



HALEY & ALDRICH, INC.
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Boston, MA 02129
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12 December 2018

File No. 130676-004

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

Attention: Shauna Little, EPA/OEP RGP Applications Coordinator

Subject: Notice of Intent (NOI)
Temporary Construction Dewatering
Seaport Square Parcel L4
50 East Service Road
Boston, Massachusetts

Dear Ms. Little:

On behalf of our client, Seaport L-4 Title Holder LLC, 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 Seaport Square Parcel L4 site, located at 390 Congress Street, in Boston, Massachusetts.

Site Location and Historical Site Usage

The Seaport Square Parcel L4 site is a 1.65-acre parcel located within a larger development parcel referred to as the L Blocks within the Seaport Square Master Plan in South Boston, Massachusetts. The subject site is located in the South Boston Seaport area which consists of filled land. According to historical records the site consisted of tidal flats at the intersection of Fort Point Channel and the harbor prior to 1869. Between 1873 and 1878, portions of the tidal flats were filled with dredge material (cohesive fill) from the main Fort Point Channel and three feet of gravel was placed over the dredge fill at the ground surface.

In 1878, the area was rented to New York & New England Railroad, which later purchased the site land in 1880. The subject site was part of a 50-acre lot operated by the New York & New England Railroad that was filled during the mass filling of the South Boston Waterfront. The site was later developed as a railroad terminal ground.

In the late 1970s, the railroad terminal was decommissioned, and the rail spurs and support buildings were removed. In the late 1990's the site was used as a soil staging area in support of the Central Artery Tunnel Project (CA/T). At the end of the CA/T the project site was paved using the manufactured gravel stored on the site as the pavement subbase. The property has been used for surface parking since.

Proposed Construction

Within L4, a 2-story below grade parking garage is planned to extend over the entire 72,000 square foot footprint. The top of the lowest level (P1) floor slab is planned at El. -19.5. The P1 parking level will have 24.5 ft floor-to-floor spacing to allow for parking stackers, and the P2 parking level will have a 14 ft floor-to-floor spacing. Both garage levels are planned to connect to future garages in Parcels L3, L5, and L6 to the west and south as these parcels are developed. Within the overall footprint, 25,700 square feet will consist of an above-grade building having a two-floor retail podium and a 16-story office tower. Based on recent adjacent developments within the Seaport, it is also likely that the proposed office building will house day care facilities. The remaining at-grade footprint will be used for landscaping and pedestrian access ways.

Construction of the underground garage and foundations will require excavations extending from current ground surface down to approximately El. -22.5 to El. -26.7 corresponding to excavation depths of about 40 to 45 ft below current site grades. The excavations are expected to extend through Fill, Organic Soils, Marine (sand) Deposits, and terminate within the Marine (clay) Deposits.

Building loads will be supported on reinforced concrete foundations consisting of footings and mat foundations bearing on undisturbed, naturally deposited Marine Deposits. The garage foundation walls will be concrete diaphragm walls constructed by the slurry trench excavation method (i.e., slurry wall) on two sides north and east which will serve as temporary earth support during construction and the permanent foundation wall. There will be no foundation wall on the west and south sides as the below grade garage is intended to connect to future phases. On an interim basis, the interlocking steel sheeting used for temporary support of excavation will be left in place. The walls will be braced by the garage floor slabs and columns in the interim condition.

Regulatory Status

A Class A-3 Response Action Outcome (RAO) Statement prepared by Haley & Aldrich was previously submitted to MassDEP for the MCP Disposal Site RTN 3-19097, a portion of which encompasses the limits of the Parcel L4 site. In 2000, the fill material at 390 to 420 Congress Street, which includes the Parcel L4 Site, indicated levels of semi-volatile organic compounds (SVOCs), metals, and petroleum hydrocarbons at concentrations above applicable MCP Reportable Concentrations. Reportable concentrations of groundwater contaminants were not detected. The fill materials for which chemical data were available (which included manufactured gravel fill placed in the 1990s and some underlying fill soils) were evaluated in 2000 according to a Method 3 Risk Characterization, 310 CMR 40.0942. Concentrations of contaminants were not reduced to background, and it was not considered feasible to do so at that time. Therefore, an Activity and Use Limitation (AUL) was required to maintain a condition of "No Significant Risk" at 390 to 420 Congress Street, relative to human health, safety, public welfare and the environment.

In accordance with 310 CMR 40.1036(2), a Class A-3 RAO was achieved for 390 to 420 Congress Street, which includes the Parcel L4 Site, on 27 December 2000. The associated AUL permitted the following Site activities and uses at 390 to 420 Congress Street:

- Use as a parking lot;
- Maintenance of landscaped areas and parking lot;
- Construction activities provided that such work is conducted in accordance with the soil and groundwater management procedures pursuant to 310 CMR 40.0030;
- Future use of the property for retail, hotel, or office space; and
- Other activities as recommended by a Licensed Site Professional (LSP) that are not restricted by the AUL.

Uses and activities inconsistent with the AUL included:

- Single family residences;
- Schools as defined by 310 CMR 40.006 which includes day care centers and kindergartens;
- Active recreational uses; and
- Use of on-site soils for cultivation of fruits and vegetables.

Precharacterization programs were conducted at the project Site during May and June 2018 to develop geotechnical information and environmental soil and groundwater quality data. These data were judged to constitute a new 120-day reporting condition under the MCP considering that volatile organic compounds (VOCs), SVOCs, petroleum hydrocarbons and metals detected in soils exceeded the applicable MCP RCS-1 Reportable Concentrations, were detected at greater concentrations and/or with additional compounds as compared to conditions previously considered by the December 2000 Class A-3 RAO for RTN 3-19097. Accordingly, a BWSC 103 Release Notification Form (RNF) was submitted via eDEP on 21 November 2018 for the Site and RTN 3-35310 was issued by MassDEP.

The RAM Plan was submitted under the new primary RTN 3-35310 on 4 December 2018. The MCP at 310 CMR 40.1067(4)(b) also requires a RAM Plan for RTN 3-19097 due to planned post-RAO (currently known as post-Permanent Solution) remedial actions within an area subject to an AUL. Therefore, the BWSC106 Form also listed RTN3-19097 as an additional RTN addressed by the RAM Plan in connection with soil management during the proposed site development.

Groundwater Quality Data

On 9 July 2018, a groundwater sample was collected from the observation well HA18-C3(OW) located at the center of the property. 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, semi-volatile 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 HA18-C3(OW) is shown on Figure 2.

Receiving Water Quality Information and Dilution Factor

On 9 July 2018, Haley & Aldrich collected a receiving water sample from the Boston Harbor 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 2019 and is anticipated to be required for up to 18 months. On average, we estimate effluent discharge rates of about 75 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, 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.

National Marine Fisheries Service Eligibility

Based on our review of the National Marine Fisheries Service (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 below¹, 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 Parcel L4 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 below², resident populations of Sturgeon no longer exist in the Charles River.

Owner and Operator Information

Owner:

Seaport L-4 Title Holder LLC
33 Boylston Street, Suite 3000
Chestnut Hill, MA 02467
Contact: Daniel Preysman
Vice President

Operator:

Turner Construction Company
2 Seaport Lane
Boston, MA 02210
Contact: Matthew McCullough
Title: Project Executive

Appendices

The completed “Suggested Notice of Intent” form as provided in the RGP is enclosed in Appendix A. The site owner is the Seaport L-4 Title Holder LLC. Seaport L-4 Title Holder LLC has hired Turner Construction Company as the general 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 Seaport L-4 Title Holder LLC 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.

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/>

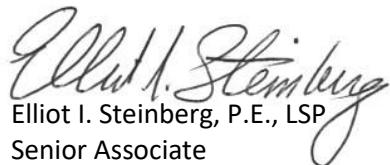
Closing

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



Lindsey R. Howard, E.I.T.
Staff Environmental Engineer



Elliot I. Steinberg, P.E., LSP
Senior Associate

Attachments:

Table I – Summary of Groundwater Quality Data

Figure 1 – Site Locus

Figure 2 – Site and Subsurface Location Plan

Figure 3 – Proposed Discharge Route

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: Amy Prange, WS Development

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TABLE I - SUMMARY OF WATER QUALITY DATA

SEAPORT PARCEL L4
BOSTON, MASSACHUSETTS
FILE NO. 130676-004

LOCATION SAMPLING DATE LAB SAMPLE ID SAMPLE TYPE	MCP 2014 RCGW- 2 Reportable Concentrations (ug/L)	NPDES Project Specific Effluent Criteria (ug/L)	HA 18-BOSTON HARBOR 7/9/2018 L1825904-01 RECEIVING WATER	HA-18-L4-NPDES 7/9/2018 L1825903-01 SOURCE WATER
Volatile Organic Compounds (ug/L)				
1,1,1-Trichloroethane	4000	200	-	ND(2)
1,1,2-Trichloroethane	900	5	-	ND(1.5)
1,1-Dichloroethane	2000	70	-	ND(1.5)
1,1-Dichloroethene	80	3.2	-	ND(1)
1,2-Dichlorobenzene	2000	600	-	ND(5)
1,2-Dichloroethane	5	5	-	ND(1.5)
1,3-Dichlorobenzene	6000	320	-	ND(5)
1,4-Dichlorobenzene	60	5	-	ND(5)
Acetone	50000	7.97	-	ND(10)
Benzene	1000	5*	-	ND(1)
Carbon tetrachloride	2	4.4	-	ND(1)
cis-1,2-Dichloroethene	20	70	-	ND(1)
Ethylbenzene	5000	*	-	ND(1)
Methyl tert butyl Ether	5000	70	-	ND(10)
Methylene chloride	2000	4.6	-	ND(5)
o-xylene	3000	*	-	ND(1)
p/m-Xylene	3000	*	-	ND(2)
Tert-Butyl Alcohol	NA	120	-	ND(100)
Tertiary-Amyl Methyl Ether	NA	90	-	ND(20)
Tetrachloroethene	50	5	-	ND(1.5)
Toluene	40000	*	-	ND(1)
Trichloroethene	5	5	-	ND(1)
Vinyl chloride	2	2	-	ND(1)
Xylenes, Total	3000	*	-	ND(1)
1,2-Dibromoethane	2	0.05	-	ND(0.01)
1,4-Dioxane	6000	200	-	ND(50)
Semivolatile Organic Compounds (ug/L)				
Bis(2-ethylhexyl)phthalate	50000	+	-	ND(3)
Butyl benzyl phthalate	10000	+	-	ND(5)
Di-n-butylphthalate	5000	+	-	ND(5)
Di-n-octylphthalate	100000	+	-	ND(5)
Diethyl phthalate	9000	+	-	ND(5)
Dimethyl phthalate	50000	+	-	ND(5)
Acenaphthene	10000	**	-	ND(0.1)
Acenaphthylene	40	**	-	ND(0.1)
Anthracene	30	**	-	0.18
Benzo(a)anthracene	1000	1	-	ND(0.1)
Benzo(a)pyrene	500	1	-	ND(0.1)
Benzo(b)fluoranthene	400	1	-	ND(0.1)
Benzo(ghi)perylene	20	**	-	ND(0.1)
Benzo(k)fluoranthene	100	1	-	ND(0.1)
Chrysene	70	1	-	ND(0.1)
Dibenzo(a,h)anthracene	40	1	-	ND(0.1)
Fluoranthene	200	**	-	ND(0.1)
Fluorene	40	**	-	ND(0.1)
Indeno(1,2,3-cd)pyrene	100	1	-	ND(0.1)
Naphthalene	700	20	-	ND(0.1)
Pentachlorophenol	200	1	-	ND(1)
Phenanthrene	10000	**	-	ND(0.1)
Pyrene	20	**	-	ND(0.1)
Total Metals (ug/L)				
Antimony, Total	8000	206	-	ND(4)
Arsenic, Total	900	104	-	2.7
Cadmium, Total	4	10.2	-	ND(0.2)
Chromium, Total	300	323	-	1.18
Copper, Total	100000	242	-	ND(1)
Iron, Total	NA	5000	-	27700
Lead, Total	10	160	-	ND(1)
Mercury, Total	20	0.739	-	ND(0.2)
Nickel, Total	200	1450	-	2.76
Selenium, Total	100	235.8	-	ND(5)
Silver, Total	7	35.1	-	ND(0.4)
Zinc, Total	900	420	-	ND(10)
Polychlorinated Biphenyls (ug/L)				
Aroclor 1016	5	***	-	ND(0.25)
Aroclor 1221	5	***	-	ND(0.25)
Aroclor 1232	5	***	-	ND(0.25)
Aroclor 1242	5	***	-	ND(0.25)
Aroclor 1248	5	***	-	ND(0.25)
Aroclor 1254	5	***	-	ND(0.25)
Aroclor 1260	5	***	-	ND(0.2)
Total Petroleum Hydrocarbons (ug/L)				
TPH, SGT-HEM	5000	5000	-	ND(4000)
General Chemistry				
Chlorine, Total Residual	NA	7.5	-	ND(20)
Chromium, Hexavalent	300	0.323	-	ND(10)
Chromium, Trivalent	600	0.323	-	ND(10)
Cyanide, Total	30	178000	-	ND(5)
Ethanol	NA	Report	-	ND(2000)
Nitrogen, Ammonia	NA	Report	-	8840
Hardness	NA	Report	-	622000
pH (H)	NA	6.5 - 8.3	7.8	7.02
Chloride	NA	Report	-	2290000
Temperature	NA	Report	18	21.73
Phenolics, Total	NA	1080	-	ND(30)
Salinity	NA	NA	27	-
Solids, Total Suspended	NA	30	-	62000

ABBREVIATIONS:

- : Not analyzed

ug/L: microgram 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. **Bold** values indicate an exceedance of applicable 2017 NPDES RGP Project Limit Concentrations.

3. *: Indicates effluent limit is limited as total BTEX of 100 ug/l.

4. **: Indicates effluent limit is limited as total Group II PAHs of 100 ug/l.

5. ***: Indicates compliance limits are equal to the minimum level (ML) of the test method

2. +: Indicates effluent limit is limited as total phthalates of 190 ug/l.

3. pH and Temperature are collected in the field.



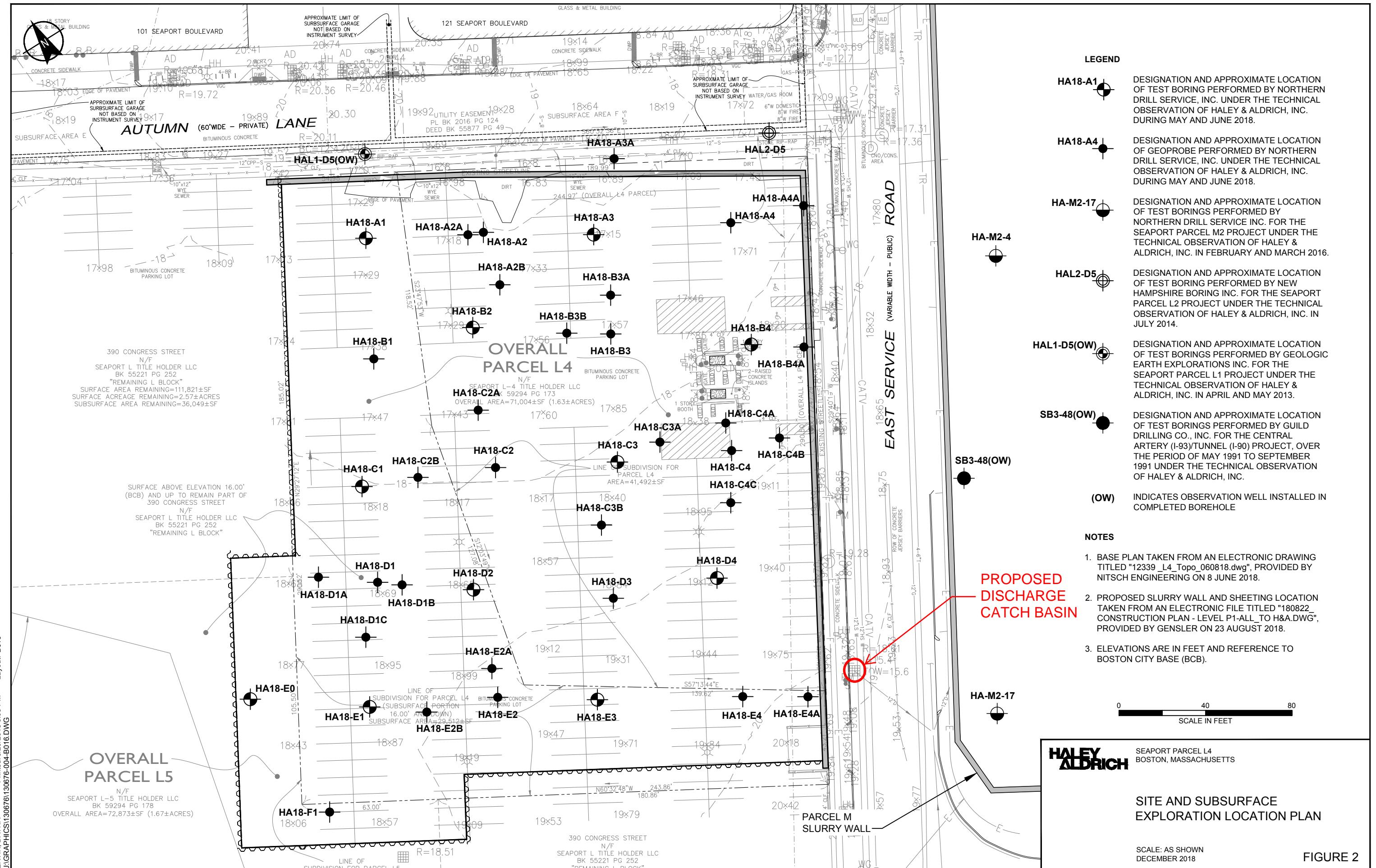
**HALEY
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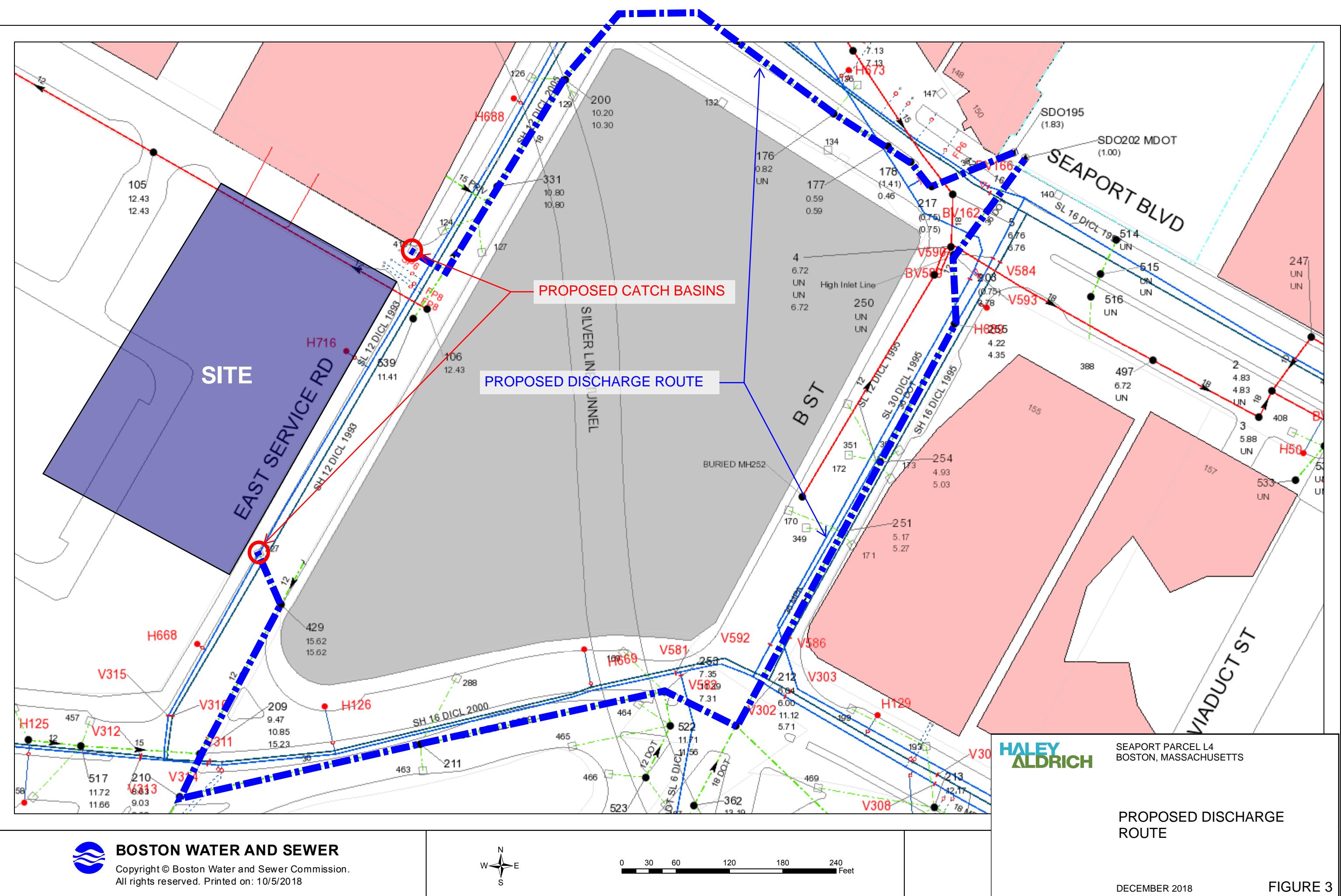
SEAPORT PARCEL L4
EAST SERVICE ROAD
BOSTON, MASSACHUSETTS

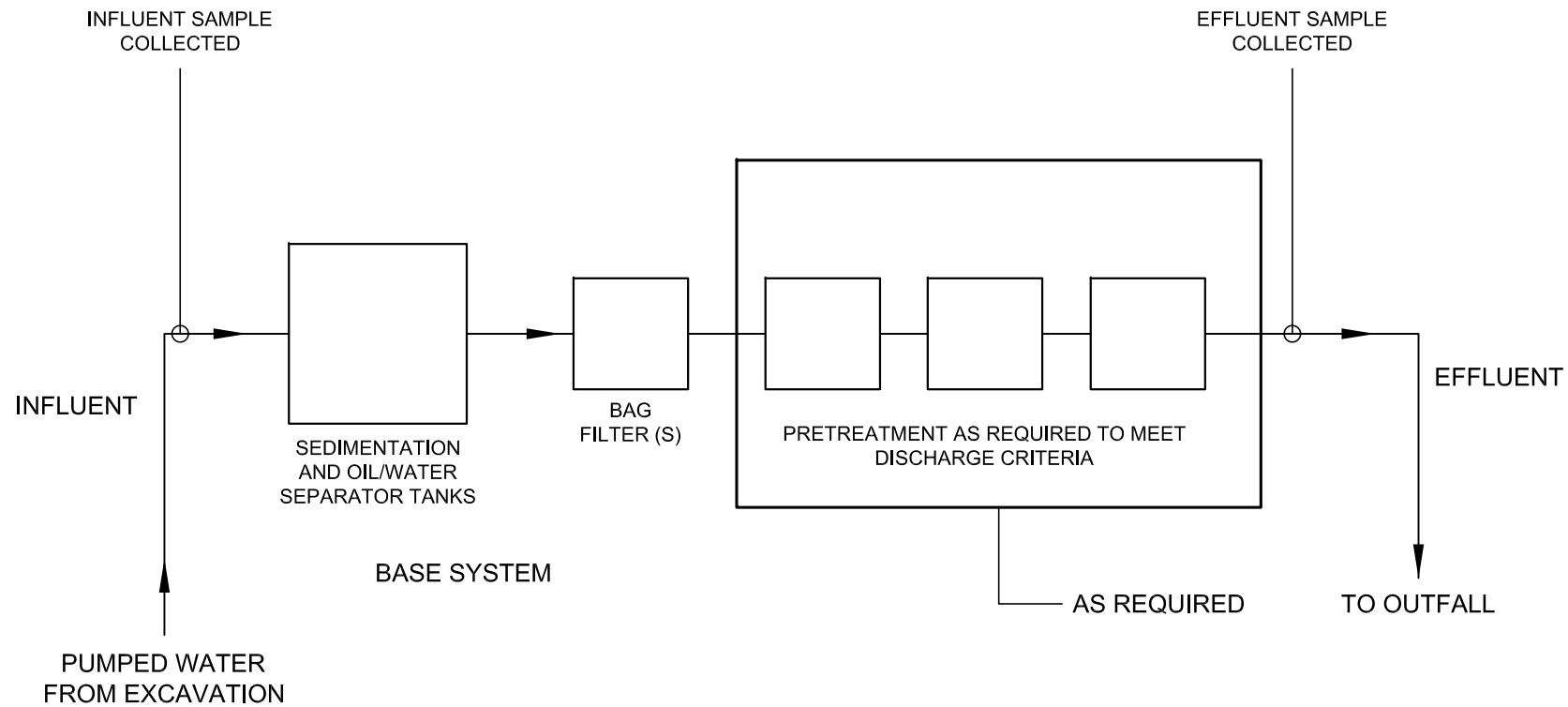
PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
DECEMBER 2018

FIGURE 1







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.

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SEAPORT PARCEL L4
BOSTON, MASSACHUSETTS

PROPOSED
TREATMENT SYSTEM
SCHEMATIC

SCALE: NONE
DECEMBER 2018

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: Seaport Square Parcel L4	Site address: Street: 390 Congress Street		
	City: Boston	State: MA	Zip: 02110
2. Site owner Seaport L-4 Title Holder LLC	Contact Person: Daniel Preysman		
	Telephone: 617-646-3130	Email: Daniel.Preysman@wsdevelopment.com	
Owner is (check one): <input type="checkbox"/> Federal <input type="checkbox"/> State/Tribal <input checked="" type="checkbox"/> Private <input type="checkbox"/> Other; if so, specify: Turner Construction Company	Mailing address: Street: 33 Boylston Street, Suite 3000		
	City: Chestnut Hill	State: MA	Zip: 02467
3. Site operator, if different than owner	Contact Person: Matthew McCullough		
	Telephone: 617-247-6400	Email: mmccullough@tcco.com	
	Mailing address: Street: 2 Seaport Lane, Suite 200		
	City: Boston	State: MA	Zip: 02118
4. NPDES permit number assigned by EPA: N/A NPDES permit is (check all that apply): <input type="checkbox"/> RGP <input type="checkbox"/> DGP <input type="checkbox"/> CGP <input type="checkbox"/> MSGP <input type="checkbox"/> Individual NPDES permit <input type="checkbox"/> Other; if so, specify:	5. Other regulatory program(s) that apply to the site (check all that apply): <input checked="" type="checkbox"/> MA Chapter 21e; list RTN(s): 3-35310 <input type="checkbox"/> CERCLA <input type="checkbox"/> NH Groundwater Management Permit or Groundwater Release Detection Permit: <input type="checkbox"/> UIC Program <input type="checkbox"/> POTW Pretreatment <input type="checkbox"/> CWA Section 404		

B. Receiving water information:

1. Name of receiving water(s): Boston Inner Harbor/Boston Main Channel	Waterbody identification of receiving water(s): MA70-02	Classification of receiving water(s): SB
Receiving water is (check any that apply): <input type="checkbox"/> Outstanding Resource Water <input type="checkbox"/> Ocean Sanctuary <input type="checkbox"/> territorial sea <input type="checkbox"/> Wild and Scenic River		
2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Are sensitive receptors present near the site? (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

C. Source water information:

1. Source water(s) is (check any that apply):			
<input checked="" type="checkbox"/> 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): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> 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): <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> The receiving water <input type="checkbox"/> A surface water other than the receiving water; if so, indicate waterbody: <input checked="" type="checkbox"/> Other; if so, specify: Although "Contaminated Groundwater" is listed, see table for compounds actually detected	<input type="checkbox"/> Potable water; if so, indicate municipality or origin:

2. Source water contaminants: Total suspended solids, iron	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

D. Discharge information

1. The discharge(s) is a(n) (check any that apply): <input type="checkbox"/> Existing discharge <input checked="" type="checkbox"/> New discharge <input type="checkbox"/> New source	
Outfall(s): SDO 195	Outfall location(s): (Latitude, Longitude) 42.350697 -71.042631
Discharges enter the receiving water(s) via (check any that apply): <input type="checkbox"/> Direct discharge to the receiving water <input checked="" type="checkbox"/> Indirect discharge, if so, specify: <input type="checkbox"/> A private storm sewer system <input checked="" type="checkbox"/> 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): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Has the operator has received permission from the owner to use such system for discharges? (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Provide the expected start and end dates of discharge(s) (month/year): February 2019 - August 2020	
Indicate if the discharge is expected to occur over a duration of: <input type="checkbox"/> less than 12 months <input checked="" type="checkbox"/> 12 months or more <input type="checkbox"/> is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

2. Activity Category: (check all that apply)	3. Contamination Type Category: (check all that apply)	
	<p>a. If Activity Category I or II: (check all that apply)</p> <p><input type="checkbox"/> A. Inorganics <input type="checkbox"/> B. Non-Halogenated Volatile Organic Compounds <input type="checkbox"/> C. Halogenated Volatile Organic Compounds <input type="checkbox"/> D. Non-Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> E. Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> F. Fuels Parameters</p>	
	<p>b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)</p>	
	<p><input checked="" type="checkbox"/> G. Sites with Known Contamination</p> <p><input type="checkbox"/> H. Sites with Unknown Contamination</p> <p>c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply)</p> <p><input checked="" type="checkbox"/> A. Inorganics *<input checked="" type="checkbox"/> B. Non-Halogenated Volatile Organic Compounds <input type="checkbox"/> C. Halogenated Volatile Organic Compounds *<input checked="" type="checkbox"/> D. Non-Halogenated Semi-Volatile Organic Compounds *<input checked="" type="checkbox"/> E. Halogenated Semi-Volatile Organic Compounds *<input checked="" type="checkbox"/> F. Fuels Parameters</p>	<p>d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply</p>

*detected in soil only

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	8840	8840	Report mg/L	---
Chloride		X	1	300.0	25000	2290000	2290000	Report µg/l	---
Total Residual Chlorine	X		1	4500CL	20	ND	ND	0.2 mg/L	7.5 µg/L
Total Suspended Solids		X	1	2540D	5	62	62	30 mg/L	—
Antimony Total		X*	1	6020A	4	ND	ND	206 µg/L	640
Arsenic Total		X	1	6020A	1	2.7	2.7	104 µg/L	36
Cadmium Total		X*	1	6020A	0.2	ND	ND	10.2 µg/L	8.9
Chromium III	X		1	6020A	10	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	22700	22700	5,000 µg/L	
Lead Total		X*	1	6020A	1	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	2.76	2.76	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	0.005	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	1	ND	ND	5.0 µg/L	---
1,4 Dioxane	X		1	8260C-SIM	50	ND	ND	200 µg/L	---
Acetone		X*	1	8260C	10	ND	ND	7.97 mg/L	---
Phenol	X		1	8270D	30	ND	ND	1,080 µg/L	300

X* - detected in soil only

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	1.0	ND	ND	4.4 µg/L	1.6
1,2 Dichlorobenzene	X		1	8260C	5.0	ND	ND	600 µg/L	---
1,3 Dichlorobenzene	X		1	8260C	5.0	ND	ND	320 µg/L	---
1,4 Dichlorobenzene	X		1	8260C	5.0	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	1.5	ND	ND	70 µg/L	---
1,2 Dichloroethane	X		1	8260C	1.5	ND	ND	5.0 µg/L	---
1,1 Dichloroethylene	X		1	8260C	1.0	ND	ND	3.2 µg/L	---
Ethylene Dibromide	X		1	8260C	0.01	ND	ND	0.05 µg/L	---
Methylene Chloride	X		1	8260C	5.0	ND	ND	4.6 µg/L	---
1,1,1 Trichloroethane	X		1	8260C	2.0	ND	ND	200 µg/L	---
1,1,2 Trichloroethane	X		1	8260C	1.5	ND	ND	5.0 µg/L	---
Trichloroethylene	X		1	8260C	1.0	ND	ND	5.0 µg/L	---
Tetrachloroethylene	X		1	8260C	1.5	ND	ND	5.0 µg/L	3.3
cis-1,2 Dichloroethylene	X		1	8260C	1.0	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		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

X* - detected in soil only

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	0.18	0.18	100 µg/L	---
Naphthalene		X*	1	8260C	0.1	ND	ND	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs		X*	1	608	NA	ND	ND	0.000064 µg/L	---
Pentachlorophenol	X		1	8270D	0.25	ND	ND	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		X*	1	1664A	4.0	ND	ND	5.0 mg/L	---
Ethanol								Report mg/L	---
Methyl-tert-Butyl Ether	X		1	8260C	10	ND	ND	70 µg/L	
tert-Butyl Alcohol	X		1	8260C	100	ND	ND	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	X		1	8260C	20	ND	ND	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC₅₀, additional pollutants present); if so, specify:									
Total Chromium	X	1	6020A	0.2	1.18	1.18	ug/L		
Hardness	X	1	200.7	0.660	622000	622000	ug/L		
pH	X	1			7.02	7.02	ug/L		
See Attached Table 1									

X* - detected in soil only

Additional compounds detected in soil only:

VOCs

1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
2-Butanone (Methyl Ethyl Ketone)
2-Phenylbutane (sec-Butylbenzene)
Carbon disulfide
Cymene (p-Isopropyltoluene)
Isopropylbenzene (Cumene)
n-Butylbenzene
n-Propylbenzene

Metals

Barium
Beryllium
Vanadium
Lead, TCLP
Mercury, TCLP

Other

Total Solids
Conductivity

SVOCs

2-Methylnaphthalene
3-Methylphenol
bis(2-Ethylhexyl)phthalate
Butyl benzylphthalate
Dibenzofuran

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:

Following will be applied IF REQUIRED per effluent monitoring sampling

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 separator), to remove suspended solids and undissolved chemical constituents, as shown on Figure 4 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: **Flow meter**

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. **75 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: See attached manufacturers cut sheets and SDSs for equipment which may be utilized if necessary. This information is only included as a contingency and is not currently needed based on groundwater data. Exact specifications on frequency, duration, quantity, and method of application are not known at this time. If the system eventually requires chemical additives, these details will be provided to EPA.

- a. Product name, chemical formula, and manufacturer of the chemical/additive;
- b. Purpose or use of the chemical/additive or remedial agent;
- c. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
- d. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;
- e. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks; and
- f. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

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

(check one): Yes No

See above

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.

Refer to attached Haley & Aldrich, Inc. letter

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

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

J. Certification requirement

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

BMPP certification statement: A BMPP meeting the requirements of this general permit will be implemented 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

BWSC Permit being submitted concurrently with this NOI

Check one: Yes No NA

Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.

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

Check one: Yes No NA

Other; if so, specify:

Signature:



11/29/18

Date:

Print Name and Title:

Turner Construction Company

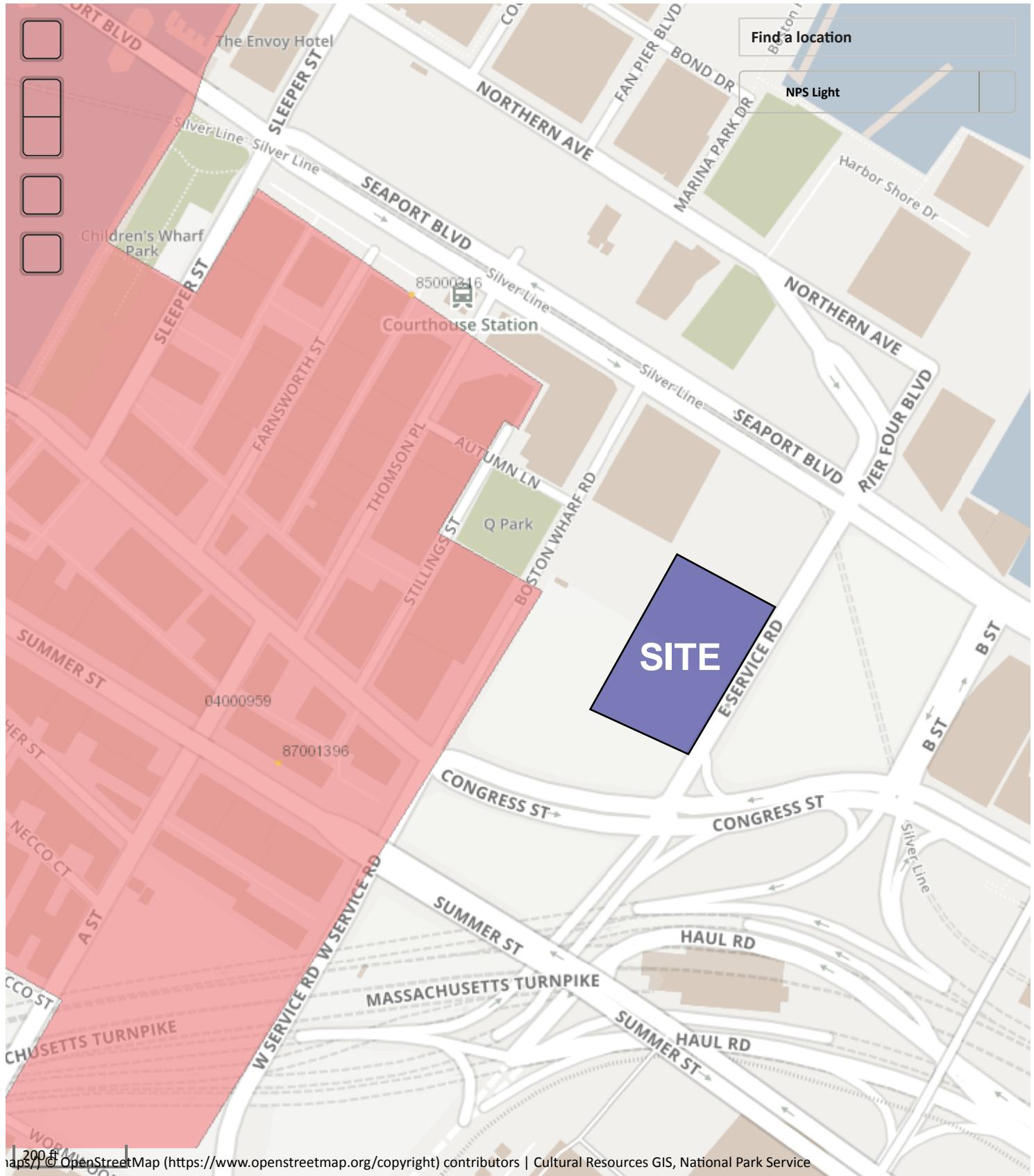
APPENDIX B

**National Register of Historic Places and
Massachusetts Historical Commission Documentation**

National Register of Histori...

National Park Service
U.S. Department of the Interior

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



200 ft
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National Register of Historic Places: Listed Properties

As of July 2015

Note: Not all properties are digitized

Reference State Number	County	City	Resource Name	Address	Listed Date	Text	Photos
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	Wiglesworth 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 Harbor	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	Stoughton St. and Columbia Rd.	19740418	Text	Photos
80004396	MASSACHUSETTS	Suffolk	Boston	Boston African American National Historic Site	Museum of Afro American History, C	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 N	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:	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, Bun	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., E	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 harmc	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., I	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 Fishter 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, Bostc	20040318	Text	Photos
04000426	MASSACHUSETTS	Suffolk	Boston	Nazing Court Apartments	224-236 Seaver St. and 1-8 Nazing Cc	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, Binf	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 Bo	Truman Parkway	20050105	Text	Photos
04001432	MASSACHUSETTS	Suffolk	Boston	VFW Parkway, Metropolitan Park System of Greater Bosto	VFW Parkway, bet. Spring And Centr	20050105	Text	Photos
04001572	MASSACHUSETTS	Suffolk	Boston	Morton Street, Metropolitan Park System of Greater Bosto	Morton Street, Metropolitan Park System of Greater Bosto	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., Richm	20080220	Text	Photos
08000693	MASSACHUSETTS	Suffolk	Boston	Old Harbor Reservation Parkways, Metropolitan Park Syst	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 Brooklin	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., E	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 Richmond	20150303 Text	Photos
15000195 MASSACHUSETTS	Suffolk	Boston	Boston National Historical Park	Charlestown Navy Yard	20150505 Text	Photos
86001378 MASSACHUSETTS	Suffolk	South Boston	US Post Office Garage	135 A St.	19860626 Text	Photos

Massachusetts Historical Commission

William Francis Galvin, Secretary of the Commonwealth

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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.](#)



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MACRIS MAPS 2.0 beta

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 Address or MHC# Search
[Bing](#) [MassDOT](#) [Street View](#)
Available Layers

 Base Layer
 Inventory Layers
 MassGIS Layers

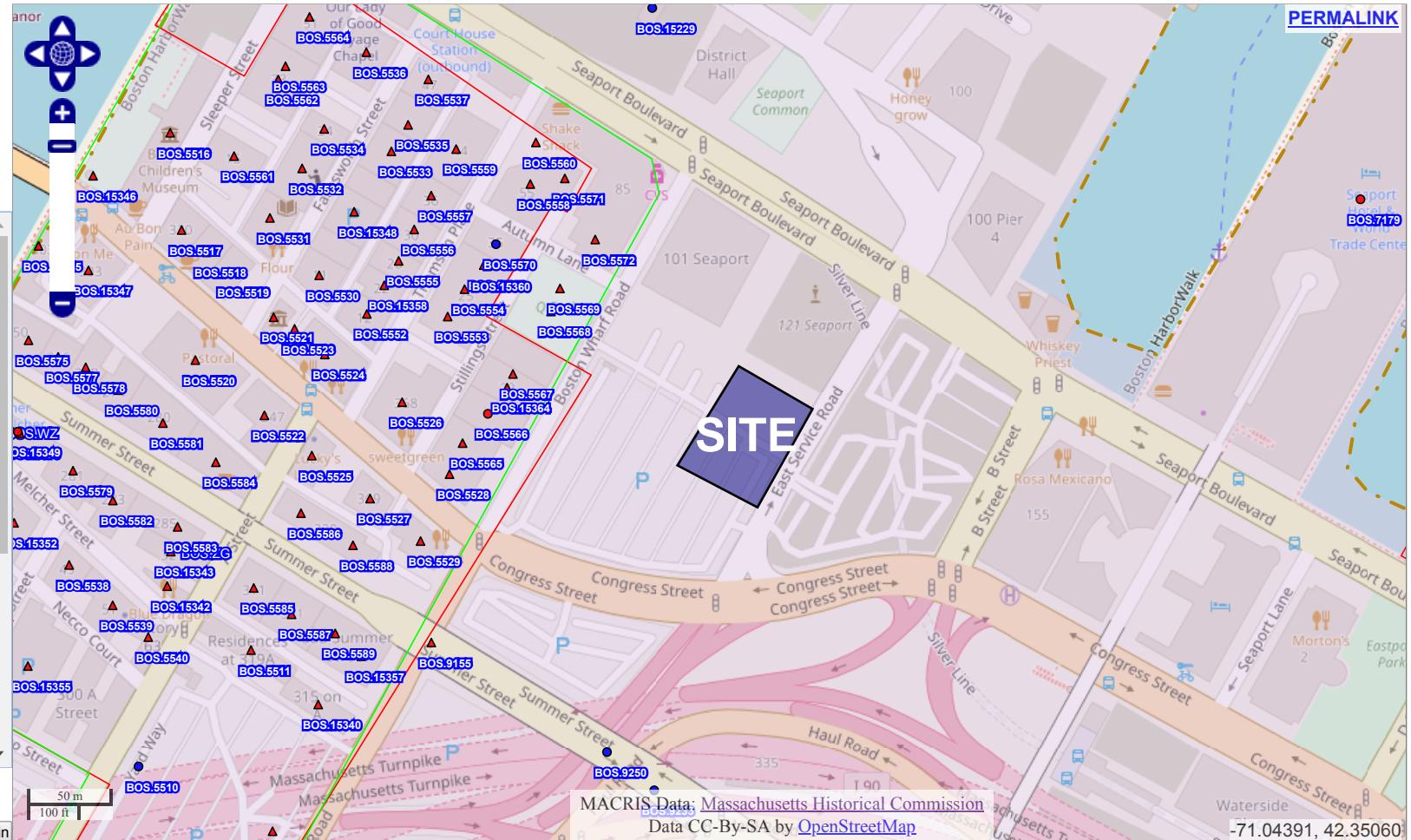
Legend
MHC Inventory Points

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

Archaeology Login

 Username:

Login

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MACRIS Maps Last Updated 08/28/2018

Massachusetts Cultural Resource Information System

MACRIS

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For more information about this page and how to use it, [click here](#).

Inventory No: BOS.WZ 
Historic Name: Fort Point Channel Historic District
Common Name:
Address:

City/Town: Boston
Village/Neighborhood: Fort Point Channel; South Boston
Local No:
Year Constructed:
Architect(s): Prescott, Howard S. B.; Safford, Morton D.
Architectural Style(s):

Use(s): Commercial District; Industrial Complex or District; Other Processing; Other Road Related; Other Transportation; Other Water Related; Residential District

Significance: Architecture; Commerce; Community Planning; Engineering; Industry; Maritime History; Transportation

Area(s):
Designation(s): Nat'l Register District (09/10/2004)
Building Material(s):



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APPENDIX C
ESA Documentation



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:

September 25, 2018

Consultation Code: 05E1NE00-2018-SLI-3207

Event Code: 05E1NE00-2018-E-07507

Project Name: Seaport Parcel L4

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-3207

Event Code: 05E1NE00-2018-E-07507

Project Name: Seaport Parcel L4

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/42.35145981399904N71.04199263511074W>



Counties: Suffolk, MA

Endangered Species Act Species

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

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

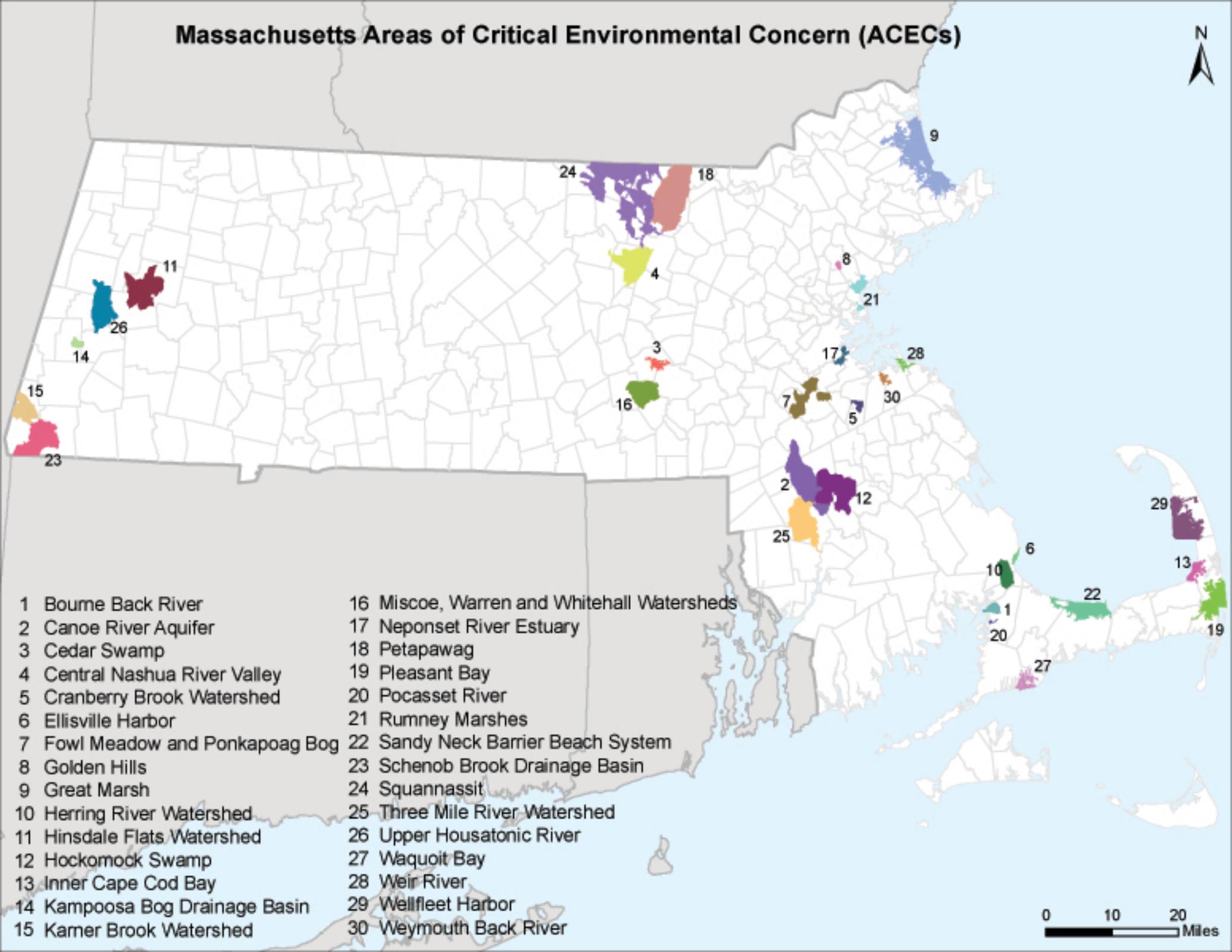
See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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

Critical habitats

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

Massachusetts Areas of Critical Environmental Concern (ACECs)



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

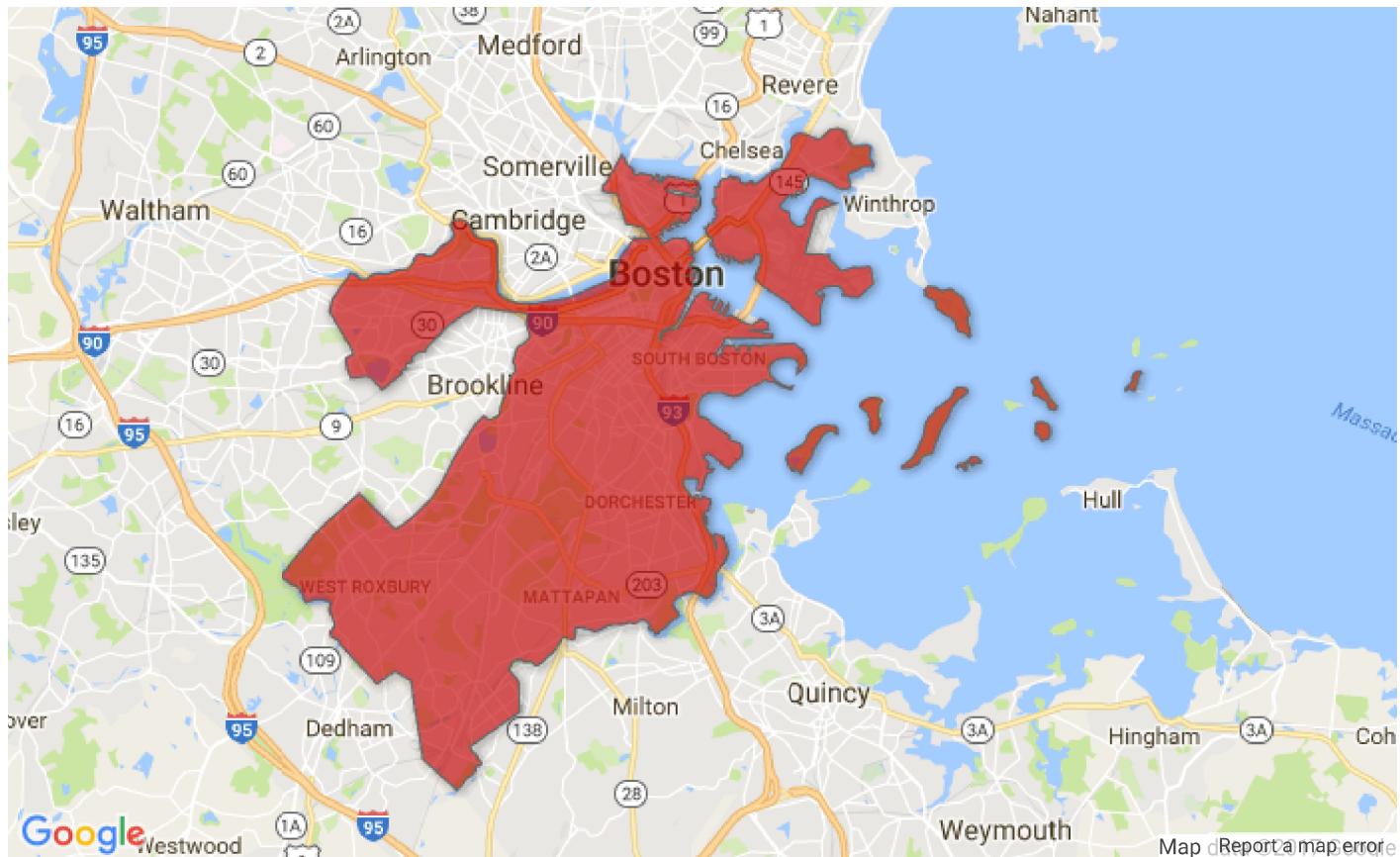
November 2010

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

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 its 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: or Species (Common Name): or Species (Scientific Name):



Showing 1 to 46 of 46 entries

Search:

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

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

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**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

**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

**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

¹Migratory 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.

APPENDIX D
BWSC PERMIT

12 December 2018
File No. 130676-004

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
Seaport Square Parcel L4
390 Congress Street
Boston, Massachusetts

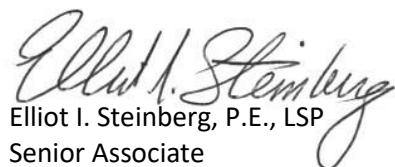
Dear Mr. Tuttle:

On behalf of our client, Seaport L-4 Title Holder LLC, this letter submits the Dewatering Discharge Permit Application in support of the proposed Seaport Square Parcel L4 project, located at 390 Congress Street, in Boston, Massachusetts.

Dewatering is necessary to enable construction excavations in-the-dry and is anticipated to begin in February 2019 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 undissolved 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.


Elliot I. Steinberg, P.E., LSP
Senior Associate

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: Seaport L-4 Title Holder LLC Address: 33 Boylston Street, Suite 3000, Chestnut Hill, MA 02467

Phone Number: 617-646-3130 Fax number: _____

Contact person name: Daniel Preysman Title: Vice President of Finance

Cell number: 617-646-3130 Email address: Daniel.preysman@wsdevelopment.com

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: 50 East Service Road Neighborhood Seaport Boston

Discharge is to a: Sanitary Sewer Combined Sewer Storm Drain Other (specify): _____
Sedimentation Tank, Bag Filter, and any other components as necessary

Describe Proposed Pre-Treatment System(s): (refer to attached RGP Application)

BWSC Outfall No. SDO195 Receiving Waters Boston Inner Harbor

Temporary Discharges (Provide Anticipated Dates of Discharge): From February 2019 To April 2020

<input type="checkbox"/> Groundwater Remediation	<input type="checkbox"/> Tank Removal/Installation	<input checked="" type="checkbox"/> Foundation Excavation
<input type="checkbox"/> Utility/Manhole Pumping	<input type="checkbox"/> Test Pipe	<input checked="" type="checkbox"/> Trench Excavation
<input checked="" type="checkbox"/> Accumulated Surface Water	<input type="checkbox"/> Hydrogeologic Testing	<input type="checkbox"/> Other _____

Permanent Discharges

<input type="checkbox"/> Foundation Drainage	<input type="checkbox"/> Crawl Space/Footing Drain
<input type="checkbox"/> Accumulated Surface Water	<input type="checkbox"/> Non-contact/Uncontaminated Cooling
<input type="checkbox"/> Non-contact/Uncontaminated Process	<input type="checkbox"/> 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: tuttemp@bwsc.org
Phone: 617-989-7204 Fax: 617-989-7716

Signature of Authorized Representative for Property Owner: RJH

Date: 11-29-18

APPENDIX E
Laboratory Data Reports



ANALYTICAL REPORT

Lab Number:	L1825903
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Heather Scranton
Phone:	(617) 886-7400
Project Name:	SEAPORT PARCEL L4
Project Number:	130676-004 SID 4
Report Date:	08/01/18

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

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

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

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1825903-01	HA-18-L4-NDPES_	WATER	SEAPORT, BOSTON, MA	07/09/18 10:00	07/09/18

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Case Narrative (continued)

Report Revision

August 01, 2018: The reporting limit for Bis(2-ethylhexyl)phthalate has been lowered to achieve NPDES criteria.

July 18, 2018: The Volatile Organics analyte list has been amended on L1825903-01 (HA-18-L4-NDPES_).

Report Submission

July 17, 2018: This final report includes the results of all requested analyses.

July 16, 2018: This is a preliminary report.

The analysis of Ethanol was subcontracted. A copy of the laboratory report is included as an addendum.

Please note: This data is only available in PDF format and is not available on Data Merger.

Semivolatile Organics

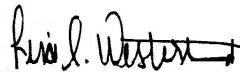
WG1134231: A Matrix Spike and Matrix Spike Duplicate were prepared with the sample batch, however, the native sample was not available for reporting; therefore, the Matrix Spike and Matrix Spike Duplicate results could not be reported.

Semivolatile Organics by SIM

WG1134239: A Matrix Spike and Matrix Spike Duplicate were prepared with the sample batch, however, the native sample was not available for reporting; therefore, the Matrix Spike and Matrix Spike Duplicate results could not be 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:

 Lisa Westerlind

Title: Technical Director/Representative

Date: 08/01/18

ORGANICS

VOLATILES

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

SAMPLE RESULTS

Lab ID:	L1825903-01	Date Collected:	07/09/18 10:00
Client ID:	HA-18-L4-NDPES_	Date Received:	07/09/18
Sample Location:	SEAPORT, BOSTON, MA	Field Prep:	Refer to COC

Sample Depth:

Matrix: Water
Analytical Method: 128,624.1
Analytical Date: 07/12/18 04:23
Analyst: KJD

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

Project Name: SEAPORT PARCEL L4

Lab Number: L1825903

Project Number: 130676-004 SID 4

Report Date: 08/01/18

SAMPLE RESULTS

Lab ID:	L1825903-01	Date Collected:	07/09/18 10:00
Client ID:	HA-18-L4-NDPES_	Date Received:	07/09/18
Sample Location:	SEAPORT, BOSTON, MA	Field Prep:	Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
-----------	--------	-----------	-------	----	-----	-----------------

Volatile Organics by GC/MS - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	103		60-140
Fluorobenzene	109		60-140
4-Bromofluorobenzene	98		60-140

Project Name: SEAPORT PARCEL L4

Lab Number: L1825903

Project Number: 130676-004 SID 4

Report Date: 08/01/18

SAMPLE RESULTS

Lab ID:	L1825903-01	Date Collected:	07/09/18 10:00
Client ID:	HA-18-L4-NDPES_	Date Received:	07/09/18
Sample Location:	SEAPORT, BOSTON, MA	Field Prep:	Refer to COC

Sample Depth:

Matrix: Water

Analytical Method: 128,624.1-SIM

Analytical Date: 07/12/18 04:23

Analyst: GT

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	116		60-140
4-Bromofluorobenzene	98		60-140

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Serial_No:08011819:23

Lab Number: L1825903
Report Date: 08/01/18

SAMPLE RESULTS

Lab ID: L1825903-01
Client ID: HA-18-L4-NDPES_
Sample Location: SEAPORT, BOSTON, MA

Date Collected: 07/09/18 10:00
Date Received: 07/09/18
Field Prep: Refer to COC

Sample Depth:

Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 07/10/18 14:10
Analyst: AWS

Extraction Method: EPA 504.1
Extraction Date: 07/10/18 11:45

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

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
Analytical Date: 07/10/18 11:14
Analyst: AWS

Extraction Method: EPA 504.1
Extraction Date: 07/10/18 10:33

Parameter	Result	Qualifier	Units	RL	MDL
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG1134151-1					
1,2-Dibromoethane	ND		ug/l	0.010	--

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 07/12/18 01:36
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1134961-4					
Methylene chloride	ND	ug/l	5.0	--	
1,1-Dichloroethane	ND	ug/l	1.5	--	
Carbon tetrachloride	ND	ug/l	1.0	--	
1,1,2-Trichloroethane	ND	ug/l	1.5	--	
Tetrachloroethene	ND	ug/l	1.5	--	
1,2-Dichloroethane	ND	ug/l	1.5	--	
1,1,1-Trichloroethane	ND	ug/l	2.0	--	
Benzene	ND	ug/l	1.0	--	
Toluene	ND	ug/l	1.0	--	
Ethylbenzene	ND	ug/l	1.0	--	
Vinyl chloride	ND	ug/l	1.0	--	
1,1-Dichloroethene	ND	ug/l	1.0	--	
cis-1,2-Dichloroethene ¹	ND	ug/l	1.0	--	
Trichloroethene	ND	ug/l	1.0	--	
1,2-Dichlorobenzene	ND	ug/l	5.0	--	
1,3-Dichlorobenzene	ND	ug/l	5.0	--	
1,4-Dichlorobenzene	ND	ug/l	5.0	--	
p/m-Xylene ¹	ND	ug/l	2.0	--	
o-xylene ¹	ND	ug/l	1.0	--	
Xylenes, Total ¹	ND	ug/l	1.0	--	
Acetone ¹	ND	ug/l	10	--	
Methyl tert butyl Ether ¹	ND	ug/l	10	--	
Tert-Butyl Alcohol ¹	ND	ug/l	100	--	
Tertiary-Amyl Methyl Ether ¹	ND	ug/l	20	--	

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 07/12/18 01:36
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1134961-4					

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

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1-SIM
Analytical Date: 07/11/18 23:56
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1134985-4					
1,4-Dioxane	ND		ug/l	50	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	102		60-140
4-Bromofluorobenzene	100		60-140

Lab Control Sample Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	<i>LCS</i>	<i>LCSD</i>	%Recovery		%Recovery		<i>RPD</i>	<i>Qual</i>	<i>RPD</i>	<i>Limits</i>	<i>Column</i>
	<i>%Recovery</i>	<i>Qual</i>	<i>%Recovery</i>	<i>Qual</i>	<i>Limits</i>						
Microextractables by GC - Westborough Lab Associated sample(s): 01 Batch: WG1134151-2											
1,2-Dibromoethane	116	-	-	-	80-120	-	-	-	-	-	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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: WG1134961-3								
Methylene chloride	95		-		60-140	-		28
1,1-Dichloroethane	80		-		50-150	-		49
Carbon tetrachloride	90		-		70-130	-		41
1,1,2-Trichloroethane	95		-		70-130	-		45
Tetrachloroethene	100		-		70-130	-		39
1,2-Dichloroethane	90		-		70-130	-		49
1,1,1-Trichloroethane	90		-		70-130	-		36
Benzene	90		-		65-135	-		61
Toluene	100		-		70-130	-		41
Ethylbenzene	100		-		60-140	-		63
Vinyl chloride	95		-		5-195	-		66
1,1-Dichloroethene	90		-		50-150	-		32
cis-1,2-Dichloroethene ¹	90		-		60-140	-		30
Trichloroethene	90		-		65-135	-		48
1,2-Dichlorobenzene	100		-		65-135	-		57
1,3-Dichlorobenzene	95		-		70-130	-		43
1,4-Dichlorobenzene	100		-		65-135	-		57
p/m-Xylene ¹	98		-		60-140	-		30
o-xylene ¹	95		-		60-140	-		30
Acetone ¹	92		-		40-160	-		30
Methyl tert butyl Ether ¹	85		-		60-140	-		30
Tert-Butyl Alcohol ¹	81		-		60-140	-		30
Tertiary-Amyl Methyl Ether ¹	95		-		60-140	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	<i>LCS</i> %Recovery	Qual	<i>LCSD</i> %Recovery	Qual	<i>%Recovery</i> <i>Limits</i>	<i>RPD</i>	Qual	<i>RPD</i> <i>Limits</i>
------------------	-------------------------	------	--------------------------	------	-----------------------------------	------------	------	-----------------------------

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1134961-3

Surrogate	<i>LCS</i> %Recovery	Qual	<i>LCSD</i> %Recovery	Qual	<i>Acceptance</i> <i>Criteria</i>
Pentafluorobenzene	102				60-140
Fluorobenzene	99				60-140
4-Bromofluorobenzene	98				60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	LCS	LCSD		%Recovery		RPD	Qual	RPD
	%Recovery	Qual	%Recovery	Qual	Limits			
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1134985-3								
1,4-Dioxane	110	-	-	-	60-140	-	-	20

Surrogate	LCS	LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual
Fluorobenzene	103	-	-	60-140
4-Bromofluorobenzene	100	-	-	60-140

Matrix Spike Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134151-3 QC Sample: L1825399-01 Client ID: MS Sample													
1,2-Dibromoethane	ND	0.249	0.284	114		-	-	-	80-120	-	20	A	
1,2-Dibromo-3-chloropropane	ND	0.249	0.267	107		-	-	-	80-120	-	20	A	

SEMIVOLATILES

Project Name: SEAPORT PARCEL L4

Lab Number: L1825903

Project Number: 130676-004 SID 4

Report Date: 08/01/18

SAMPLE RESULTS

Lab ID:	L1825903-01	Date Collected:	07/09/18 10:00
Client ID:	HA-18-L4-NDPES_	Date Received:	07/09/18
Sample Location:	SEAPORT, BOSTON, MA	Field Prep:	Refer to COC

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 625.1
Analytical Method:	129,625.1	Extraction Date:	07/10/18 14:47
Analytical Date:	07/11/18 19:19		
Analyst:	CB		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.2	--	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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		15-314
2-Fluorobiphenyl	92		55-108
4-Terphenyl-d14	109		52-109

Project Name: SEAPORT PARCEL L4

Lab Number: L1825903

Project Number: 130676-004 SID 4

Report Date: 08/01/18

SAMPLE RESULTS

Lab ID: L1825903-01
 Client ID: HA-18-L4-NDPES_
 Sample Location: SEAPORT, BOSTON, MA

Date Collected: 07/09/18 10:00
 Date Received: 07/09/18
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 129,625.1-SIM
 Analytical Date: 07/11/18 15:24
 Analyst: DV

Extraction Method: EPA 625.1
 Extraction Date: 07/10/18 14:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
Fluoranthene	ND		ug/l	0.10	--	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	0.18		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
Pentachlorophenol	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	46		35-77
Phenol-d6	34		24-61
Nitrobenzene-d5	92		15-314
2-Fluorobiphenyl	81		55-108
2,4,6-Tribromophenol	111		52-123
4-Terphenyl-d14	94		52-109

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1
Analytical Date: 07/11/18 10:04
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 07/10/18 14:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1134231-1					
Bis(2-ethylhexyl)phthalate	ND	ug/l	2.2	--	
Butyl benzyl phthalate	ND	ug/l	5.0	--	
Di-n-butylphthalate	ND	ug/l	5.0	--	
Di-n-octylphthalate	ND	ug/l	5.0	--	
Diethyl phthalate	ND	ug/l	5.0	--	
Dimethyl phthalate	ND	ug/l	5.0	--	

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		15-314
2-Fluorobiphenyl	71		55-108
4-Terphenyl-d14	102		52-109

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1-SIM
Analytical Date: 07/11/18 08:52
Analyst: DV

Extraction Method: EPA 625.1
Extraction Date: 07/10/18 14:58

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1134239-1					
Acenaphthene	ND	ug/l	0.10	--	
Fluoranthene	ND	ug/l	0.10	--	
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	--	
Pentachlorophenol	ND	ug/l	1.0	--	

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	36		35-77
Phenol-d6	26		24-61
Nitrobenzene-d5	71		15-314
2-Fluorobiphenyl	66		55-108
2,4,6-Tribromophenol	94		52-123
4-Terphenyl-d14	89		52-109

Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	<i>LCS</i> %Recovery	<i>LCSD</i> %Recovery	%Recovery Limits		<i>RPD</i> Qual	<i>RPD</i> Limits
	Qual	Qual	RPD	Qual		
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1134231-2						
Bis(2-ethylhexyl)phthalate	83	-	29-137	-	-	30
Butyl benzyl phthalate	92	-	1-140	-	-	30
Di-n-butylphthalate	97	-	8-120	-	-	30
Di-n-octylphthalate	86	-	19-132	-	-	30
Diethyl phthalate	88	-	1-120	-	-	30
Dimethyl phthalate	84	-	1-120	-	-	30

Surrogate	<i>LCS</i> %Recovery	<i>LCSD</i> %Recovery	Acceptance Criteria
	Qual	Qual	
Nitrobenzene-d5	86	-	15-314
2-Fluorobiphenyl	90	-	55-108
4-Terphenyl-d14	109	-	52-109

Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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: WG1134239-2								
Acenaphthene	79		-		60-132	-		30
Fluoranthene	81		-		43-121	-		30
Naphthalene	64		-		36-120	-		30
Benzo(a)anthracene	72		-		42-133	-		30
Benzo(a)pyrene	71		-		32-148	-		30
Benzo(b)fluoranthene	71		-		42-140	-		30
Benzo(k)fluoranthene	84		-		25-146	-		30
Chrysene	78		-		44-140	-		30
Acenaphthylene	74		-		54-126	-		30
Anthracene	81		-		43-120	-		30
Benzo(ghi)perylene	73		-		1-195	-		30
Fluorene	83		-		70-120	-		30
Phenanthrene	75		-		65-120	-		30
Dibenzo(a,h)anthracene	77		-		1-200	-		30
Indeno(1,2,3-cd)pyrene	71		-		1-151	-		30
Pyrene	78		-		70-120	-		30
Pentachlorophenol	78		-		38-152	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> <i>Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> <i>Limits</i>
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1134239-2								
Surrogate			<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>		Acceptance Criteria
2-Fluorophenol			37					35-77
Phenol-d6			27					24-61
Nitrobenzene-d5			82					15-314
2-Fluorobiphenyl			72					55-108
2,4,6-Tribromophenol			99					52-123
4-Terphenyl-d14			88					52-109

PCBS

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Serial_No:08011819:23

Lab Number: L1825903
Report Date: 08/01/18

SAMPLE RESULTS

Lab ID: L1825903-01
Client ID: HA-18-L4-NDPES_
Sample Location: SEAPORT, BOSTON, MA

Date Collected: 07/09/18 10:00
Date Received: 07/09/18
Field Prep: Refer to COC

Sample Depth:

Matrix: Water
Analytical Method: 127,608.3
Analytical Date: 07/16/18 10:05
Analyst: WR

Extraction Method: EPA 608.3
Extraction Date: 07/10/18 13:02
Cleanup Method: EPA 3665A
Cleanup Date: 07/11/18
Cleanup Method: EPA 3660B
Cleanup Date: 07/11/18

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	113		37-123	A
Decachlorobiphenyl	99		38-114	A
2,4,5,6-Tetrachloro-m-xylene	111		37-123	B
Decachlorobiphenyl	109		38-114	B

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 127,608.3
Analytical Date: 07/11/18 15:33
Analyst: WR

Extraction Method: EPA 608.3
Extraction Date: 07/10/18 07:54
Cleanup Method: EPA 3665A
Cleanup Date: 07/11/18
Cleanup Method: EPA 3660B
Cleanup Date: 07/11/18

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG1134023-1						
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	87		37-123	A
Decachlorobiphenyl	55		38-114	A
2,4,5,6-Tetrachloro-m-xylene	98		37-123	B
Decachlorobiphenyl	64		38-114	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	LCS	LCSD		%Recovery		RPD	Qual	RPD	Column
	%Recovery	Qual	%Recovery	Qual	Limits			Limits	
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG1134023-2									
Aroclor 1016	85		-		50-140	-		36	A
Aroclor 1260	71		-		8-140	-		38	A

Surrogate	LCS	LCSD		Acceptance Criteria	Column
	%Recovery	Qual	%Recovery	Qual	
2,4,5,6-Tetrachloro-m-xylene	81			37-123	A
Decachlorobiphenyl	60			38-114	A
2,4,5,6-Tetrachloro-m-xylene	91			37-123	B
Decachlorobiphenyl	70			38-114	B

METALS

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

SAMPLE RESULTS

Lab ID: L1825903-01
Client ID: HA-18-L4-NDPES_
Sample Location: SEAPORT, BOSTON, MA

Date Collected: 07/09/18 10:00
Date Received: 07/09/18
Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.00400	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Arsenic, Total	0.00270		mg/l	0.00100	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Chromium, Total	0.00118		mg/l	0.00100	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Iron, Total	27.7		mg/l	0.050	--	1	07/12/18 10:45	07/12/18 21:41	EPA 3005A	19,200.7	LC
Lead, Total	ND		mg/l	0.00100	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	07/11/18 12:27	07/11/18 19:25	EPA 245.1	3,245.1	EA
Nickel, Total	0.00276		mg/l	0.00200	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	07/12/18 10:45	07/13/18 10:34	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	622		mg/l	0.660	NA	1	07/12/18 10:45	07/12/18 21:41	EPA 3005A	19,200.7	LC

General Chemistry - Mansfield Lab

Chromium, Trivalent	ND	mg/l	0.010	--	1	07/13/18 10:34	NA	107,-
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Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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: WG1134573-1									
Mercury, Total	ND	mg/l	0.00020	--	1	07/11/18 12:27	07/11/18 18:59	3,245.1	EA

Prep Information

Digestion Method: EPA 245.1

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1134919-1									
Antimony, Total	ND	mg/l	0.00400	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Arsenic, Total	ND	mg/l	0.00100	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Cadmium, Total	ND	mg/l	0.00020	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Chromium, Total	ND	mg/l	0.00100	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Copper, Total	ND	mg/l	0.00100	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Lead, Total	ND	mg/l	0.00100	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Nickel, Total	ND	mg/l	0.00200	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Selenium, Total	ND	mg/l	0.00500	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Silver, Total	ND	mg/l	0.00040	--	1	07/12/18 10:45	07/13/18 09:55	3,200.8	AM
Zinc, Total	ND	mg/l	0.01000	--	1	07/12/18 10:45	07/13/18 09:55	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: WG1134922-1									
Iron, Total	ND	mg/l	0.050	--	1	07/12/18 10:45	07/12/18 20:21	19,200.7	LC

Prep Information

Digestion Method: EPA 3005A



Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Method Blank Analysis Batch Quality Control

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: WG1134922-1									
Hardness	ND	mg/l	0.660	NA	1	07/12/18 10:45	07/12/18 20:21	19,200.7	LC

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1134573-2								
Mercury, Total	107		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1134919-2								
Antimony, Total	87		-		85-115	-		
Arsenic, Total	104		-		85-115	-		
Cadmium, Total	108		-		85-115	-		
Chromium, Total	104		-		85-115	-		
Copper, Total	103		-		85-115	-		
Lead, Total	105		-		85-115	-		
Nickel, Total	102		-		85-115	-		
Selenium, Total	103		-		85-115	-		
Silver, Total	101		-		85-115	-		
Zinc, Total	106		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1134922-2								
Iron, Total	106		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1134922-2								
Hardness	106		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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: WG1134573-3 WG1134573-4 QC Sample: L1800007-72 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00506	101		0.00511	102		70-130	1		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134573-5 QC Sample: L1825898-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00510	102		-	-	-	70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134919-3 QC Sample: L1825464-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.6906	138	Q	-	-	-	70-130	-		20
Arsenic, Total	0.00140	0.12	0.1265	104		-	-	-	70-130	-		20
Cadmium, Total	ND	0.051	0.05722	112		-	-	-	70-130	-		20
Chromium, Total	0.00142	0.2	0.2099	104		-	-	-	70-130	-		20
Copper, Total	ND	0.25	0.2625	105		-	-	-	70-130	-		20
Lead, Total	ND	0.51	0.5381	106		-	-	-	70-130	-		20
Nickel, Total	0.01379	0.5	0.5246	102		-	-	-	70-130	-		20
Selenium, Total	ND	0.12	0.1213	101		-	-	-	70-130	-		20
Silver, Total	ND	0.05	0.05059	101		-	-	-	70-130	-		20
Zinc, Total	0.02804	0.5	0.5588	106		-	-	-	70-130	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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: WG1134919-5 QC Sample: L1800007-83 Client ID: MS Sample									
Antimony, Total	ND	0.5	0.5168	103	-	-	70-130	-	20
Arsenic, Total	0.00553	0.12	0.1307	104	-	-	70-130	-	20
Cadmium, Total	ND	0.051	0.05289	104	-	-	70-130	-	20
Chromium, Total	0.00408	0.2	0.2021	99	-	-	70-130	-	20
Copper, Total	0.00379	0.25	0.2416	95	-	-	70-130	-	20
Lead, Total	0.00276	0.51	0.5247	102	-	-	70-130	-	20
Nickel, Total	0.00438	0.5	0.4813	95	-	-	70-130	-	20
Selenium, Total	ND	0.12	0.1204	100	-	-	70-130	-	20
Silver, Total	ND	0.05	0.04840	97	-	-	70-130	-	20
Zinc, Total	0.01206	0.5	0.5303	104	-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134922-3 QC Sample: L1800007-82 Client ID: MS Sample									
Iron, Total	3.63	1	1.16	0	Q	-	75-125	-	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134922-3 QC Sample: L1800007-82 Client ID: MS Sample									
Hardness	524	66.2	414	0	Q	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134573-6 QC Sample: L1825898-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134919-4 QC Sample: L1825464-01 Client ID: DUP Sample						
Antimony, Total	ND	0.00615	mg/l	NC		20
Arsenic, Total	0.00140	0.00156	mg/l	11		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.00142	0.00147	mg/l	3		20
Copper, Total	ND	0.00100	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Nickel, Total	0.01379	0.01430	mg/l	4		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	0.02804	0.02958	mg/l	5		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134919-6 QC Sample: L1800007-83 Client ID: DUP Sample					
Antimony, Total	ND	ND	mg/l	NC	20
Arsenic, Total	0.00553	0.00487	mg/l	13	20
Cadmium, Total	ND	ND	mg/l	NC	20
Chromium, Total	0.00408	0.00408	mg/l	0	20
Copper, Total	0.00379	0.00393	mg/l	4	20
Lead, Total	0.00276	0.00259	mg/l	7	20
Nickel, Total	0.00438	0.00440	mg/l	0	20
Selenium, Total	ND	ND	mg/l	NC	20
Silver, Total	ND	ND	mg/l	NC	20
Zinc, Total	0.01206	0.01206	mg/l	0	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134922-4 QC Sample: L1800007-82 Client ID: DUP Sample					
Iron, Total	3.63	0.114	mg/l	188	Q
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1134922-4 QC Sample: L1800007-82 Client ID: DUP Sample					
Hardness	524	345	mg/l	41	Q

INORGANICS & MISCELLANEOUS



Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

SAMPLE RESULTS

Lab ID: L1825903-01 Date Collected: 07/09/18 10:00
 Client ID: HA-18-L4-NDPES_ Date Received: 07/09/18
 Sample Location: SEAPORT, BOSTON, MA Field Prep: Refer to COC

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	62.		mg/l	10	NA	2	-	07/11/18 00:05	121,2540D	CW
Cyanide, Total	ND		mg/l	0.005	--	1	07/10/18 10:25	07/10/18 13:20	121,4500CN-CE	LH
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	07/10/18 04:23	121,4500CL-D	UN
Nitrogen, Ammonia	8.84		mg/l	0.075	--	1	07/10/18 14:30	07/10/18 21:10	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	4.00	--	1	07/12/18 17:30	07/12/18 22:45	74,1664A	ML
Phenolics, Total	ND		mg/l	0.030	--	1	07/11/18 11:10	07/12/18 05:31	4,420.1	GD
Chromium, Hexavalent	ND		mg/l	0.010	--	1	07/10/18 03:25	07/10/18 03:47	1,7196A	UN
Anions by Ion Chromatography - Westborough Lab										
Chloride	2290		mg/l	50.0	--	100	-	07/11/18 19:03	44,300.0	AU



Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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: WG1133922-4									
Chlorine, Total Residual	ND	mg/l	0.02	--	1	-	07/10/18 04:23	121,4500CL-D	UN
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1133962-1									
Chromium, Hexavalent	ND	mg/l	0.010	--	1	07/10/18 03:25	07/10/18 03:46	1,7196A	UN
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1134047-1									
Nitrogen, Ammonia	ND	mg/l	0.075	--	1	07/10/18 14:30	07/10/18 20:54	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1134068-1									
Cyanide, Total	ND	mg/l	0.005	--	1	07/10/18 10:25	07/10/18 12:46	121,4500CN-CE	LH
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1134374-1									
Solids, Total Suspended	ND	mg/l	5.0	NA	1	-	07/11/18 00:05	121,2540D	CW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1134489-1									
Phenolics, Total	ND	mg/l	0.030	--	1	07/11/18 11:10	07/12/18 14:23	4,420.1	GD
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1134769-1									
Chloride	ND	mg/l	0.500	--	1	-	07/11/18 17:51	44,300.0	AU
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1135101-1									
TPH, SGT-HEM	ND	mg/l	4.00	--	1	07/12/18 17:30	07/12/18 22:45	74,1664A	ML

Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1133922-1								
Chlorine, Total Residual	97	-	-	-	90-110	-	-	-
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1133962-2								
Chromium, Hexavalent	98	-	-	-	85-115	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1134047-2								
Nitrogen, Ammonia	98	-	-	-	80-120	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1134068-2								
Cyanide, Total	103	-	-	-	90-110	-	-	-
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1134489-2								
Phenolics, Total	83	-	-	-	70-130	-	-	-
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1134769-2								
Chloride	101	-	-	-	90-110	-	-	-
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1135101-2								
TPH	92	-	-	-	64-132	-	-	34

Matrix Spike Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1133922-3 QC Sample: L1825884-02 Client ID: MS Sample												
Chlorine, Total Residual	ND	0.248	0.24	97	-	-	-	-	80-120	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1133962-4 QC Sample: L1825903-01 Client ID: HA-18-L4-NDPES_												
Chromium, Hexavalent	ND	0.1	0.090	90	-	-	-	-	85-115	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134047-4 QC Sample: L1825898-02 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	3.71	93	-	-	-	-	80-120	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134068-4 QC Sample: L1825882-01 Client ID: MS Sample												
Cyanide, Total	ND	0.2	0.190	95	-	-	-	-	90-110	-	-	30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134489-4 QC Sample: L1825903-01 Client ID: HA-18-L4-NDPES_												
Phenolics, Total	ND	0.4	0.39	97	-	-	-	-	70-130	-	-	20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134769-3 QC Sample: L1825464-01 Client ID: MS Sample												
Chloride	626	100	707	81	Q	-	-	-	90-110	-	-	18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1135101-4 QC Sample: L1826003-01 Client ID: MS Sample												
TPH	ND	20.8	21.2	102	-	-	-	-	64-132	-	-	34

Lab Duplicate Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1133922-2 QC Sample: L1825884-01 Client ID: DUP Sample						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1133962-3 QC Sample: L1825903-01 Client ID: HA-18-L4-NDPES_						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134047-3 QC Sample: L1825898-02 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134068-3 QC Sample: L1825882-01 Client ID: DUP Sample						
Cyanide, Total	ND	ND	mg/l	NC		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134374-2 QC Sample: L1825878-01 Client ID: DUP Sample						
Solids, Total Suspended	33	28	mg/l	16		29
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134489-3 QC Sample: L1825903-01 Client ID: HA-18-L4-NDPES_						
Phenolics, Total	ND	ND	mg/l	NC		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134769-4 QC Sample: L1825464-01 Client ID: DUP Sample						
Chloride	626	625	mg/l	0		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1135101-3 QC Sample: L1826003-01 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34

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(*)
L1825903-01A	Vial HCl preserved	A	NA		2.5	Y	Absent		624.1-RGP(14),624.1-SIM-RGP(14)
L1825903-01B	Vial HCl preserved	A	NA		2.5	Y	Absent		624.1-RGP(14),624.1-SIM-RGP(14)
L1825903-01C	Vial HCl preserved	A	NA		2.5	Y	Absent		624.1-RGP(14),624.1-SIM-RGP(14)
L1825903-01D	Vial Na2S2O3 preserved	A	NA		2.5	Y	Absent		504(14)
L1825903-01E	Vial Na2S2O3 preserved	A	NA		2.5	Y	Absent		504(14)
L1825903-01F	Vial HCl preserved	A	NA		2.5	Y	Absent		SUB-ETHANOL(14)
L1825903-01G	Vial HCl preserved	A	NA		2.5	Y	Absent		SUB-ETHANOL(14)
L1825903-01H	Vial HCl preserved	A	NA		2.5	Y	Absent		SUB-ETHANOL(14)
L1825903-01I	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1825903-01J	Plastic 250ml HNO3 preserved	A	<2	<2	2.5	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)
L1825903-01K	Plastic 500ml H2SO4 preserved	A	<2	<2	2.5	Y	Absent		NH3-4500(28)
L1825903-01L	Plastic 500ml NaOH preserved	A	>12	>12	2.5	Y	Absent		TCN-4500(14)
L1825903-01M	Plastic 950ml unpreserved	A	7	7	2.5	Y	Absent		CL-300(28),HEXCR-7196(1),TRC-4500(1)
L1825903-01N	Plastic 950ml unpreserved	A	7	7	2.5	Y	Absent		TSS-2540(7)
L1825903-01O	Amber 950ml H2SO4 preserved	A	<2	<2	2.5	Y	Absent		TPHENOL-420(28)
L1825903-01P	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		625.1-RGP(7),625.1-SIM-RGP(7)
L1825903-01Q	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		625.1-RGP(7),625.1-SIM-RGP(7)
L1825903-01R	Amber 1000ml Na2S2O3	A	7	7	2.5	Y	Absent		PCB-608.3(7)
L1825903-01S	Amber 1000ml Na2S2O3	A	7	7	2.5	Y	Absent		PCB-608.3(7)
L1825903-01T	Amber 1000ml HCl preserved	A	NA		2.5	Y	Absent		TPH-1664(28)
L1825903-01U	Amber 1000ml HCl preserved	A	NA		2.5	Y	Absent		TPH-1664(28)

*Values in parentheses indicate holding time in days

Project Name: SEAPORT PARCEL L4

Serial_No:08011819:23

Project Number: 130676-004 SID 4

Lab Number: L1825903

Report Date: 08/01/18

Container Information

Container ID **Container Type**

Container ID	Container Type	<i>Initial Cooler</i>	<i>Final pH</i>	<i>Temp deg C</i>	<i>Pres</i>	<i>Seal</i>	<i>Frozen Date/Time</i>	<i>Analysis(*)</i>

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
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.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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.

Report Format: Data Usability Report



Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the 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 exceedances 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: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825903
Report Date: 08/01/18

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.
- 14 Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.
- 19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 74 Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.
- 107 Alpha Analytical - In-house calculation method.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 127 Method 608.3: Organochlorine Pesticides and PCBs by GC/HSD, EPA 821-R-16-009, December 2016.
- 128 Method 624.1: Purgeables by GC/MS, EPA 821-R-16-008, December 2016.
- 129 Method 625.1: Base/Neutrals and Acids by GC/MS, EPA 821-R-16-007, December 2016.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its 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: **SCM:** Perchlorate

EPA 9010: NPW and **SCM:** Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; **SCM:** Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-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: Ammonia-N and Kjeldahl-N, **EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **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, SM9222D.**

Mansfield Facility:

Drinking Water

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

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, 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		Service Centers Brewer, ME 04412 Portsmouth, NH 03801 Mahwah, NJ 07430 Albany, NY 12235 Tonawanda, NY 14210 Holmes, PA 19043		Page	1	Date Rec'd in Lab <i>7/9/18</i>	ALPHA Job # <i>L1825903</i>			
				of	1					
Westborough, MA 01581 8 Warkup Dr. TEL: 508-859-0225 FAX: 508-859-9193		Mansfield, MA 02048 329 Forbes Blvd TEL: 508-822-0300 FAX: 508-822-3298		Project Information Project Name: Seaport Parcel L4 Project Location: Seaport, Boston, MA Project # 130676-004 SID 4		Deliverables <input checked="" type="checkbox"/> Email <input type="checkbox"/> Fax <input checked="" type="checkbox"/> EQuIS (1 File) <input type="checkbox"/> EQuIS (4 File) <input type="checkbox"/> Other:		Billing Information <input checked="" type="checkbox"/> Same as Client Info PO #		
H&A Information H&A Client: Seaport L Title Holder LLC (Use Project name as Proj)		Project Manager: H. Scranton Boston, MA 0212-1400 ALPHAQuote #:		Regulatory Requirements (Program/Criteria)		Disposal Site Information Please identify below location of applicable disposal facilities.				
H&A Address 465 Medford St Boston, MA 0212-1400		Turn-Around Time				Disposal Facility: <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> Other:				
H&A Phone: 617-886-7400 H&A Fax: ihoward@haleylrich.com H&A Email: kalepidis@haleylrich.com		Standard <input checked="" type="checkbox"/> Due Date: (only if pre approved) <input type="checkbox"/> # of Days:		Note: Select State from menu & identify criteria.		ANALYSIS		Sample Filtration <input type="checkbox"/> Done <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please Specify below)		
These samples have been previously analyzed by Alpha										Sample Specific Comments <i>18</i>
Other project specific requirements/comments: 3. HOLD PAGN & ACN 11. Dissolved Metals ON HOLD (Field Filtered) Please sample per EPA Approved 2017 RGP Permit methods										<i>7/9/18</i>
Please specify Metals or TAL.										
ALPHA Lab ID (Lab Use Only) <i>25903 - 01</i>	Sample ID <i>HA18-L4-NDPES</i>	Collection Date Time		Sample Matrix <i>AQ</i>	Sampler's Initials <i>SGS</i>	1. TSS = 2540 2. TRC-4500 3. TCR-4500 HOLD PAGN & ACN 4. 504 5. 8260 & 8260 SIM for Dimethyl 6. HEXCR-3500 & Trivalent Chromium 7. TPHENOL-420 8. 8270/1CL (including Diethylbenzylphthalate 9. 8270/1CL-SIM 10. CL-300 11. Total Metals - Ag, As, Cd, Cr, Cu, Ni, Pb, Sb, Se, Zn / Fe, Hg 12. Ammonia 13. Total Hardness 14. A2-ALCOHOL (Ethanol) 15. TPH-1654 16. PCB-608	Sample Filtration <input type="checkbox"/> Done <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please Specify below)			
		Preservative Code: A = None B = HCl C = HNO3 D = H2SO4 E = NaOH F = MeOH G = NaHSO4 H = Na2S2O3 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		Sample Specific Comments <i>18</i>	
Reinforced By: <i>J. Phay</i> <i>MICLHD</i> <i>reinforced</i>		Date/Time: <i>7/9/18 1300</i> <i>7/9/18 1630</i> <i>7/9/18 1807</i>		Received By: <i>M. C. LHD</i> <i>reinforced</i> <i>J. Phay</i>		Date/Time <i>7/9/18 1630</i> <i>AAC 7/9/18 1630</i> <i>7/9/18 1827</i>				
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 Haleylrich, Inc., its subsidiaries and affiliates and Alpha Analytical.										
Document ID: 20455 Rev 1 (1/28/2016)										

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Nashville

2960 Foster Creighton Drive
Nashville, TN 37204

Tel: (615)726-0177

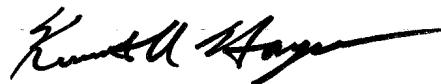
TestAmerica Job ID: 490-155469-1

Client Project/Site: L1825903

For:

Alpha Analytical Inc
145 Flanders Road
Westborough, Massachusetts 01581-1019

Attn: Melissa Gulli



Authorized for release by:

7/16/2018 4:56:13 PM

Ken Hayes, Project Manager II

(615)301-5035

ken.hayes@testamericainc.com

LINKS

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results through

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Expert

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www.testamericainc.com

Page 54 of 66

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: Alpha Analytical Inc
Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-155469-1	HA-18-L4-NDPES_	Water	07/09/18 10:00	07/11/18 10:00

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TestAmerica Nashville

Case Narrative

Client: Alpha Analytical Inc
Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

Job ID: 490-155469-1**Laboratory: TestAmerica Nashville****Narrative****Job Narrative
490-155469-1****Comments**

No additional comments.

Receipt

The sample was received on 7/11/2018 10:00 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.6° C.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Alpha Analytical Inc
Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

Glossary

Abbreviation **These commonly used abbreviations may or may not be present in this report.**

□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Client Sample Results

Client: Alpha Analytical Inc
 Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

Client Sample ID: HA-18-L4-NDPES_**Lab Sample ID: 490-155469-1**

Date Collected: 07/09/18 10:00

Matrix: Water

Date Received: 07/11/18 10:00

Method: 1671A - Ethanol (GC/FID)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	ND		2000	500	ug/L			07/12/18 11:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Isopropyl acetate (Surr)	97		70 - 130					07/12/18 11:05	1

QC Sample Results

Client: Alpha Analytical Inc
Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

Method: 1671A - Ethanol (GC/FID)

Lab Sample ID: MB 490-528440/4

Matrix: Water

Analysis Batch: 528440

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Ethanol	ND		2000	500	ug/L			07/12/18 10:42	1
Surrogate									
Isopropyl acetate (Surr)									
	MB	MB							
	%Recovery	Qualifier	Limits						
	80		70 - 130						

Lab Sample ID: LCS 490-528440/5

Matrix: Water

Analysis Batch: 528440

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	MB	MB	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier							
Ethanol	ND		50200	42750		ug/L		85	70 - 130
Surrogate									
Isopropyl acetate (Surr)									
	LCS	LCS							
	%Recovery	Qualifier	Limits						
	84		70 - 130						

Lab Sample ID: 490-155469-1 MS

Matrix: Water

Analysis Batch: 528440

Client Sample ID: HA-18-L4-NDPES_
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
Ethanol	ND		50200	42920		ug/L		85	70 - 130
Surrogate									
Isopropyl acetate (Surr)									
	MS	MS							
	%Recovery	Qualifier	Limits						
	100		70 - 130						

Lab Sample ID: 490-155469-1 MSD

Matrix: Water

Analysis Batch: 528440

Client Sample ID: HA-18-L4-NDPES_
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec. Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Ethanol	ND		50200	39440		ug/L		78	70 - 130	8	20
Surrogate											
Isopropyl acetate (Surr)											
	MSD	MSD									
	%Recovery	Qualifier	Limits								
	102		70 - 130								

TestAmerica Nashville

QC Association Summary

Client: Alpha Analytical Inc
 Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

GC VOA**Analysis Batch: 528440**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-155469-1	HA-18-L4-NDPES_	Total/NA	Water	1671A	
MB 490-528440/4	Method Blank	Total/NA	Water	1671A	
LCS 490-528440/5	Lab Control Sample	Total/NA	Water	1671A	
490-155469-1 MS	HA-18-L4-NDPES_	Total/NA	Water	1671A	
490-155469-1 MSD	HA-18-L4-NDPES_	Total/NA	Water	1671A	

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TestAmerica Nashville

Lab Chronicle

Client: Alpha Analytical Inc
 Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

Client Sample ID: HA-18-L4-NDPES_**Lab Sample ID: 490-155469-1****Date Collected: 07/09/18 10:00****Matrix: Water****Date Received: 07/11/18 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1671A		1			528440	07/12/18 11:05	NMB	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

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TestAmerica Nashville

Method Summary

Client: Alpha Analytical Inc
Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

Method	Method Description	Protocol	Laboratory
1671A	Ethanol (GC/FID)	EPA	TAL NSH

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

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TestAmerica Nashville

Accreditation/Certification Summary

Client: Alpha Analytical Inc
Project/Site: L1825903

TestAmerica Job ID: 490-155469-1

Laboratory: TestAmerica Nashville

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2938	10-31-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
1671A		Water	Ethanol

Maine	State Program	1	TN00032	11-03-19
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The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
1671A		Water	Ethanol



COOLER RECEIPT FORM

Cooler Received/Opened On 07-11-2018 @ 10:00Time Samples Removed From Cooler 17:13 Time Samples Placed In Storage 17:22 (2 Hour Window)1. Tracking # 1Z-E306540199533760 (last 4 digits, FedEx)Courier: UPS NDAIR Gun ID 31470368pH Strip Lot N/AChlorine Strip Lot N/A2. Temperature of rep. sample or temp blank when opened: 0.6 Degrees Celsius3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA4. Were custody seals on outside of cooler? YES NO NA

If yes, how many and where: _____

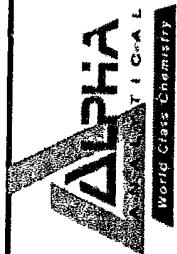
5. Were the seals intact, signed, and dated correctly? YES NO NA6. Were custody papers inside cooler? YES NO NAI certify that I opened the cooler and answered questions 1-6 (initial) KD7. Were custody seals on containers: YES NO and Intact YES NO NAWere these signed and dated correctly? YES NO NA8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None10. Did all containers arrive in good condition (unbroken)? YES NO NA11. Were all container labels complete (#, date, signed, pres., etc)? YES NO NA12. Did all container labels and tags agree with custody papers? YES NO NA

13a. Were VOA vials received?

b. Was there any observable headspace present in any VOA vial? YES NO NA

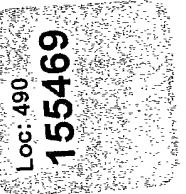
Larger than this.

14. Was there a Trip Blank in this cooler? YES NO NA If multiple coolers, sequence # KDI certify that I unloaded the cooler and answered questions 7-14 (initial) KD15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES NO NAb. Did the bottle labels indicate that the correct preservatives were used YES NO NA16. Was residual chlorine present? YES NO NAI certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) KD17. Were custody papers properly filled out (ink, signed, etc)? YES NO NA18. Did you sign the custody papers in the appropriate place? YES NO NA19. Were correct containers used for the analysis requested? YES NO NA20. Was sufficient amount of sample sent in each container? YES NO NAI certify that I entered this project into LIMS and answered questions 17-20 (initial) KDI certify that I attached a label with the unique LIMS number to each container (initial) KD21. Were there Non-Conformance issues at login? YES NO Was a NCM generated? YES NO # _____



Subcontract Chain of Custody

Test America (Nashville)
2960 Foster Creighton Drive
Nashville, TN 37204

Subcontract Chain of Custody		Regulatory Requirements/Report Limits	
Client Information Client: Alpha Analytical Labs Address: Eight Walkup Drive Westborough, MA 01581-1019 Phone: 603.319.5010 Email: mgulli@alphalab.com		Project Information Project Location: MA Project Manager: Melissa Gulli Turnaround & Deliverables Information Due Date: Deliverables:	
		Project Specific Requirements and/or Report Requirements Reference following Alpha Job Number on final report/deliverables: L1825903 Additional Comments: Send all results/reports to subreports@alphalab.com	
		Report to include Method Blank, LCS/LCSD:	
			
Lab ID	Client ID	Collection Date/Time	Sample Matrix
HA-18-L4-NDPES_		07-09-18 10:00	WATER
			Ethanol by EPA 1671 Revision A
			Analysis
			Batch QC
		Relinquished By: 	
		Date/Time:	Received By:
			J. Smith - Analyst TA-MSS
			Date/Time: 01-11-2017 10:00
Form No: AL_subcoc			

016

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ANALYTICAL REPORT

Lab Number:	L1825904
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Heather Scranton
Phone:	(617) 886-7400
Project Name:	SEAPORT PARCEL L4
Project Number:	130676-004 SID 4
Report Date:	07/12/18

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

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

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



Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1825904-01	HA 18-BOSTON HARBOR_	WATER	SEAPORT, BOSTON, MA	07/09/18 11:35	07/09/18

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

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:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 07/12/18

INORGANICS & MISCELLANEOUS

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

SAMPLE RESULTS

Lab ID: L1825904-01
Client ID: HA 18-BOSTON HARBOR_
Sample Location: SEAPORT, BOSTON, MA

Date Collected: 07/09/18 11:35
Date Received: 07/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
SALINITY	27	SU		2.0	--	1	-	07/10/18 05:00	121,2520B	UN
pH (H)	7.8	SU		-	NA	1	-	07/10/18 04:59	121,4500H+-B	UN
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	07/10/18 14:30	07/10/18 21:10	121,4500NH3-BH	AT



Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

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: WG1134047-1									
Nitrogen, Ammonia	ND	mg/l	0.075	--	1	07/10/18 14:30	07/10/18 20:54	121,4500NH3-BH	AT



Lab Control Sample Analysis

Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1133999-1								
pH	100	-	-	-	99-101	-	-	5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1134006-1								
SALINITY	100	-	-	-	-	-	-	-
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1134047-2								
Nitrogen, Ammonia	98	-	-	-	80-120	-	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134047-4 QC Sample: L1825898-02 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	3.71	93	-	-	-	-	80-120	-	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1133999-2 QC Sample: L1825872-01 Client ID: DUP Sample						
pH	7.8	7.8	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134006-2 QC Sample: L1825904-01 Client ID: HA 18-BOSTON HARBOR_						
SALINITY	27	27	SU	0		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1134047-3 QC Sample: L1825898-02 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20

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(*)
L1825904-01A	Plastic 60ml unpreserved	A	7	7	2.5	Y	Absent		PH-4500(.01)
L1825904-01B	Amber 120ml unpreserved	A	7	7	2.5	Y	Absent		SALINITY(28)
L1825904-01C	Plastic 500ml H ₂ SO ₄ preserved	A	<2	<2	2.5	Y	Absent		NH3-4500(28)

Project Name: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

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: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

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 exceedances 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: SEAPORT PARCEL L4
Project Number: 130676-004 SID 4

Lab Number: L1825904
Report Date: 07/12/18

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 its 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: **SCM:** Perchlorate

EPA 9010: NPW and **SCM:** Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; **SCM:** Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-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: Ammonia-N and Kjeldahl-N, **EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **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, SM9222D.**

Mansfield Facility:

Drinking Water

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

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, 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		Service Centers		Page of	Date Rec'd in Lab	7/9/18	ALPHA Job # L1825904			
		Brewer, ME 04412	Portsmouth, NH 03801 Mahwah, NJ 07430							
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		Project Information		Deliverables		Billing Information		
				Project Name: Seaport Parcel L4		<input checked="" type="checkbox"/> Email <input type="checkbox"/> Fax <input type="checkbox"/> EQuIS (1 File) <input type="checkbox"/> EQuIS (4 File) <input type="checkbox"/> Other:		<input checked="" type="checkbox"/> Same as Client Info PO #		
H&A Information		Project # 130676-004 SID 4								
H&A Client: Seaport L Title Holder LLC		(Use Project name as Project #) <input type="checkbox"/>								
H&A Address: 465 Medford St Boston, MA 0212-1400		Project Manager: H Scranton ALPHAQuote #:				EPA NPDES		Please identify below location of applicable disposal facilities.		
H&A Phone: 617-886-7400		Turn-Around Time								Disposal Facility: <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> Other:
H&A Fax: lhoward@haleyaldrich.com		Standard <input checked="" type="checkbox"/>		Due Date:						
H&A Email: kalepidis@haleyaldrich.com		Rush (only if pre approved) <input type="checkbox"/>		# of Days:				Note: Select State from menu & identify criteria.		
These samples have been previously analyzed by Alpha <input type="checkbox"/>						ANALYSIS		Sample Filtration		
Other project specific requirements/comments: Use 2017 NPDES RGP Approved methods										
Please specify Metals or TAL.										
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	1.pH	2. Salinity	3. Ammonia	(Please Specify below)	
		Date	Time							
25904-01	HA18-Boston Harbor	7/9/18	1138	AQ	565	X	X	X		
Preservative Code: Container Code A = None P = Plastic B = HCl A = Amber Glass C = HNO ₃ V = Vial D = H ₂ SO ₄ G = Glass E = NaOH B = Bacteria Cup F = MeOH C = Cube G = NaHSO ₄ O = Other H = Na ₂ S ₂ O ₃ E = Encore K/E = Zn Ac/NaOH D = BOD Bottle										
Westboro: Certification No: MA935 Mansfield: Certification No: MA015										
Container Type										
Preservative										
Relinquished By:		Date/Time		Received By:		Date/Time				
<i>h. haley</i>		7/9/18 1300		<i>11.10.18</i>		7/9/18 1630				
<i>M. L. 10.18</i>		7/9/18 1630		<i>11.10.18</i>		7/9/18 1630				
<i>relinquished</i>		7/9/18 1807		<i>J. Scott</i>		7/9/18 1827				
Document ID: 20455 Rev 1 (1/28/2016)										
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.										

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. promelas* 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



Lockwood Remediation Technologies, LLC

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.

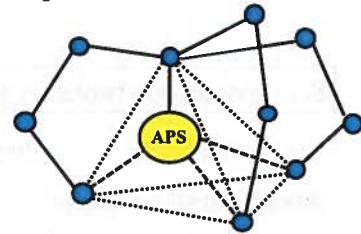
Cleanup:

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.





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:

Persistence / degradability: The product is not expected to bioaccumulate.
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

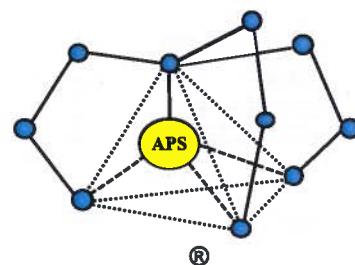
16. OTHER INFORMATION

NFPA and HMIS ratings:

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

DATE EDITED: Nov 4th 2015

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 (NO_x), 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

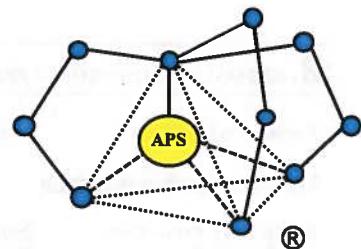
16. OTHER INFORMATION

NFPA and HMIS ratings:

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

DATE EDITED: Jan 11th 2016

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

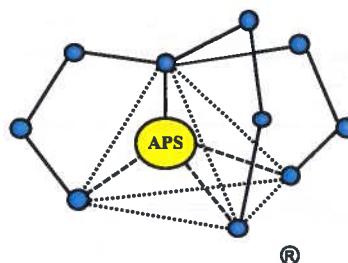
16. OTHER INFORMATION

NFPA and HMIS ratings:

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

DATE EDITED: Nov 4th 2015

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° C)**

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls:	Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dust.
<u>Personal protection equipment</u>	
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 (NO _x), carbon oxides.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:	(EPA/600/4-90/027F)
LD 50 / <i>Rattus norvegicus</i> / oral / > 5000 mg/kg LC 50 / <i>Oncorhynchus mykiss</i> / 96h / 530 mg/L LC 50 / <i>Daphnia magna</i> / 48h / >420mg/L EC 50 / <i>Selenastrum capricornutum</i> / 96h / >500mg/L	

12. ECOLOGICAL INFORMATION

Chronic Toxicity :	(EPA/600/R-98/182)
IC ₂₅ (Survival) / <i>P. promelas</i> / 7 day / 358 ppm IC ₂₅ (Survival) / <i>C. dubia</i> / 7 day / 157.5 ppm NOEC (Survival) / <i>P. promelas</i> / 7 day / 840 ppm NOEC (Survival) / <i>C. dubia</i> / 7 day / 105 ppm IC ₂₅ (Growth) / <i>P. promelas</i> / 7 day / 94 ppm IC ₂₅ (Reproduction) / <i>C. dubia</i> / 7 day / 27.7 ppm NOEC (Growth) / <i>P. promelas</i> / 7 day / 105 ppm NOEC (Reproduction) / <i>C. dubia</i> / 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

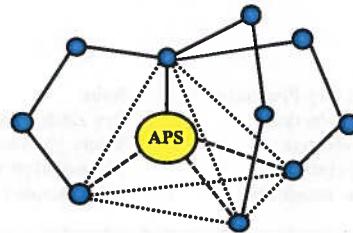
16. TRANSPORT AND REGULATORY INFORMATION

NFPA and HMIS ratings:

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

DATE EDITED: Oct. 29th 2015

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 (NO_x), 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) / <i>P. promelas</i> / 7 day / 110 ppm	IC 25 (Survival) / <i>C. dubia</i> / 7 day / 99.8 ppm
NOEC (Survival) / <i>P. promelas</i> / 7 day / 105 ppm	NOEC (Survival) / <i>C. dubia</i> / 7 day / 52.5 ppm
IC 25 (Growth) / <i>P. promelas</i> / 7 day / 130 ppm	IC 25 (Reproduction) / <i>C. dubia</i> / 7 day / 58.2 ppm
NOEC (Growth) / <i>P. promelas</i> / 7 day / 105 ppm	NOEC (Reproduction) / <i>C. dubia</i> / 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 vendors 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 vendors 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.

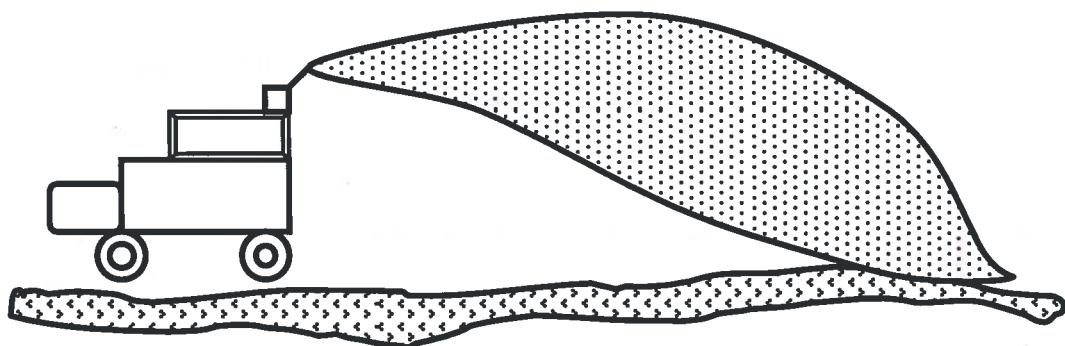
Maintenance

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)



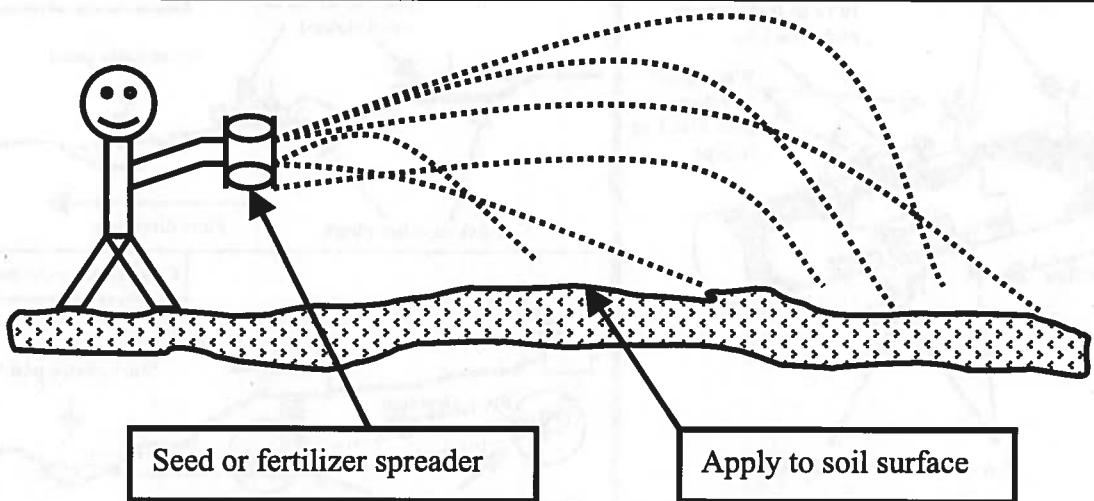
Notes:

- 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)



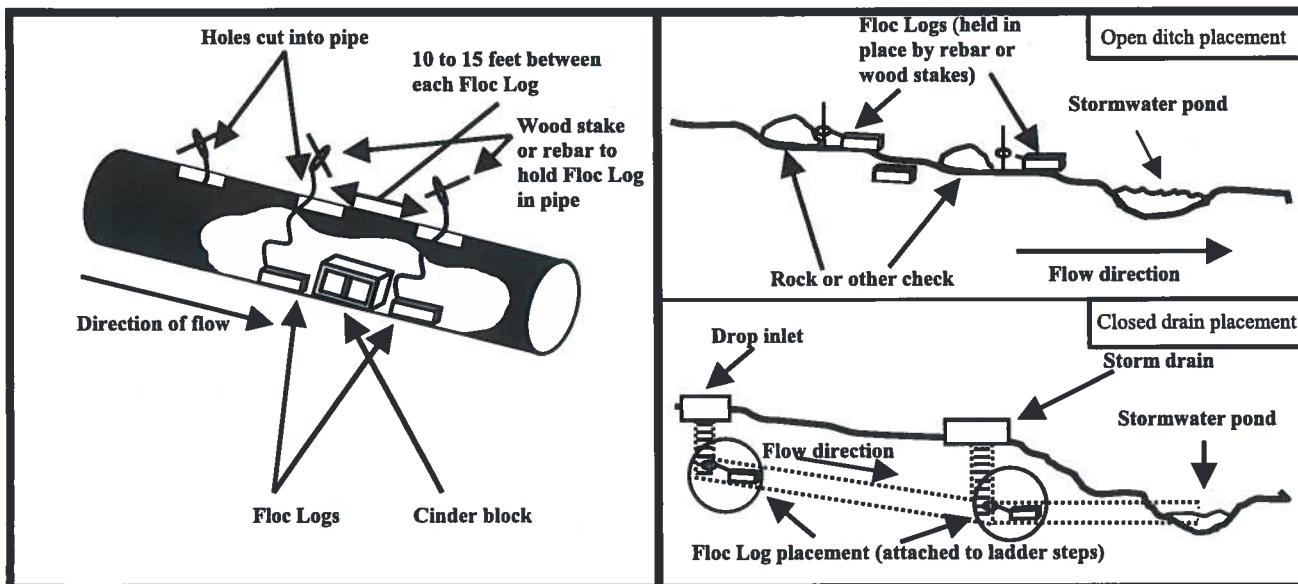
Notes:

- 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)



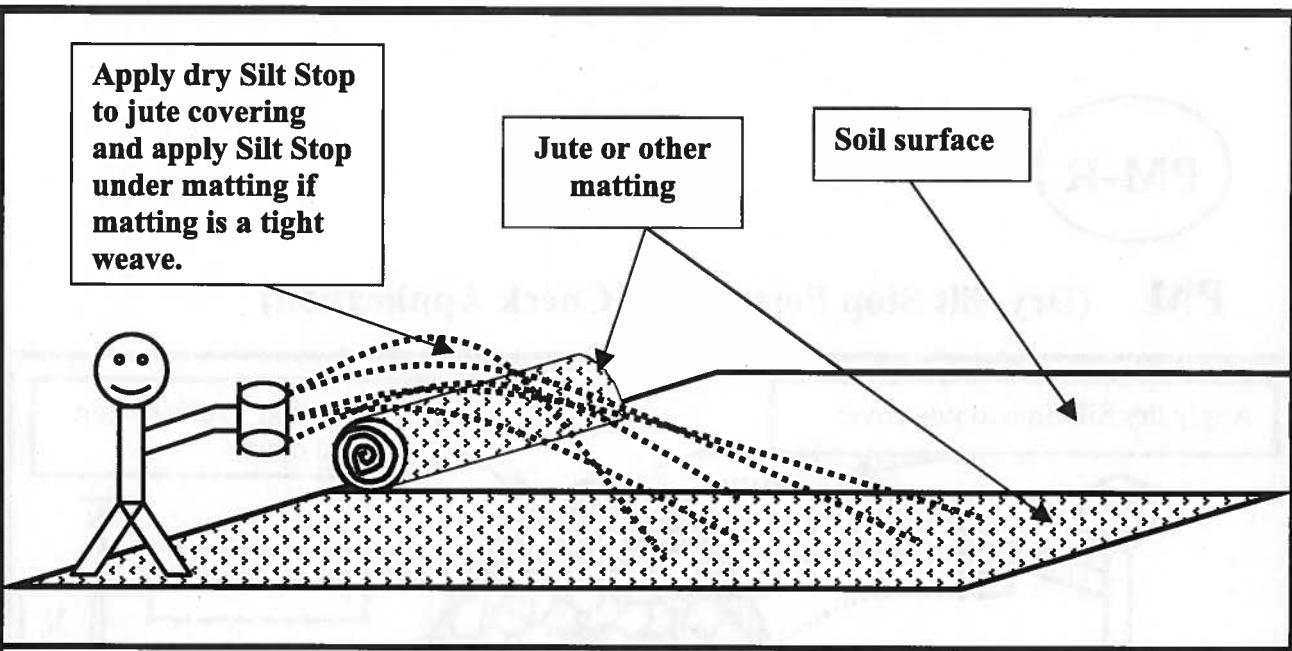
Notes:

- 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 all catch basins and after all 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)



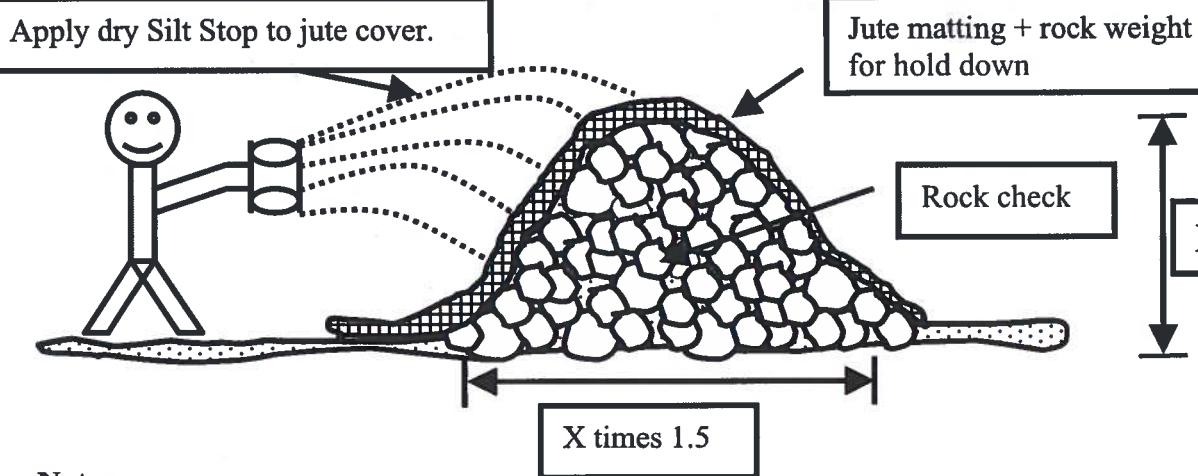
Notes:

- 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:

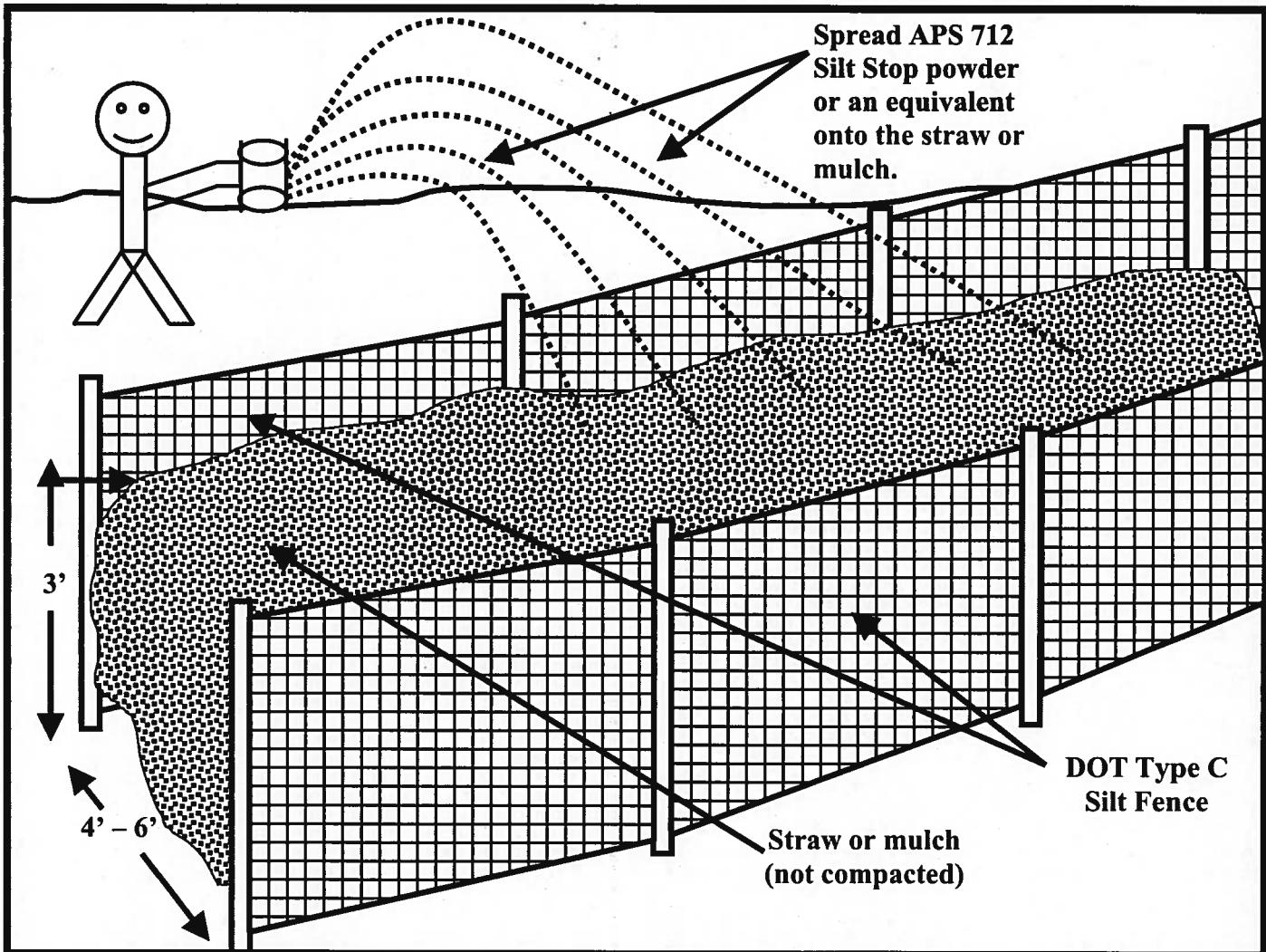
- 1) One layer of jute matting shall be applied to the surface of all rock checks.
- 2) Dry Silt Stop shall be applied to the jute cover using a seed or fertilizer spreader.
- 3) Application rate shall be 10 pounds/acre but not greater than 25 pounds/acre.

(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.



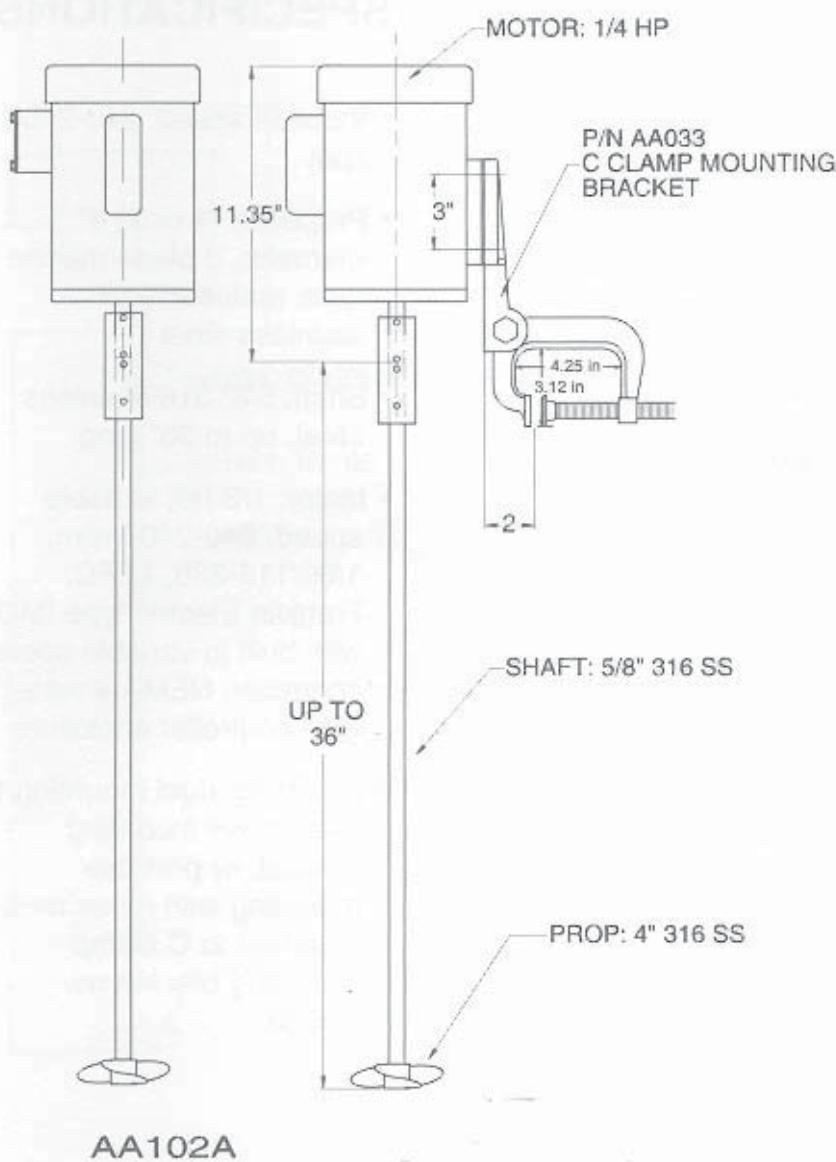
- 1) Use in all low areas during the grading phase.
- 2) Place 2 rows of DOT type C silt fence 4 to 6 feet apart. Place straw or mulch 3 feet deep between the silt fences.
- 3) Dry Silt Stop powder or an equivalent should be spread throughout the straw or mulch using a seed or fertilizer spreader.

(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



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.

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 $\pm 2\%$ of maximum capacity. Please refer to the reverse side for Series E PLUS specifications.

Features

- Automatic Control, available with 4-20mA/DC 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

4-20mA/DC 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	• Tanks
• Gauges	• Pre-Engineered Systems
• Dampeners	• Process Controllers
• Pressure Relief Valves	(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 nominal (max.)	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
	GPD	3	5	6	12	12	12	14	20	22	24	41	42	44	60	76	120	192	240	240	600
	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 (max.)	PSIG	300	250	150	250	150	100	100	250	150	100	250	150	100	150	150	100	50	35	80	30
	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



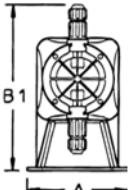
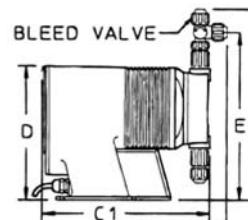
Pre-Engineered Systems

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



DryLoc® pH and ORP electrodes

Specifications

ISO9001:2000
CERTIFIED SUPPLIER

cUL us

CE

2 year
warranty
Meter only
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
	Open collector	One 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 1/16" x 3 3/16" x 4 3/16" (96 x 96 x 106 mm) Panel-mount: 3 1/16" x 3 3/16" x 3 3/16" (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	+GF+ Signet 8750-1	Field mount	
S-56560-28	+GF+ Signet 8750-1P	Panel mount, 1/4 DIN	
S-56560-20	+GF+ Signet 8750-2	Field mount	
S-56560-30	+GF+ Signet 8750-2P	Panel mount, 1/4 DIN	
S-56560-22	+GF+ Signet 8750-3	Field mount	
S-56560-32	+GF+ Signet 8750-3P	Panel mount, 1/4 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	3/4" NPT(M)	
S-56560-04	ISO 7-1 R 3/4"	

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 3/4" NPT(M) or ISO 7-1 R 3/4" 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	pH, flat surface	3/4" NPT(M) ISO 7-1 R 3/4"	
S-56561-03			
S-56561-10	pH, bulb style	3/4" NPT(M) ISO 7-1 R 3/4"	
S-56561-11			
S-56561-06	pH, HF-resistant bulb	3/4" NPT(M) ISO 7-1 R 3/4"	
S-56561-07			
S-56561-14	pH, LC bulb	3/4" NPT(M) ISO 7-1 R 3/4"	
S-56561-15			
S-56561-16	ORP, flat surface	3/4" NPT(M) ISO 7-1 R 3/4"	
S-56561-17			

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 André Auger, Administration Assistant 1-905-542-6901 (Mississauga)
Information Contact	Canada 1-877-ERP-ACID (377-2243)
Product Information	U.S.A. 1-800-424-9300 CHEMTRAC
Phone Number (Transportation Emergency)	1-418-656-8090
Phone Number (Transportation Emergency)	CANUTEC 1-613-996-6666
Phone Number (Medical Emergency)	Dihydrogen Sulfate ; Oil of Vitriol ; Vitriol Brown Oil ; Sulphuric Acid. Acide sulfurique (French)
Phone Number (Emergency)	Sulfuric Acid / H ₂ SO ₄ Acid
Synonyms	Chemical industries ; Water treatment ; Fertilizer ; Pulp and Paper.
Name / Chemical Formula	
Chemical Family	
Utilization	
Manufacturers	CEZinc on behalf of Noranda Income Limited Partnership, Salaberry-de-Valleyfield (Quebec) Canada J6T 6L4 Xstrata Copper, Horne 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 conjunctivitis, 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.
Inhalation	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. <i>Creams or ointments SHOULD NOT be applied before or during the washing phase of treatment.</i>
Ingestion	DO NOT INDUCE VOMITING. Conscious and alert person : Rinse mouth with water and give 1/2 to 1 cup of water or milk to dilute material. Spontaneous vomiting : Keep head below hips to prevent aspiration ; Rinse mouth and give 1/2 to 1 cup of water or milk. UNCONSCIOUS person : DO NOT induce vomiting or give any liquid. Immediately obtain medical attention.

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77% - 100% SULFURIC ACID

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

Name	# CAS	Control parameters	
		ACGIH (U.S.A.) 2008	OSHA (U.S.A.)
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.

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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

Molecular Weight 98.08

Odourless

pH (1% soln/water) < 1

Colourless to light grey

Boiling Point

< 1 (Butyl Acetate = 1.0)

193°C to 327 °C (379°F to 621°F) @ 760 mm Hg

3.4

Melting Point

-35°C to 11°C (-31°F to 52°F)

Yes (Water)

Vapour Pressure

< 0.3 mm Hg @ 25°C (77 °F)

Dispersion

< 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 ambient 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 SO₂, SO₃)

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.

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	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. <i>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.</i>

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 bioassay not specified). (HSBD). Flounder (LC50 ; 48 hours) : 100-330 mg/l (Aerated water, conditions of bioassay 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 without 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 <i>Resource Conservation and Recovery Act (RCRA)</i> 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.
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SECTION 14. TRANSPORT INFORMATION

TDG (Canada)	CLASS 8 Corrosives
PIN	UN1830 SULFURIC ACID
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

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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- Never 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).

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77% - 100% SULFURIC ACID

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 <u>Health Canada's Controlled Drugs and Substances Act and Precursor Control Regulations</u> .												
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, <u>Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA)</u> , 40 CFR Part 372. Certain companies must report emissions of Sulfuric Acid as required under <u>The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)</u> , 40 CFR Part 302 For more information call the <u>SARA Hotline</u> 800-424-9346. Strong Inorganic Acid Mists Containing Sulfuric Acid : Chemical listed effective March 14, 2003 to the <u>State of California, Proposal 65</u> . <u>U.S. FDA Food Bioterrorism Regulations</u> : 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.)	<table><tr><td>Fire Hazard</td><td>0</td><td>Reactivity</td><td>2</td><td>Health</td><td>3</td><td>Special Hazard</td><td>ACID</td></tr></table>					Fire Hazard	0	Reactivity	2	Health	3	Special Hazard	ACID
Fire Hazard	0	Reactivity	2	Health	3	Special Hazard	ACID						
NPCA- HMIS Rating	<table><tr><td>Fire Hazard</td><td>0</td><td>Reactivity</td><td>2</td><td>Health</td><td>3</td></tr></table>					Fire Hazard	0	Reactivity	2	Health	3		
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, Lauwers
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 visit 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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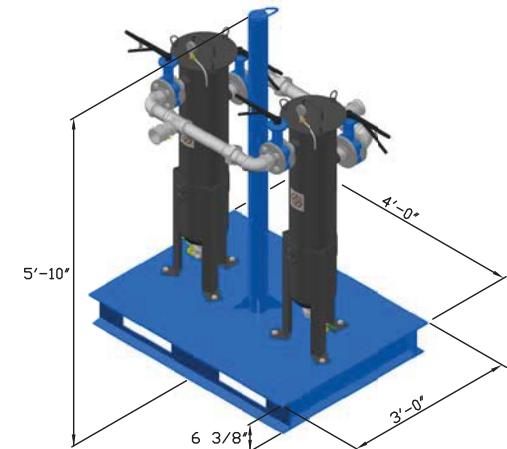
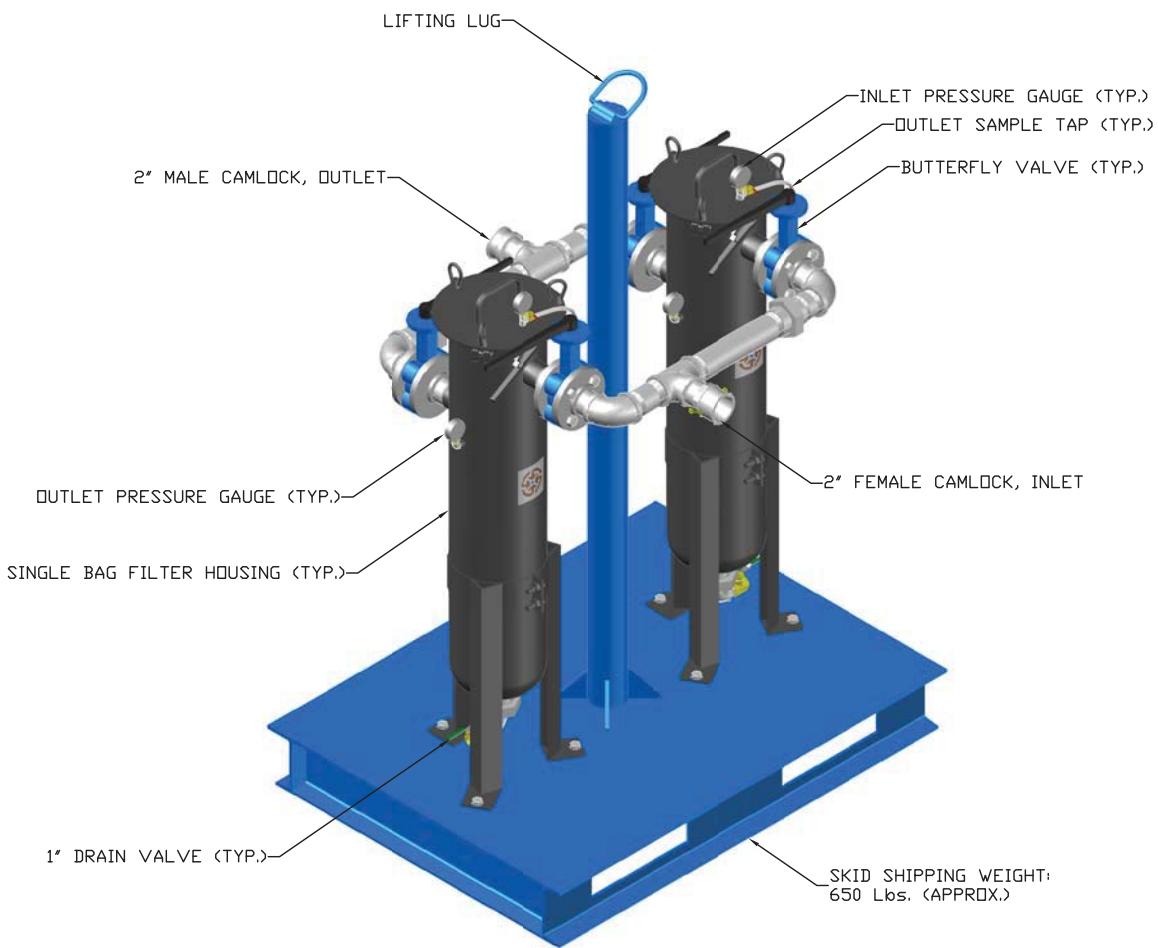
77% - 100% SULFURIC ACID

Verified by : Guy Desgagnés and Eric Kuraitis, Technical Representative - Sulfuric Acid

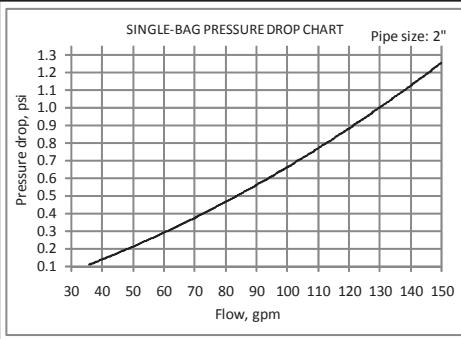
Request to : André Auger, Administration Assistant Tel. : (905) 542-6901 extension 0 Fax : (905) 542-6914 / 6924
NorFalco Sales Inc., 6755 Mississauga Road, Suite 304, Mississauga, Ontario L5N 7Y2

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NOTE: THIS DRAWING DEPICTS A "TYPICAL" SKID.
ACTUAL DETAILS AND DIMENSIONS MAY VARY.

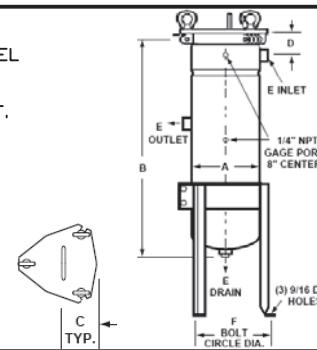


SINGLE BAG FILTER SPECIFICATIONS

- 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"



C	ADDED SKID WEIGHT	02/18/09
NO.	REVISIONS	DATE
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		
THIS DRAWING IS THE PROPERTY OF GROUND/WATER TREATMENT & TECHNOLOGY, INC		
DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST-0002-SPC C



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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