop
- Automatic Control

Operating Benefits

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

Aftermarket

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

PULSAtron® Series E Plus Electronic Metering Pumps

PULSAtron® Series E Plus

Specifications and Model Selection

MODEL		LPK2	LPB2	LPA2	LPD3	LPB3	LPA3	LPK3	LPF4	LPD4	LPB4	LPH4	LPG4	LPE4	LPK5	LPH5	LPH6	LPK7	LPH7	LPJ7	LPH8
Capacity	GPH	0.13	0.21	0.25	0.5	0.50	0.50	0.60	0.85	0.90	1.00	1.70	1.75	1.85	2.50	3.15	5.00	8.00	10.00	10.00	25.00
nominal	GPD	3	5	6	12	12	12	14	20	22	24	41	42	44	60	76	120	192	240	240	600
(max.)	LPH	0.5	0.8	0.9	1.9	1.9	1.9	2.3	3.2	3.4	3.8	6.4	6.6	7	9.5	11.9	18.9	30.3	37.9	37.9	94.6
Pressure	PSIG	300	250	150	250	150	100	100	250	150	100	250	150	100	150	150	100	50	35	80	30
(max.)	BAR	21	17	10	17	10	7	7	17	10	7	17	10	7	10	10	7	3.3	2.4	5.5	2
Connections	Tubing	1/4" ID X 3/8" OD 3/8" ID X 1/2" OD													3/8" ID X 1/2" OD 1/2" ID X 3/4" OD (LPH8 ONLY)						
	Piping	1/4" FNPT													1/4" FNPT 1/2" FNPT						

Engineering Data

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

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

Engineering Data

Reproducibility:	+/- 2% at maximum capacity
Viscosity Max CPS :	

For viscosity up to 3000 CPS, select connection size 3, 4, B or C with 316SS ball material. Flow rate will determine connection/ball size. Greater than 3000 CPS require spring loaded ball checks. See Selection Guide for proper connection.

Stroke Frequency Max SPM:	125
Stroke Frequency Turn-Down Ratio:	10:1
Stroke Length Turn-Down Ratio:	10:1
Power Input:	115 VAC/50-60 HZ/1 ph
	230 VAC/50-60 HZ/1 ph
Average Current Draw:	
@ 115 VAC; Amps:	1.0 Amps
@ 230 VAC; Amps:	0.5 Amps
Peak Input Power:	300 Watts
Average Input Power @ Max SPM:	130 Watts

Custom Engineered Designs – Pre-Engineered Systems

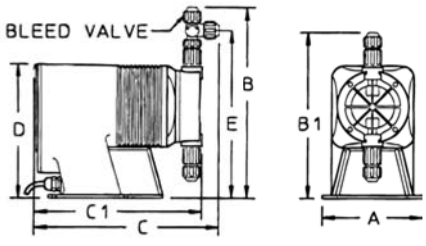
Pre-Engineered Systems

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

Dimensions

Series E Plus Dimensions (inches)																	
Model No.	A	B	B1	C	C1	D	E	Shpg Wt	Model No.	A	B	B1	C	C1	D	E	Shpg Wt
LPA2	5.4	10.3	-	10.8	-	7.5	8.9	13	LPH4	6.2	10.9	-	11.2	-	8.2	9.5	21
LPA3	5.4	10.6	-	10.7	-	7.5	9.2	13	LPH5	6.2	11.3	-	11.2	-	8.2	9.9	21
LPB2	5.4	10.3	-	10.8	-	7.5	8.9	13	LPH6	6.2	11.3	-	11.9	-	8.2	9.9	21
LPB3	5.4	10.6	-	10.7	-	7.5	9.2	13	LPH7	6.1	11.7	-	11.9	-	8.2	10.3	21
LPB4	5.4	10.6	-	10.7	-	7.5	9.2	13	LPH8*	6.1	-	10.9	-	11.3	8.2	-	26
LPD3	5.4	10.6	-	11.2	-	7.5	9.2	15	LPK2	5.4	10.3	-	10.8	-	7.5	8.9	13
LPD4	5.4	10.6	-	11.2	-	7.5	9.2	15	LPK3	5.4	10.6	-	10.7	-	7.5	9.2	13
LPE4	5.4	10.6	-	11.2	-	7.5	9.2	15	LPK5	5.4	10.9	-	11.7	-	7.5	9.5	18
LPF4	5.4	10.6	-	11.7	-	7.5	9.2	18	LPK7	6.1	11.7	-	11.2	-	8.2	10.3	21
LPG4	5.4	10.6	-	11.7	-	7.5	9.2	18	LPJ7	6.1	10	-	10.7	-	-	-	21

NOTE: Inches X 2.54 = cm /* the LPH8 is designed without a bleed valve available



+GF+® Signet pH/ORP Controllers

Versatile mounting options allow you to customize the installation for particular applications

NEW

- Large, scratch-resistant, self-healing display

+GF+ Signet controllers are designed for broad application and ease of setup and operation. Multiple mounting options allow for installation best suited to your particular application. Intuitive software and four-button keypad arrangement make it easy to access important information such as measurement values, calibration data, relay setup menus, and more.

Optional universal mounting kit allows for mounting of field-mount units on pipes, tanks, and walls. RC filter kit prevents premature wearing of the relay outputs by providing protection from electrical noise. Order separately below.

Required *System Components*

1. Controller
2. Preamplifier
3. Electrode

Field-mount controller 56560-20

Panel-mount controller 56560-30

Specifications

ISO9001:2000 CERTIFIED SUPPLIER · c UL us · CE · IP65 Meter only · 2 year warranty Meter only

Model		+GF+ Signet 8750-1	+GF+ Signet 8750-2	+GF+ Signet 8750-3
Range	pH	0.00 to 14.00	0.00 to 14.00	0.00 to 14.00
	mV	–1000 to 2000 mV	–1000 to 2000 mV	–1000 to 2000 mV
	Temperature	–13 to 248°F (–25 to 120°C)	–13 to 248°F (–25 to 120°C)	–13 to 248°F (–25 to 120°C)
Resolution	pH	0.01	0.01	0.01
	mV	1 mV	1 mV	1 mV
	Temperature	0.1°C (0.1°F)	0.1°C (0.1°F)	0.1°C (0.1°F)
Accuracy	pH	±0.03	±0.03	±0.03
	mV	±2 mV	±2 mV	±2 mV
	Temperature	±0.5°C (±1°F)	±0.5°C (±1°F)	±0.5°C (±1°F)
Temperature compensation		Automatic, 3 kΩ Balco	Automatic, 3 kΩ Balco	Automatic, 3 kΩ Balco
Control type		On/off (limit) or proportional	On/off (limit) or proportional	On/off (limit) or proportional
Number of set points		Two (low, high)	Two (low, high)	Two (low, high)
Output	Relay	—	Two SPDT relays, 5 A at 30 VDC or 250 VAC resistive load maximum	—
	Current	One 4 to 20 mA, isolated, fully adjustable and reversible	One 4 to 20 mA, isolated, fully adjustable and reversible	Two 4 to 20 mA, isolated, fully adjustable and reversible
	Open collector	One open-collector, optically isolated, 50 mA max	—	Two open-collector, optically isolated, 50 mA max
Dead band		User adjustable	User adjustable	User adjustable
Housing		NEMA 4X (IP65) front panel	NEMA 4X (IP65) front panel	NEMA 4X (IP65) front panel
Display		2 x 16 alphanumeric LCD	2 x 16 alphanumeric LCD	2 x 16 alphanumeric LCD
Dimensions (W x H x D)		Field-mount: 3 13/16" x 3 13/16" x 4 3/16" (96 x 96 x 106 mm) Panel-mount: 3 13/16" x 3 13/16" x 3 13/16" (96 x 96 x 97 mm)		
Power		12 to 24 VDC	12 to 24 VDC	12 to 24 VDC

1 Controllers

Catalog number	Model	Mounting style	Price
S-56560-18 S-56560-28	+GF+ Signet 8750-1 +GF+ Signet 8750-1P	Field mount Panel mount, ¼ DIN	
S-56560-20 S-56560-30	+GF+ Signet 8750-2 +GF+ Signet 8750-2P	Field mount Panel mount, ¼ DIN	
S-56560-22 S-56560-32	+GF+ Signet 8750-3 +GF+ Signet 8750-3P	Field mount Panel mount, ¼ DIN	

S-05631-50 Universal mounting kit for field-mount units . . . . . .
S-19007-52 RC filter kit for relay use. Pack of 2 . . . . . .
S-17106-20 NIST-traceable calibration . . . . . .

2 Preamplifiers

Preamplifiers protect the relatively weak output signal of the pH or ORP electrode from electrical interferences common in industrial environments and are required for initial system installation. Unique DryLoc® connectors allow you to quickly form robust assemblies for submersible and in-line applications.

Catalog number	Thread size	Price
S-56560-03 S-56560-04	¾" NPT(M) ISO 7-1 R¾"	

DryLoc® pH and ORP electrodes

3 Electrodes

Feature-packed pH and ORP electrodes feature unique DryLoc connectors which offer resistance to intrusion from dirt and moisture. Extended reference path length extends electrode life over traditional combination electrodes. Electrode bodies are Ryton® PPS for added chemical resistance and feature a ¾" NPT(M) or ISO 7-1 R¾" threads for in-line installation. Flat-surface electrodes minimize abrasion and breakage problems by allowing sediment to sweep past the measurement surface. Bulb-style electrodes feature quick response and are well-suited to general-purpose applications. HF-resistant electrodes resist hydrofluoric acid in concentration less than 2%. LC-bulb electrodes are designed for ultrapure, low-conductivity water applications. All have a 3 kΩ Balco ATC element and measure 0 to 14 pH.

Catalog number	Type	Thread size	Price
S-56561-02 S-56561-03	pH, flat surface	¾" NPT(M) ISO 7-1 R¾"	
S-56561-10 S-56561-11	pH, bulb style	¾" NPT(M) ISO 7-1 R¾"	
S-56561-06 S-56561-07	pH, HF-resistant bulb	¾" NPT(M) ISO 7-1 R¾"	
S-56561-14 S-56561-15	pH, LC bulb	¾" NPT(M) ISO 7-1 R¾"	
S-56561-16 S-56561-17	ORP, flat surface	¾" NPT(M) ISO 7-1 R¾"	

NorFalco Inc.
NorFalco Sales Inc.

Material Safety Data Sheet

77% - 100% SULFURIC ACID

SECTION 1. PRODUCT IDENTIFICATION

Trade Name	**77 % - 100 % Sulfuric Acid**
Product Code	None
Manufacturers/Distributors	NorFalco Inc., 6000 Lombardo Center, The Genesis Blg, suite 650 Seven Hills, OH 44131 NorFalco Sales Inc., 6755 Mississauga Road, Suite 304, Mississauga, Ontario L5N 7Y2
Information Contact	André Auger, Administration Assistant
Product Information	1-905-542-6901 (Mississauga)
Phone Number (Transportation Emergency)	Canada 1-877-ERP-ACID (377-2243)
Phone Number (Transportation Emergency)	U.S.A. 1-800-424-9300 CHEMTREC
Phone Number (Medical Emergency)	**1-418-656-8090**
Phone Number (Emergency)	**CANUTEC 1-613-996-6666**
Synonyms	Dihydrogen Sulfate ; Oil of Vitriol ; Vitriol Brown Oil ; Sulphuric Acid. Acide sulfurique (French)
Name / Chemical Formula	Sulfuric Acid / H_2SO_4
Chemical Family	Acid
Utilization	Chemical industries ; Water treatment ; Fertilizer ; Pulp and Paper.

Manufacturers CEZinc on behalf of Noranda Income Limited Partnership, Salaberry-de-Valleyfield (Quebec) Canada J6T 6L4
Xstrata Copper, Home Smelter, Rouyn-Noranda (Quebec) J9X 5B6
Xstrata Zinc, Brunswick Smelting, Belledune, New Brunswick E0B 1G0
Xstrata Copper, Kidd Metallurgical Division, Timmins, Ontario P4N 7K1
Xstrata Nickel, Sudbury Operations, Falconbridge, Ontario P0M 1S0

SECTION 2. HAZARDS IDENTIFICATION

WHMIS (Canada) CLASS D-1A : Very toxic material causing immediate and serious effects
CLASS E : Corrosive material

Labeling (EEC) C Corrosive

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS #	Percentage (%)	# CE	R Phrases[1]
Sulfuric (Acid)	7664-93-9	77 % to 100 %	231-639-5	R35
60 Deg Technical		77.7		
66 Deg Technical		93.2		
1.835 Electrolyte		93.2		
98 % Technical		98		
99 % Technical		99		
100 % Technical		100		
Water	7732-18-5	0-22		

Note 1 : See section 15 for the complete wording of risk phrases.

SECTION 4. FIRST-AID MEASURES

Eye Contact Remove contact lenses if present. Immediately flush eyes with plenty of water, holding eyelids open for at least 15 minutes. Consult a physician. Possibility of conjonctivitis, severe irritation, severe burns, permanent eye damage.

Skin Contact Remove contaminated clothing and shoes as quickly as possible protecting your hands and body. Place under a deluge shower for 15 minutes. Flush exposed skin gently and thoroughly with running water (Pay particular attention to : Folds, crevices, creases, groin). Call a physician if irritation persists. May irritate skin, cause burns (Highly corrosive) and possibility of some scarring.

Wash contaminated clothing before reusing. While the patient is being transported to a medical facility, continue the application of cold, wet compresses. If medical treatment must be delayed, repeat the flushing with cold water or soak the affected area with cold water to help remove the last traces of sulfuric acid. *Creams or ointments **SHOULD NOT** be applied before or during the washing phase of treatment.*

Inhalation Take precautions to avoid secondary contamination by residual acids. Remove the person to fresh air. If not breathing, give artificial respiration. Difficult breathing : Give oxygen. Get immediate medical attention. Possibility of damage to the upper respiratory tract and lung tissues. Maintain observation of the patient for delayed onset of pulmonary oedema. May cause irritation to the upper respiratory tract : Coughing, sore throat, shortness of breath.

Ingestion **DO NOT** INDUCE VOMITING. Conscious and alert person : Rinse mouth with water and give ½ to 1 cup of water or milk to dilute material. **Spontaneous vomiting :** Keep head below hips to prevent aspiration ; Rinse mouth and give ½ to 1 cup of water or milk. **UNCONSCIOUS** person : **DO NOT** induce vomiting or give any liquid. **Immediately** obtain medical attention.

Notes to Physicians
Continued washing of the affected area with cold or iced water will be helpful in removing the last traces of sulfuric acid. Creams or ointments should not be applied before or during the washing phase of the treatment.

SECTION 5. FIRE-FIGHTING MEASURES

Flash Point	Not available
Flammable Limits	Not available
Auto-Ignition Temperature	Not available
Products of Combustion	Releases of sulfur dioxide at extremely high temperatures.
Fire Hazard	Not flammable
Explosion Hazard	Reacts with most metals, especially when dilute : Hydrogen gas release (**Extremely** flammable, explosive). Risk of explosion if acid combined with water, organic materials or base solutions in enclosed spaces (Vaccum trucks, tanks). Mixing acids of different strengths/concentrations can also pose an explosive risk in an enclosed space/container.
Extinguishing media	ERG (Emergency Response Guidebook) : Guide 137 When material is not involved in fire, do not use water on material itself. **Small fire :** Dry chemical or CO_2. Move containers from fire area if you can do it without risk. **Large fire:** Flood fire area with large quantities of water, while knocking down vapors with water fog. If insufficient water supply: knock down vapors only. **Fire involving Tanks or Car/Trailer Loads :** Cool containers with flooding quantities of water until well after fire is out. Do not get water inside containers. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.
Protective equipment	Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Generates heat upon addition of water, with possibility of spattering. Wear full protective clothing. Runoff from fire control may cause pollution. Neutralize run-off with lime, soda ash, etc., to prevent corrosion of metals and formation of hydrogen gas. Wear self-contained breathing apparatus if fumes or mists are present.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill	Review **Fire and Explosion Hazards** and **Safety Precautions** before proceeding with clean up. Stop flow if possible. Soak up small spills with dry sand, clay or diatomaceous earth.
Methods	Dike large spills, and cautiously dilute and neutralize with lime or soda ash, and transfer to waste water treatment system. Prevent liquid from entering sewers, waterways, or low areas. If this product is spilled and not recovered, or is recovered as a waste for treatment or disposal, the Reportable Quantity (U.S. DOT) is 1 000 lbs (Based on the sulfuric acid content of the solution spilled). Comply with Federal, State, and local regulations on reporting releases.
Protective equipment	Review Fire Fighting Measures and Handling (Personnel Protection) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

SECTION 7. HANDLING AND STORAGE

Handling	Do not get in eyes, on skin, or on clothing. Avoid breathing vapours or mist. Wear approved respirators if adequate ventilation cannot be provided. Wash thoroughly after handling. Ingestion or inhalation : Seek medical advice **immediately** and provide medical personnel with a copy of this MSDS.
Conditions for storage	Sulfuric acid must be stored in containers or tanks that have been specially designed for use with sulfuric acid. **DO NOT** add water or other products to contents in containers as violent reactions will result with resulting high heat, pressure and/or generation of hazardous acid mists. Keep containers away from heat, sparks, and flame. All closed containers must be safely vented before each opening. For more information on sulfuric acid tanks, truck tanks and tank cars including safe unloading information go to www.norfalco.com.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

		Control parameters	
		ACGIH (U.S.A.) 2008	OSHA (U.S.A.)
Name	**# CAS**	**TLV-TWA (mg/m³)**	**PEL - TWA (mg/m³)**
Sulfuric (Acid)	7664-93-9	0.2 (thoracic fr.)	1
60 Deg Technical	7664-93-9	0.2 (thoracic fr.)	1
66 Deg Technical	7664-93-9	0.2 (thoracic fr.)	1
1.835 Electrolyte	7664-93-9	0.2 (thoracic fr.)	1
98 % Technical	7664-93-9	0.2 (thoracic fr.)	1
99 % Technical	7664-93-9	0.2 (thoracic fr.)	1
100 % Technical	7664-93-9	0.2 (thoracic fr.)	1
Water	7732-18-5	Not established	Not established

ACGIH : American Conference of Governmental Industrial Hygienists. OSHA : Occupational Safety and Health Administration.

Note : **Sulfuric (Acid) :** Exposure limits may be different in other jurisdictions. NIOSH REL-TWA (≤10 hours) : 1 mg/m³ ; IDLH : 15 mg/m³. *Consult local authorities for acceptable exposure limits.*

Engineering Controls Good general ventilation should be provided to keep vapour and mist concentrations below the exposure limits.

Individual protection Chemical splash goggles ; Full-length face shield/chemical splash goggles combination ; Acid-proof gauntlet gloves, apron, and boots ; Long sleeve wool, acrylic, or polyester clothing ; Acid proof suit and hood ; Appropriate NIOSH respiratory protection.

In case of emergency or where there is a strong possibility of considerable exposure, wear a complete acid suit with hood, boots, and gloves. If acid vapour or mist are present and exposure limits may be exceeded, wear appropriate NIOSH respiratory protection.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance	Liquid (Oily ; Clear to turbid)	**Odour**	Odourless
Molecular Weight	98.08	**Colour**	Colourless to light grey
pH (1% soln/water)	< 1	**Volatility**	< 1 (Butyl Acetate = 1.0)
Boiling Point	193°C to 327 °C (379°F to 621°F) @ 760 mm Hg	**Vapour Density**	3.4
Melting Point	-35°C to 11°C (-31°F to 52°F)	**Dispersion**	Yes (Water)
Vapour Pressure	< 0.3 mm Hg @ 25°C (77 °F) < 0.6 mm Hg @ 38°C (100 °F)	**Solubility**	Yes (Water)

GRADE	Boiling Point		Freezing Point		Specific Gravity
	DEG °C	DEG °F	DEG °C	DEG °F	
60 DEG TECHNICAL	193	380	- 12	10	1.706
66 DEG TECHNICAL	279	535	- 35	- 31	1.835
1.835 ELECTROLYTE	279	535	- 35	- 31	1.835
98 % TECHNICAL	327	621	- 2	29	1.844
99 % TECHNICAL	310	590	4	40	1.842
100 % TECHNICAL	274	526	11	51	1.839

SECTION 10. STABILITY AND REACTIVITY

Stability Yes (Under normal conditions of ambiant temperature)

Reactivity Reacts violently with water, organic substances and base solutions with evolution of heat and hazardous mists.

Conditions to avoid Heat : Possibility of decomposition. Release of dangerous gases (Sulfur oxides SO_2, SO_3)

Polymerization Polymerization will not occur.

Incompatibilities Vigorous reactions with : Water; alkaline solutions ; Metals, metal powder ; Carbides ; Chlorates ; Fulminates ; nitrates ; Picrates ; Strong oxidizing, reducing, or combustible organic materials. Hazardous gases are evolved on contact with chemicals such as cyanides, sulfides, and carbides.

Corrosivity Yes

SECTION 11. TOXICOLOGICAL INFORMATION

Routes of Entry Ingestion. Inhalation. Skin and eye contacts.

Carcinogenicity **Strong inorganic acid mists containing sulfuric acid (Occupational exposures) :** PROVEN (Human, Group 1, IARC) ; SUSPECTED (Human, Group A2, ACGIH) ; Group X (NTP) ; Classification not applicable to sulfuric acid and sulfuric acid solutions.

Mutagenicity Not applicable.

Teratogenicity Not applicable.

Acute toxicity ORAL (LD50) : 2 140 mg/kg (Rat) ; INHALATION (LC50, 2 hours) : 510 mg/m³ (Rat) ; 320 mg/m³ (Mouse). (RTECS).

Acute Effects May be **fatal** if inhaled or ingested in large quantity. Liquids or acid mists : May produce tissue damage : Mucous membranes (Eyes, mouth, respiratory tract). **Extremely** dangerous by eyes and skin contact **(Corrosive)**. Severe irritant for eyes : Inflammation (Redness, watering, itching). Very dangerous in case of inhalation (Mists) at high concentrations : May produce severe irritation of respiratory tract (Coughing, shortness of breath, choking).

Chronic Effects Target organs for acute and chronic overexposure (NIOSH 90-117) : Respiratory system, eyes, skin, teeth.

Acid mists : Overexposure to strong inorganic mists containing sulfuric acid : Possibility of laryngeal cancer (HSBD, IARC). Possibility of irritation of the nose and throat with sneezing, sore throat or runny nose. Headache, nausea and weakness. Gross overexposure : Possibility of irritation of nose, throat, and lungs with cough, difficulty breathing or shortness of breath. Pulmonary edema with cough, wheezing, abnormal lung sounds, possibly progressing to severe shortness of breath and bluish discoloration of the skin. Symptoms may be delayed. Repeated or prolonged exposure to mists may cause : Corrosion of teeth.

Contact (Skin) : Possibility of corrosion, burns or ulcers. Contact with a 1 % solution : Possibility of slight irritation with itching, redness or swelling. Repeated or prolonged exposure (Mist) : Possibility of irritation with itching, burning, redness, swelling or rash.

Contact (Eye) : Possibility of corrosion or ulceration (Blindness may result). Repeated or prolonged exposure (Mist) : Possibility of eye irritation with tearing, pain or blurred vision.

Ingestion : Immediate effects of overexposure : Burns of the mouth, throat, esophagus and stomach, with severe pain, bleeding, vomiting, diarrhea and collapse of blood pressure. Damage may appear days after exposure.

Toxicity

Persons with the following pre-existing conditions warrant particular attention :
Sulfuric (Acid) : Laryngeal irritation.

Eating, drinking and smoking must be prohibited in areas where this material is handled and processed. Wash hands and face before eating, drinking and smoking.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic toxicity : Slightly to moderately toxic.
Bluegill Sunfish (LC50 ; 48 hours) : 49 mg/l (Tap water, 20 °C, conditions of bioessay not specified). (HSBD).
Flounder (LC50 ; 48 hours) : 100-330 mg/l (Aerated water, conditions of bioessay not specified). (HSBD).

Toxicity to Animals

EYE : Concentrated compound is corrosive. 10 % solution : Moderate eye irritant.
SKIN : Concentrated compound is corrosive. 10 % solution : Slight skin irritant.
Single and repeated exposure : Irritation of the respiratory tract ; Corrosion of the respiratory tract ; Lung damage ; Labored breathing ; Altered respiratory rate ; Pulmonary oedema. Repeated exposure : Altered red blood cell count.

Mobility (Soil)

Easy soil seeping under rain action

Persistence and degradability

Sulfate ion : Ubiquitous in the environment. Metabolized by micro-organisms and plants.

Bioaccumulation

Sulfate ion : Ubiquitous in the environment. Metabolized by micro-organisms and plants whitout bioaccumulation.

Biodegradation Products

Not available

Biodegradation Products (Toxicity)

Not applicable

Remarks on Environment

Due to the product's composition, particular attention must be taken for transportation and storage. Protect from rain because the run-off water will become acidic and may be harmful to flora and fauna.

BOD5 and COD

Not available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Cleaned-up material may be an hazardous waste on *Resource Conservation and Recovery Act* (RCRA) on disposal due to the corrosivity characteristic. **DO NOT** flush to surface water or sanitary sewer system. Comply with Federal, State, and local regulations. If approved, neutralize and transfer to waste treatment system.

SECTION 14. TRANSPORT INFORMATION

TDG (Canada)

CLASS 8 Corrosives

PIN

UN1830 SULFURIC ACID PG II

Special Provisions (Transport)

None

DOT (U.S.A.)/IMO (Maritime)

Proper Shipping Name	SULFURIC ACID
Hazard Class	8
UN N°	1830
DOT/IMO Label	CORROSIVE
Packing Group	II
Reportable Quantity	1000 lbs (454 kg)
Shipping Containers	Tank Cars, Tank Trucks, Vessel

ERG

Guide 137

SECTION 15 REGULATORY INFORMATION

Labeling (EEC)

EU (Directive 67/548/EEC) :
Sulfuric (Acid) : C Corrosive (Pictogram)
Annex I Index number : 016-020-00-8 ; EU Consolidated Inventories : EC Number 231-639-5
C ≥ 15 % C ; R35 ; S2, 26, 30, 45.

Risk Phrases (EEC)

R35- Causes severe burns

Safety Phrases (EEC)

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S30- Nerver add water to this product
S36/37/39- Wear suitable protective clothing, gloves and eye/face protection
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

CEPA DSL (CANADA)	CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) : On the Domestic Substances List (DSL) ; Acceptable for use under the provisions of CEPA. Sulfuric Acid is a Class B Drug Precursor under *Health Canada's Controlled Drugs and Substances Act* and *Precursor Control Regulations*.
Regulations (U.S.A.)	CERCLA Section 103 Hazardous substances (40 CFR 302.4) ; SARA Section 302 Extremely Hazardous Substances (40 CFR 355) : Yes ; SARA Section 313, Toxic Chemicals (40 CFR 372.65) ; US: TSCA Inventory : Listed : **Sulfuric (Acid)** (Final RQ) : 1 000 pounds (454 kg) Sulfuric Acid is subject to reporting requirements of Section 313, *Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA)*, 40 CFR Part 372. Certain companies must report emissions of Sulfuric Acid as required under *The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)*, 40 CFR Part 302 For more information call the *SARA Hotline* 800-424-9346. Strong Inorganic Acid Mists Containing Sulfuric Acid : Chemical listed effective March 14, 2003 to the *State of California, Proposal 65.* *U.S. FDA Food Bioterrorism Regulations* : These regulations apply to Sulfuric Acid when being distributed, stored or used for Food or Food Processing.
Classifications HCS (U.S.A.)	Corrosive liquid

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

Fire Hazard	**0**	**Reactivity**	**2**	**Health**	**3**	**Special Hazard**	**ACID**

NPCA- HMIS Rating

Fire Hazard	**0**	**Reactivity**	**2**	**Health**	**3**

SECTION 16. OTHER INFORMATION

References

- TLVs and BEIs (2008). Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices. ACGIH, Cincinnati, OH – http://www.acgih.org
- CCOHS (2008) - Canadian Centre for Occupational Health and Safety - http://www.ccohs.ca/
- CSST (2008) - Commission de la Santé et de la Sécurité du Travail (Québec). Service du répertoire toxicologique - http://www.reptox.csst.qc.ca/
- ERG (2008). Emergency Response Guidebook, Developed by the U.S. Department of Transportation, Transport Canada, and the Secretariat of Communications and Transportation of Mexico
- HSDB (2008) - Hazardous Substances Data Bank. TOXNET® Network of databases on toxicology, hazardous chemicals, and environmental health. NLM Databases & Electronic Resources, U.S. National Library of Medicine, NHI, 8600 Rockville Pike, Bethesda, MD 20894 - http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB
- IARC - Monographs on the Evaluation of Carcinogenic Risks to Humans (collection) - http://www-cie.iarc.fr/
- Merck Index (1999). Merck & CO., Inc, 12th edition
- NIOSH U.S. (2008) - Pocket Guide to Chemical Hazards - http://www.cdc.gov/niosh/npg/
- Patty's Industrial Hygiene and Toxicology, 3rd Revised Edition
- Règlement sur les produits contrôlés (Canada)
- RTECS (2008). Registry of Toxic Effects of Chemical Substances, NIOSH, CDC
- Toxicologie industrielle & intoxication professionnelle, 3e édition, Lauwerys

Glossary

CSST	: Commission de la Santé et de la Sécurité du Travail (Québec).
HSDB	: Hazardous Substances Data Bank.
IARC	: International Agency for Research on Cancer.
NIOSH	: National Institute of Occupational Safety and Health.
NTP	: U.S. National Toxicology Program.
RTECS	: Registry of Toxic Effects of Chemical Substances

Note

For further information, see NorFalco Inc. Sulfuric Acid « Storage and Handling Bulletin ».

Because of its corrosive characteristics and inherent hazards, Sulfuric Acid should not be used in sewer or drain cleaners or any similar application; regardless of whether they are formulated for residential, commercial or industrial use. NorFalco will not knowingly sell sulfuric acid to individuals or companies who repackage the product for sale as sewer or drain cleaners, or any other similar use.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

For additional information, please visited our website : www.norfalco.com

Written by : Groupe STEM Consultants / NorFalco Sales Inc.
Complete revision : 2009-01-24 **Partial review :** None **Previous complete revision :** 2008-01-24

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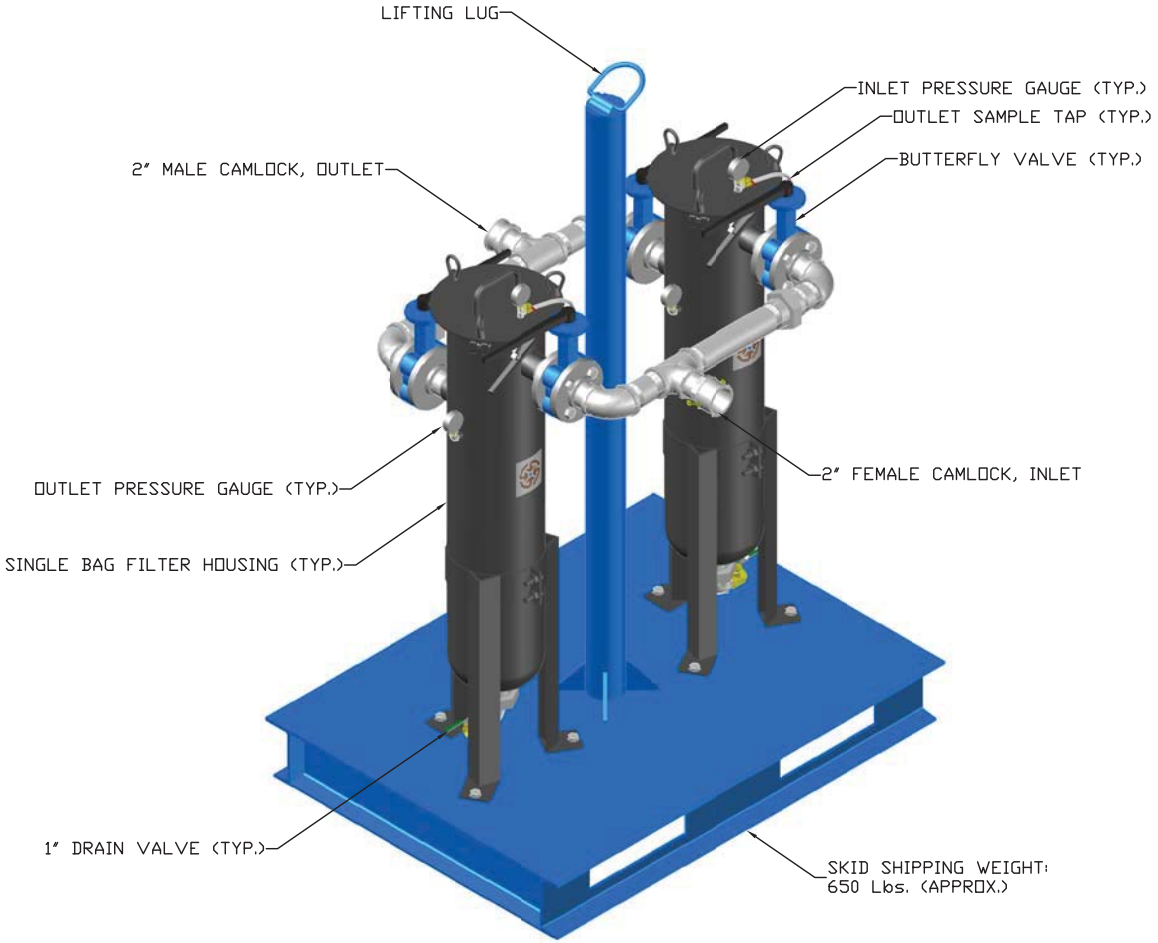
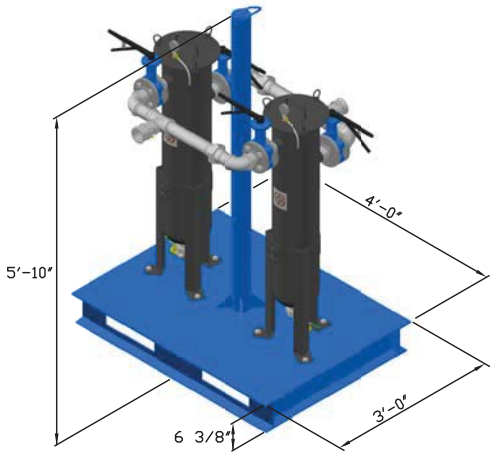
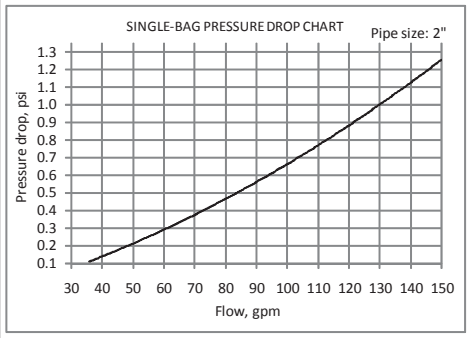
Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. NorFalco Sales Inc.extends no warranty and assumes no responsibility for the accuracy of the content and expressly disclaims all liability for reliance thereon. This material safety data sheet provides guidelines for the safe handling and processing of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required. Individuals exposed to this product should read and understand this information and be provided pertinent training prior to working with this product.





NOTE: THIS DRAWING DEPICTS A "TYPICAL" SKID.
ACTUAL DETAILS AND DIMENSIONS MAY VARY.

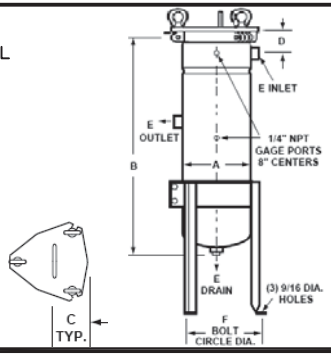


SINGLE BAG FILTER SPECIFICATIONS

- CONSTRUCTION:	CARBON STEEL
- HOUSING STYLE:	STANDARD
- NUMBER OF BASKETS:	1
- STRAINING FILTERING AREA:	26.4 SQR. FT.
- INLET/OUTLET SIZE:	2"
- DRAIN SIZE (1x):	2"
- NOMINAL FLOW RATE:	100 GPM
- STANDARD PRESSURE:	125 PSI
- WEIGHT (PER DRY UNIT):	70 Lbs.

BASIC DIMENSIONS

MODEL NUMBER & A: 8 (8.6")
LEG BOLT CIRCLE F: ø12.0"
B: 35.9" C: 6.0"
D: 3.5" E: 2.0"



NO.	REVISIONS	DATE
C	ADDED SKID WEIGHT	02/18/09

DUPLEX SINGLE BAG FILTER SKID STANDARD EQUIPMENT SPECIFICATION

SCALE: NTS	APPROVED BY: JB	DRAWN BY: AAV	
DATE: 02/18/09			

GROUND/WATER TREATMENT & TECHNOLOGY
P.O. BOX 1174
DENVILLE, NJ 07834

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST-0002-SPC	C

TENCATE Mirafi®

Mirafi® 140N

Mirafi® 140N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 140N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Mirafi® 140N meets Aashto M288-06 Class 3 for elongation > 50%.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
Apparent Opening Size (AOS)[1]	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
Permittivity	ASTM D4491	sec^{-1}	1.7	
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	135 (5500)	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

[1] ASTM D4751: AOS is a Maximum Opening Diameter Value

Physical Properties	Unit	Typical Value	
Roll Dimensions (width x length)	ft (m)	12.5 x 360 (3.8 x 110)	15 x 360 (4.5 x 110)
Roll Area	yd^2 (m^2)	500 (418)	600 (502)
Estimated Roll Weight	lb (kg)	133 (60)	160 (72)

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