



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

13 September 2018  
File No. 131268-002

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  
Parcel 9 Haymarket Hotel  
Blackstone Street and North Street  
Boston, Massachusetts

Dear Ms. Little:

On behalf of our client, Haymarket Parcel 9 Investor, 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 proposed Parcel 9 Haymarket Hotel, located at Blackstone Street and North Street, in Boston, Massachusetts (the “site”).

### Site Location and Historical Site Usage

The site is an approximately 29,400 square foot (sq ft) parcel of vacant land bounded by Hanover, Blackstone, and North Streets and the John F. Fitzgerald Surface Road in Boston, Massachusetts. The location of the site is shown on Figure 1, Project Locus. The Central Artery (I-93) tunnel runs beneath the northern portion of the site, as indicated on Figure 2. Although the parcel is vacant, the site is used as a staging area and storage area (wood pallets and stalls) for the Haymarket outdoor market.

Historic Sanborn Insurance Maps and aerial photographs were reviewed for site historic information. The site is part of the Shawmut Peninsula, the area of initial European settlement in the early 17<sup>th</sup> Century. Prior to filling activities in circa 1835, Blackstone Street and the surrounding area were occupied by Mill Creek. The 1867 Sanborn Map depicts the site developed with several tin shops, liquor stores, metals buildings, general stores, a cork factory, a turner, a painter, and a drugstore. A portion of the site was also formerly occupied by North Center Street. Use of the site remained commercial and light industrial

through 1909. By 1929, the Sanborn Map depicts commercial stores, a bank with upper story residential units, and a wholesale beef sausage factory occupying the site. Building use continued through at least 1951.

The buildings were razed, and the site was redeveloped into Interstate 93 (I-93) elevated highway and associated access ramps by 1955. The site remained part of the I-93 surface road until the Central Artery/Tunnel (CA/T) project commenced in the 1990s. During the course of the CA/T project, the site became a vacant surface lot. The CA/T I-93 tunnel now runs beneath a portion of the site.

### Proposed Activities

We understand Haymarket Parcel 9 Investor, LLC will be entering into a long-term ground lease with the Massachusetts Department of Transportation (MassDOT), the owner of the site, to construct a new hotel on Parcel 9 with an estimated 26,000 sf footprint. Approximately 18,000 sf of the hotel footprint will be above the existing below grade Central Artery Tunnel (CA/T) structures. An area of approximately 8,000 sf will be outside the limits of the CA/T southern slurry wall and will include a one level basement. It is estimated that the excavation for the hotel above the CA/T structures will extend up to four feet below ground surface (ft bgs), corresponding with El. 14. The excavation to occur outside of the CA/T southern slurry wall is estimated to extend to 16 ft bgs, corresponding to El. 2.

### Soil and Groundwater Testing Program

During the period 4 to 6 June 2018, Haley & Aldrich performed a subsurface investigation program at the Parcel 9 site for the purpose of environmental soil precharacterization. Test borings were advanced to depths ranging from 4 to 16 ft bgs, and an observation well was installed in completed borehole HA18-B207. A total of 17 soil samples were collected from the explorations, and one groundwater sample was collected from HA18-B207(OW). The results of the laboratory analysis of soil samples indicated that on-site Fill soils at the location of HA18-B207 (soil sample HB18-B207\_4-8) contain levels of benzo(a)pyrene, phenanthrene, lead and zinc in soil above the applicable MCP Reportable Concentrations for soil (RCS-1).

The results of the laboratory analysis of the groundwater sample detected constituents below the applicable MCP Reportable Concentrations for groundwater (RCGW-2). Further information regarding groundwater sampling results is provided below in this letter report and in the attached Table 1.

### 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 are anticipated to be required for up to 6 months. On average, we estimate effluent discharge rates of about 20 gallons per minute (gpm), with occasional peak flows of approximately 75 gpm during significant precipitation events. Temporary dewatering will be conducted from sumps located in excavations or from dewatering wells installed at the site.

An effluent treatment system will be designed by the Contractor to meet the 2017 NPDES RGP Discharge Effluent Criteria. Construction dewatering includes piping and discharging treated dewatering effluent to storm drains located on or near the site that discharge to the Boston Inner Harbor near the Christopher Columbus Waterfront Park (outfall SDO 058), as shown on Figure 3. Prior to discharge, collected water will

be routed through a sedimentation tank and a bag filter and other necessary treatment components, to remove suspended solids and chemical constituents, as shown on Figure 4.

### Groundwater Quality Data

One groundwater sample was obtained from observation well HA18- B207(OW) on 18 June 2018. The collected sample was submitted to Alpha Analytical Laboratory (Alpha) of Westborough, MA, for chemical analysis of 2017 NPDES Remediation General Permit parameters including volatile organic compounds, semivolatile organic compounds, polycyclic aromatic hydrocarbons, total metals, total petroleum hydrocarbons, ammonia, phenolics, dissolved lead, 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-B207(OW) is shown on Figure 2.

### Receiving Water Quality Information and Dilution Factor

On 10 August 2018, Haley & Aldrich collected a receiving water sample from the Boston Harbor area near outfall SDO 058 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 receiving 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.

### Ethanol Discussion

Ethanol sampling was not conducted on the groundwater sample collected in June 2018 as site history does not suggest that ethanol was stored at the property, and a petroleum product containing ethanol is not known to have been released at the site. Ethanol has been increasingly used in fuels since 2006 (according to the 2016 NOI Fact Sheet). According to site history, the site was used as a commercial, light industrial, and residential area until the 1950s when the area was cleared for construction of I-93, with no known fuel-related storage or handling activities conducted onsite prior to highway construction.

### Effluent Criteria Determination

The EPA suggested WQBEL Calculation spreadsheet was used to calculate the effluent criteria for the site using groundwater and receiving water data. The resulting criteria are 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 concurrently with the submission of this NOI, for its review.

### National Marine Fisheries Services Eligibility

Based on our review of the National Marine Fisheries Services (NMFS) criterion, it is the opinion of Haley & Aldrich that temporary dewatering activities to be authorized at the site 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 any take of listed species.

According to Appendix I: Endangered Species Act (ESA) Guidance and Eligibility Criteria in the NPDES RGP, and reference footnoted below<sup>1</sup>, 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 9 project 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 to the CRWA and NRWA references below<sup>2</sup>, resident populations of Sturgeon no longer exist in the Charles River.

### Owner and Operator Information

Haymarket Parcel 9 Investor, LLC has been designated by property owner, MassDOT, as a long-term ground lessee for proposed development.

**Ground Lessee:**

Haymarket Parcel 9 Investor, LLC  
c/o CV Properties  
451 D Street, Suite 100  
Boston, Massachusetts 02210  
Contact: Yvette Tetreault

**Operator:**

J. Derenzo Company  
338 Howard Street  
Brockton, MA 02302  
Contact: Steve Ando  
General Superintendent

### Appendices

The completed "Suggested Notice of Intent" form as provided in the RGP is enclosed in Appendix A. Haley & Aldrich plans to monitor the Operator's dewatering activities on behalf of the Haymarket Parcel 9 Investor, 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 Application. This BWSC Permit Application will be submitted concurrently with this NOI. 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

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<sup>1</sup> <https://www3.epa.gov/region1/npdes/remediation/RGPNMFSletter.pdf>

<sup>2</sup> <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/>



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

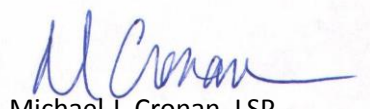
### Closing

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

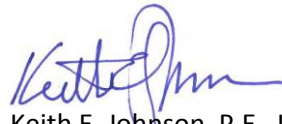
Sincerely yours,  
HALEY & ALDRICH, INC



Lindsey R. Howard, E.I.T. (NH)  
Staff Environmental Engineer



Michael J. Cronan, LSP  
Senior Project Manager



Keith E. Johnson, P.E., LSP  
Vice President

#### Attachments:

Table I – Summary of Groundwater Quality Data  
Figure 1 – Site Locus  
Figure 2 – Site and Subsurface Location Plan  
Figure 3 – 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 – Boston Water and Sewer Commission Permit Application  
Appendix E – Laboratory Data Reports  
Appendix F – Typical Dewatering Treatment System Information

c: Haymarket Parcel 9 Investor, LLC, Yvette Tetreault  
Suffolk Construction, John Russell  
J Derenzo Company, Steve Ando

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TABLE I  
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS  
PARCEL 9 CA/T  
BOSTON, MA  
FILE NO. 131268-002

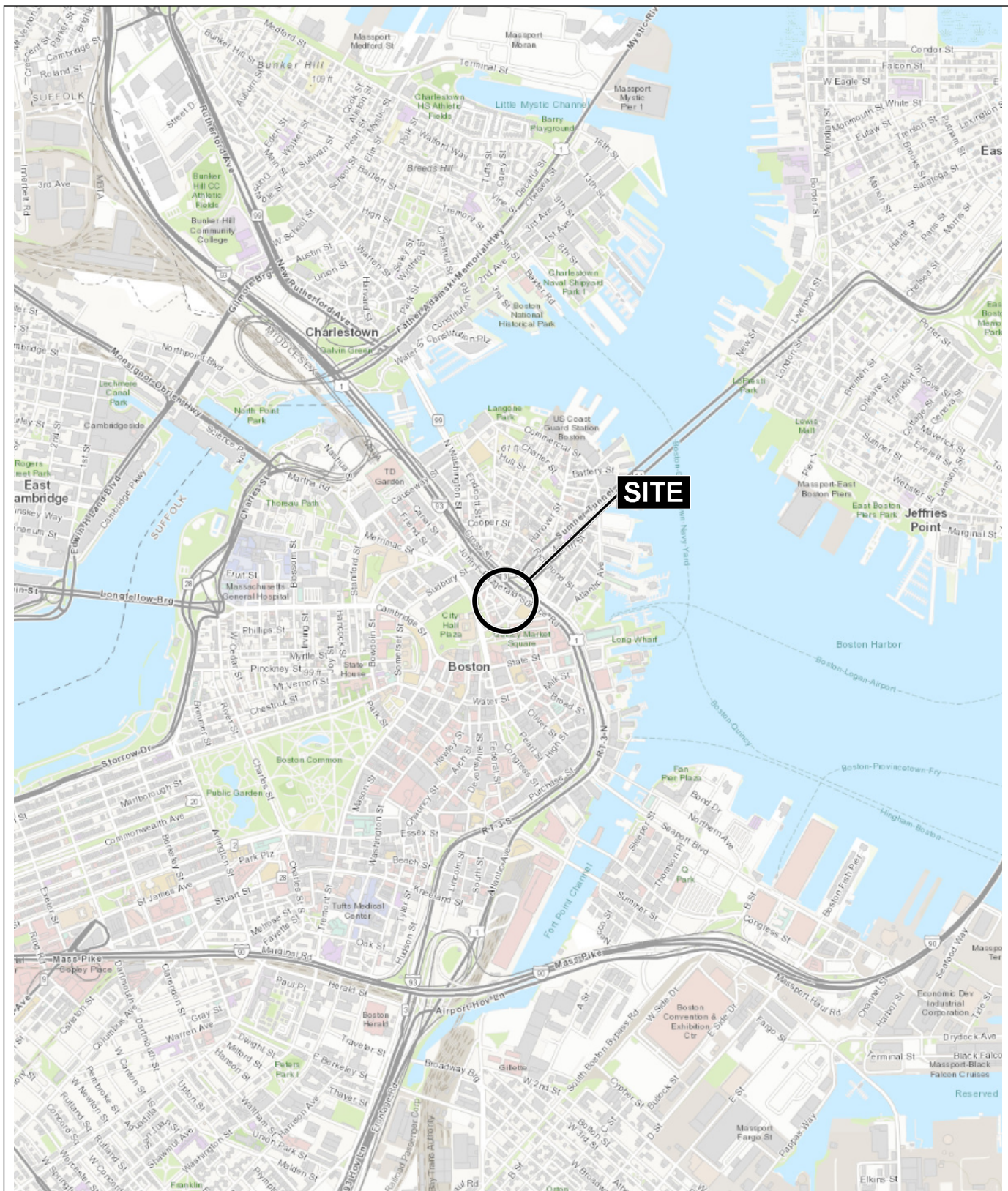
Location Name Sample Name Sample Date  Lab Sample ID  Sample Type	Action Level		HA18-B207 (OW)	BOSTON HARBOR
	NPDES RGP Effluent	2014 MCP RCGW-2 Reportable	HA18-B207 (OW) 06/18/2018	HA18-BOSTON HARBOR-81018 8/10/2018
	Limitations	Concentrations	L1822896-01	L1831427-01
			Source Water	Receiving Water
<b>Volatile Organic Compounds (ug/L)</b>				
1,1,1-Trichloroethane	200	4000	ND (0.50)	-
1,1,2-Trichloroethane	5	900	ND (0.75)	-
1,1-Dichloroethane	70	2000	ND (0.75)	-
1,1-Dichloroethene	3.2	80	ND (0.50)	-
1,2-Dichlorobenzene	600	2000	ND (2.5)	-
1,2-Dichloroethane	5	5	ND (0.50)	-
1,3-Dichlorobenzene	320	6000	ND (2.5)	-
1,4-Dichlorobenzene	5	60	ND (2.5)	-
Acetone	NA	50000	ND (5.0)	-
Benzene	5	1000	ND (0.50)	-
Carbon tetrachloride	4.4	2	ND (0.50)	-
cis-1,2-Dichloroethene	70	20	ND (0.50)	-
Ethylbenzene	*	5000	ND (0.50)	-
m,p-Xylenes	*	NA	ND (1.0)	-
Methyl Tert Butyl Ether	70	5000	ND (1.0)	-
Methylene chloride	4.6	2000	ND (3.0)	-
o-Xylene	*	NA	ND (1.0)	-
Tert-Amyl Methyl Ether (TAME)	NA	NA	ND (2.0)	-
Tert-Butyl Alcohol (tert-Butanol)	NA	NA	ND (10)	-
Tetrachloroethene	5	50	ND (0.50)	-
Toluene	*	40000	ND (0.75)	-
Trichloroethene	5	5	ND (0.50)	-
Vinyl chloride	2	2	ND (1.0)	-
Xylene (total)	*	3000	ND (1.0)	-
1,4-Dioxane	NA	6000	ND (3.0)	-
1,2-Dibromoethane (Ethylene Dibromide)	0.05	2	ND (0.010)	-
Total Volatile Organic Compounds	NA	NA	ND	-
Total BTEX	100	NA	ND	-
<b>Semi-Volatile Organic Compounds (ug/L)</b>				
Acenaphthene	**	6000	0.95	-
Acenaphthylene	**	40	ND (0.10)	-
Anthracene	**	30	0.7	-
Benzo(a)anthracene	0.0038	1000	<b>0.58</b>	-
Benzo(a)pyrene	0.0038	500	<b>0.54</b>	-
Benzo(b)fluoranthene	0.0038	400	<b>0.61</b>	-
Benzo(g,h,i)perylene	**	20	0.22	-
Benzo(k)fluoranthene	0.0038	100	<b>0.25</b>	-
Chrysene	0.0038	70	<b>0.58</b>	-
Dibenz(a,h)anthracene	0.0038	40	<b>ND (0.10)</b>	-
Fluoranthene	**	200	1.8	-
Fluorene	**	40	0.91	-
Indeno(1,2,3-cd)pyrene	0.0038	100	<b>0.24</b>	-
Naphthalene	20	700	0.38	-
Phenanthrene	**	10000	2.6	-
Pyrene	**	20	1.4	-
bis(2-Ethylhexyl)phthalate	101	50000	ND (3.0)	-
Butyl benzylphthalate	+	10000	ND (5.0)	-
Diethyl phthalate	+	9000	ND (5.0)	-
Dimethyl phthalate	+	50000	ND (5.0)	-
Di-n-butylphthalate	+	5000	ND (5.0)	-
Di-n-octyl phthalate	+	100000	ND (5.0)	-
Pentachlorophenol	0.0038	200	<b>ND (10)</b>	-
Phenol	300	2000	ND (5.0)	-
Total Semi-Volatile Organic Compounds	NA	NA	11.76	-
Total Group I PAHs	1	NA	2.8	-
Total Group II PAHs**	100	NA	8.58	-
Total Phthalates+	190	NA	ND	-
<b>Total Petroleum Hydrocarbons (mg/L)</b>				
Petroleum hydrocarbons	NA	5	ND (4.0)	-
<b>Total Metals (mg/L)</b>				
Antimony, Total	0.206	NA	ND (0.0040)	-
Arsenic, Total	0.104	NA	0.00809	-
Cadmium, Total	0.0102	NA	0.00087	-
Chromium, Total	NA	NA	0.03817	-
Chromium VI (Hexavalent), Total	0.323	NA	ND (0.010)	-
Chromium III (Trivalent), Total	0.323	0.6	0.038	-
Copper, Total	0.0037	NA	<b>0.02901</b>	-
Iron, Total	5	NA	<b>10.5</b>	-
Lead, Total	0.16	NA	<b>0.4165</b>	-
Mercury, Total	0.000739	NA	ND (0.00020)	-
Nickel, Total	0.0083	NA	<b>0.02217</b>	-
Selenium, Total	0.2358	NA	ND (0.0050)	-
Silver, Total	0.0351	NA	ND (0.00040)	-
Zinc, Total	0.086	NA	<b>0.2933</b>	-
<b>Dissolved Metals (mg/L)</b>				
Lead, Dissolved	NA	0.01	0.0043	-
<b>Polychlorinated Biphenyls (ug/L)</b>				
Aroclor-1016 (PCB-1016)	NA	5	ND (0.25)	-
Aroclor-1221 (PCB-1221)	NA	5	ND (0.25)	-
Aroclor-1232 (PCB-1232)	NA	5	ND (0.25)	-
Aroclor-1242 (PCB-1242)	NA	5	ND (0.25)	-
Aroclor-1248 (PCB-1248)	NA	5	ND (0.25)	-
Aroclor-1254 (PCB-1254)	NA	5	ND (0.25)	-
Aroclor-1260 (PCB-1260)	NA	5	ND (0.20)	-
Total PCBs	6.40E-05	NA	ND	-
<b>Other</b>				
Ammonia, Total (mg/L)	Report	NA	4.36	ND(0.075)
Chloride, Total (mg/L)	Report	NA	4160	-
Chlorine, residual, Total (mg/L)	0.0075	NA	<b>ND (0.020)</b>	-
Cyanide, Total	178	NA	ND (0.0050)	-
Total phenols (mg/L)	1.08	NA	ND (0.030)	-
Total Suspended Solids (TSS) (mg/L)	30	NA	<b>230</b>	-
Salinity	NA	NA	-	28
Temperature (°C)	NA	NA	16.4	19.03
pH	NA	NA	8.01	7.6

ABBREVIATIONS AND NOTES:

-: Not Analyzed  
MCP: 310 CMR 40.0000 Massachusetts Contingency Plan effective 25 April 2014; revisions 23 May 2014  
NA: Not Applicable  
ug/L: micrograms per liter  
mg/L: milligrams per liter  
ND (2.5): Not detected, number in parentheses is the laboratory reporting limit

1. This table shows Volatile and Semi-Volatile Organic Compounds detected in at least one sample and/or listed in Table 2 of the NPDES RGP. For a complete list of analytes see the laboratory data reports.  
2. **Bold** values indicate an exceedance of NPDES RGP Effluent Limitations.  
**Bold ND** values indicate the laboratory reporting limit exceeds the NPDES RGP Effluent Limitations.  
4. \*: Indicates effluent limit is limited as total BTEX of 100 ug/L  
5. \*\*: Indicates effluent limit is limited as total Group II PAHs of 100 ug/l.  
6. +: Indicates effluent limit is limited as total Phthalates of 190 ug/l.





MAP SOURCE: ESRI

SITE COORDINATES: 42°21'41"N, 71°3'21"W

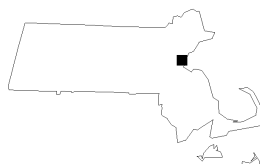
**HALEY  
ALDRICH**

PARCEL 9  
BOSTON, MASSACHUSETTS

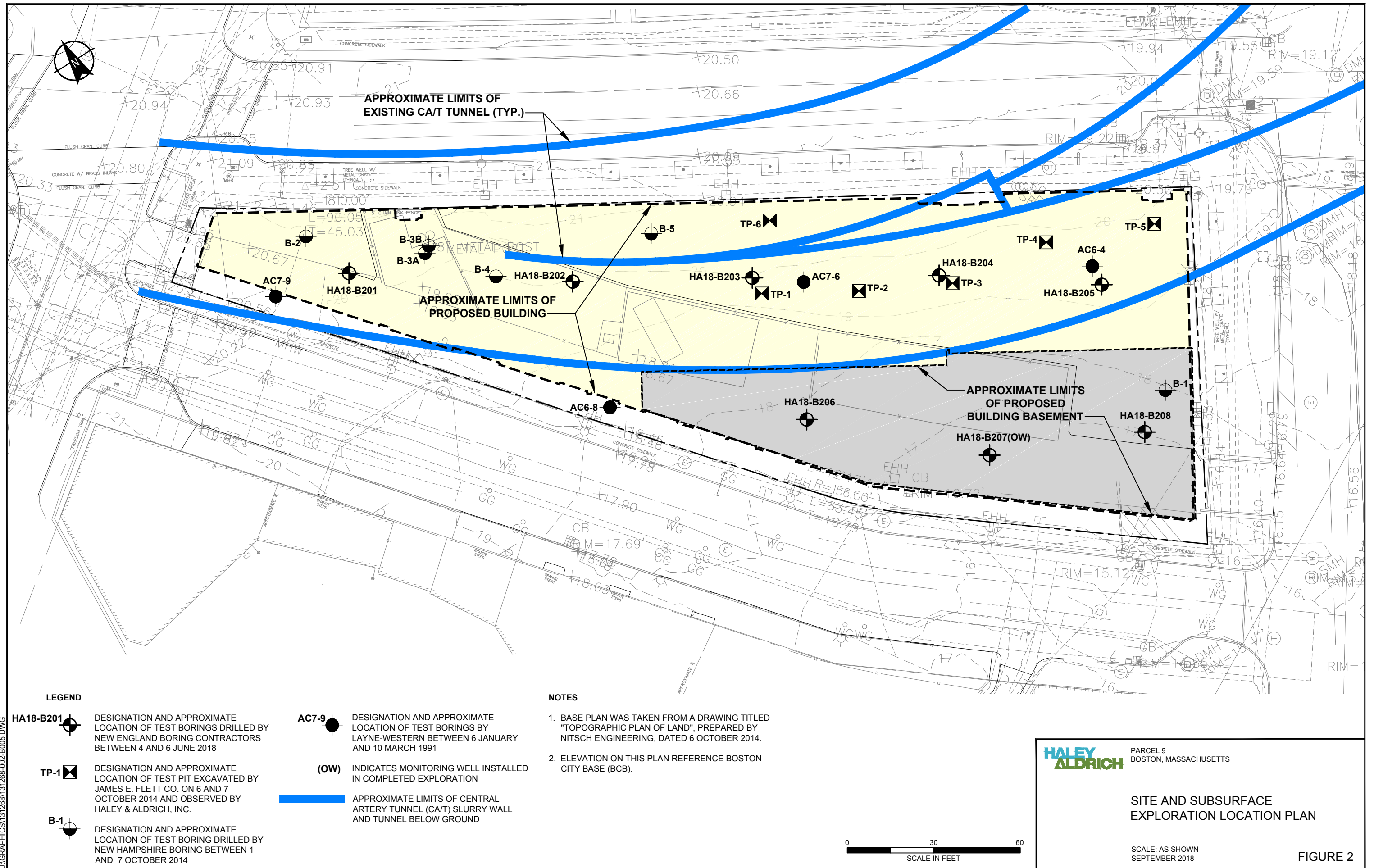
## PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT  
SEPTEMBER 2018

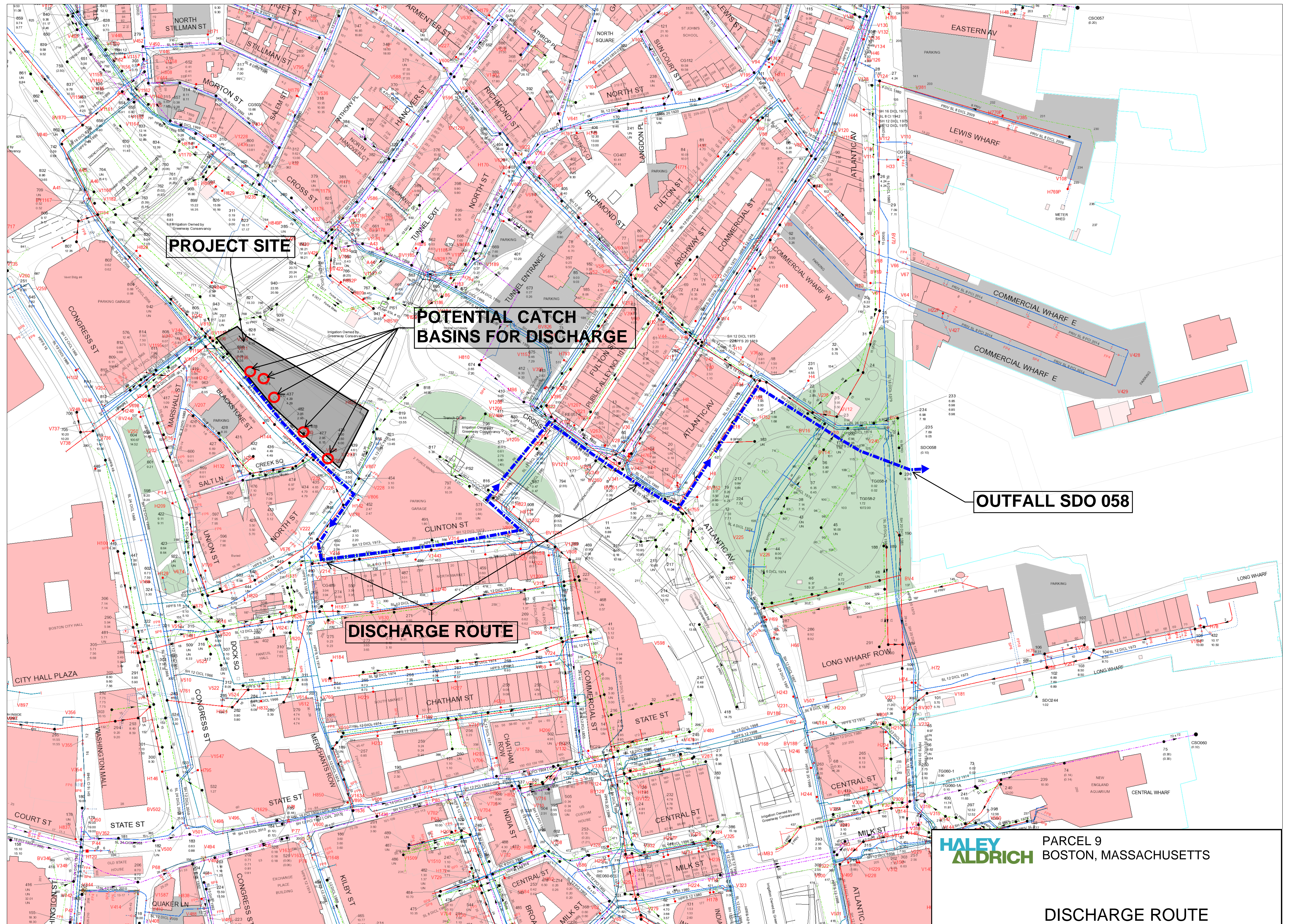
FIGURE 1



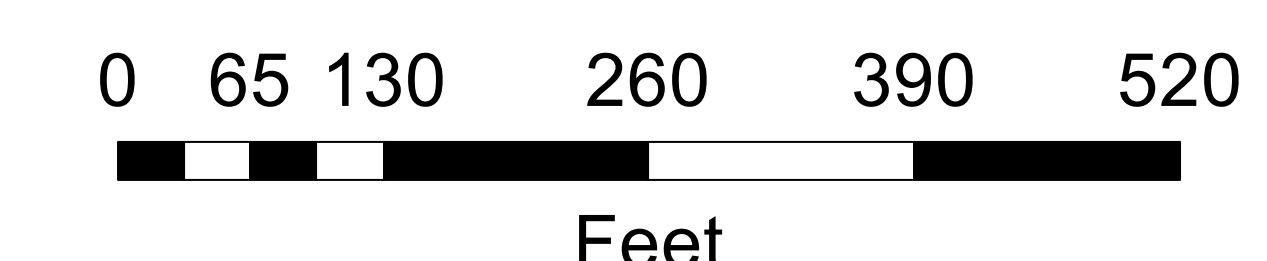
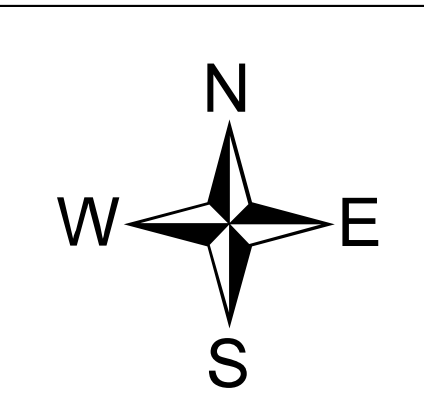








**NOTES:**  
1. FIGURE FROM BOSTON WATER AND SEWER COMMISSION AND  
REVISED BY HALEY & ALDRICH ON 7 AUGUST 2018

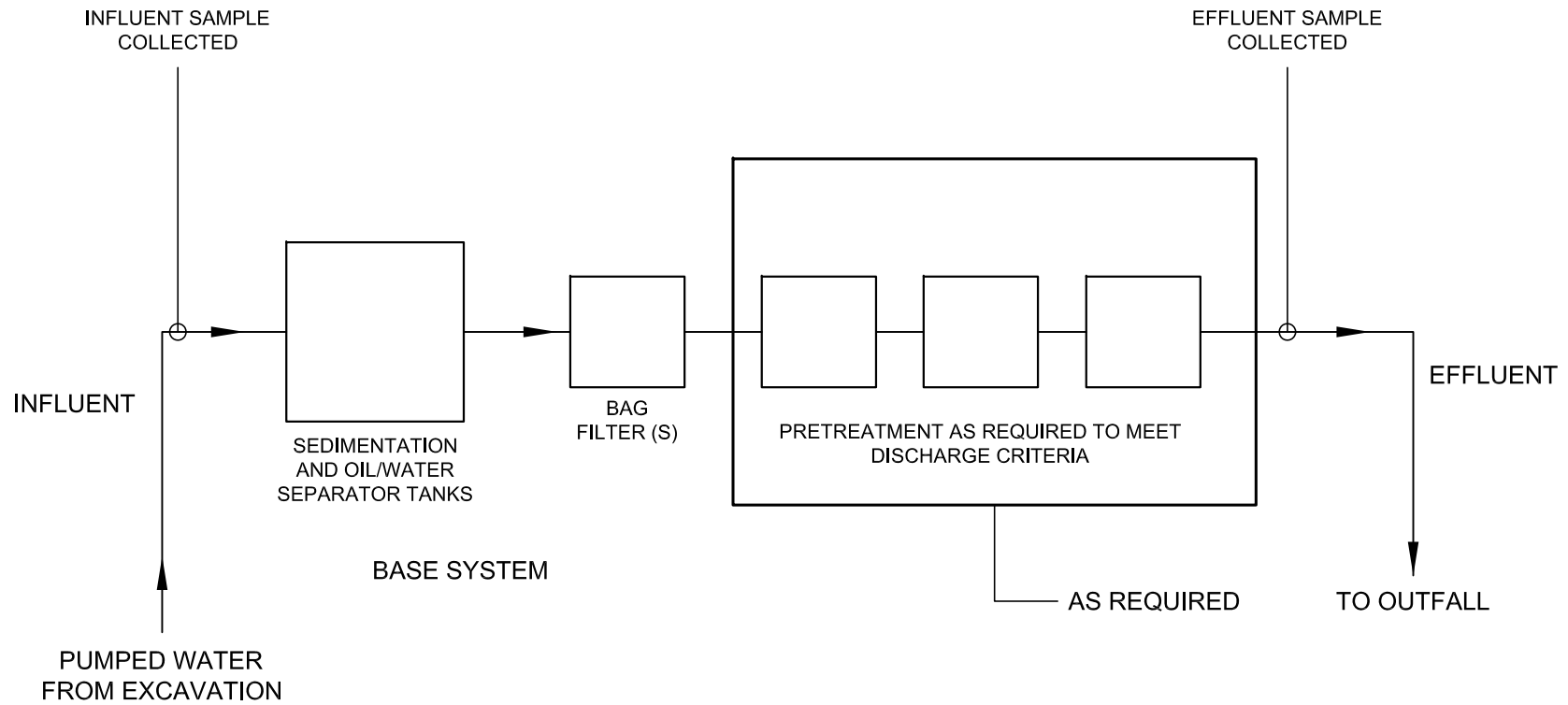


**HALEY ALDRICH** PARCEL 9  
BOSTON, MASSACHUSETTS

**DISCHARGE ROUTE**

SEPTEMBER 2018 **FIGURE 3**





**LEGEND:**

—▶ DIRECTION OF FLOW

**NOTE:**

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

**HALEY  
ALDRICH**

PARCEL 9  
BOSTON, MASSACHUSETTS

**PROPOSED  
TREATMENT SYSTEM  
SCHEMATIC**

SCALE: NONE  
SEPTEMBER 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: <b>Parcel 9 Haymarket Hotel</b>	Site address: <b>Blackstone and North Street</b> Street:		
2. Site owner Haymarket Parcel 9 Investor, LLC has been designated by property owner, MassDOT, as a long-term ground lessee for proposed development. <b>Ground Lessee: Haymarket Parcel 9 Development, LLC</b> 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:	Contact Person: <b>Yvette Tetreault</b>	Telephone: <b>617-999-5951</b>	Email: <b>ytetreault@cvprop.com</b>
3. Site operator, if different than owner <b>J. Derenzo Company</b>	Mailing address: Street: <b>451 D Street, Suite 100</b>		
4. NPDES permit number assigned by EPA: <b>N/A</b> 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): <b>3-16000</b> <input type="checkbox"/> NH Groundwater Management Permit or Groundwater Release Detection Permit:	<input type="checkbox"/> CERCLA <input type="checkbox"/> UIC Program <input type="checkbox"/> POTW Pretreatment <input type="checkbox"/> CWA Section 404	City: <b>Boston</b> State: <b>MA</b> Zip: <b>02210</b> City: <b>Brockton</b> State: <b>MA</b> Zip: <b>02302</b>

**B. Receiving water information:**

1. Name of receiving water(s): <b>Boston Harbor</b>	Waterbody identification of receiving water(s): <b>MA70-02</b>	Classification of receiving water(s): <b>Class SB (CSO) Category 5</b>
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. Yes - MA70-02 is on the 303(d) list - Impairments include enterococcus, fecal coliform, other (contaminants in fish and shellfish, dissolved oxygen, and PCB in fish tissue, No final EPA TMDL		
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.		<b>NA</b>
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.		<b>NA</b>
6. Has the operator received confirmation from the appropriate State for the 7Q10 and dilution factor indicated? (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> <b>NA</b> 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"/> Potable water; if so, indicate municipality or origin:  <input checked="" type="checkbox"/> Other; if so, specify: <b>Although "Contaminated Groundwater" is listed, see table for compounds actually detected</b>
		<input type="checkbox"/> A surface water other than the receiving water; if so, indicate waterbody:	

2. Source water contaminants: Iron, lead, TSS, PAHs	
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"/> NA
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 058	Outfall location(s): (Latitude, Longitude) 42.361185, -71.050801
<p>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:</p> <p>Flows through treatment system to catch basins, down Blackstone St, Clinton St, Cross St, under Christopher Columbus Waterfront Park to SDO 058</p> <p><input type="checkbox"/> A private storm sewer system <input checked="" type="checkbox"/> A municipal storm sewer system</p> <p>If the discharge enters the receiving water via a private or municipal storm sewer system:</p> <p>Has notification been provided to the owner of this system? (check one): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>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: Pending BWSC approval - permit submitted concurrently with RGP Permit</p> <p>Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> NA</p>	
<p>Provide the expected start and end dates of discharge(s) (month/year):</p> <p>October 2018 - April 2019</p> <p>Indicate if the discharge is expected to occur over a duration of: <input checked="" type="checkbox"/> less than 12 months <input type="checkbox"/> 12 months or more <input type="checkbox"/> is an emergency discharge</p>	
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)	
<input type="checkbox"/> I – Petroleum-Related Site Remediation <input type="checkbox"/> II – Non-Petroleum-Related Site Remediation <input checked="" type="checkbox"/> III – Contaminated Site Dewatering <input type="checkbox"/> IV – Dewatering of Pipelines and Tanks <input type="checkbox"/> V – Aquifer Pump Testing <input type="checkbox"/> VI – Well Development/Rehabilitation <input type="checkbox"/> VII – Collection Structure Dewatering/Remediation <input type="checkbox"/> VIII – Dredge-Related Dewatering	a. If Activity Category I or II: (check all that apply)  <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	
	b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)	
	<input checked="" type="checkbox"/> G. Sites with Known Contamination	<input type="checkbox"/> H. Sites with Unknown Contamination
	c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply)  <input checked="" type="checkbox"/> A. Inorganics <input 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 type="checkbox"/> E. Halogenated Semi-Volatile Organic Compounds <input checked="" type="checkbox"/> F. Fuels Parameters	d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply

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	0.00436	0.00436	Report mg/L	---
Chloride		X	1	300.0	25000	4160000	4160000	Report µg/l	---
Total Residual Chlorine	X		1	4500CL	20	ND	ND	0.2 mg/L	7.5 ug/L
Total Suspended Solids		X	1	2540D	5000	230000	230000	30 mg/L	—
Antimony Total	X		1	6020A	4	ND	ND	206 µg/L	640
Arsenic Total		X	1	6020A	1	8.09	8.09	104 µg/L	36
Cadmium Total	X		1	6020A	0.2	0.87	0.87	10.2 µg/L	8.9
Chromium III		X	1	6020A	10	38	38	323 µg/L	100
Chromium VI	X		1	3500CR	10	ND	ND	323 µg/L	50
Copper Total		X	1	6020A	1	29.01	29.01	242 µg/L	3.7
Iron Total		X	1	200.7	50	10500	10500	5,000 µg/L	
Lead Total		X	1	6020A	1	416.5	416.5	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	22.17	22.17	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	293.3	293.3	420 µg/L	86
Cyanide Total	X		1	4500CN	5	ND	ND	178 mg/L	1.0
B. Non-Halogenated VOCs									
Total BTEX	X		1	8260C	NA	ND	ND	100 µg/L	---
Benzene	X		1	8260C	0.5	ND	ND	5.0 µg/L	---
1,4 Dioxane	X		1	8260C-SIM	3	ND	ND	200 µg/L	---
Acetone	X		1	8260C	5	ND	ND	7.97 mg/L	---
Phenol	X		1	8270D	30	ND	ND	1,080 µg/L	300

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	X		1	8260C	0.5	ND	ND	4.4 µg/L	1.6
1,2 Dichlorobenzene	X		1	8260C	2.5	ND	ND	600 µg/L	---
1,3 Dichlorobenzene	X		1	8260C	2.5	ND	ND	320 µg/L	---
1,4 Dichlorobenzene	X		1	8260C	2.5	ND	ND	5.0 µg/L	---
Total dichlorobenzene	X		1	8260C	NA	NA	NA	763 µg/L in NH	---
1,1 Dichloroethane	X		1	8260C	0.75	ND	ND	70 µg/L	---
1,2 Dichloroethane	X		1	8260C	0.5	ND	ND	5.0 µg/L	---
1,1 Dichloroethylene	X		1	8260C	0.5	ND	ND	3.2 µg/L	---
Ethylene Dibromide	X		1	8260C	0.01	ND	ND	0.05 µg/L	---
Methylene Chloride	X		1	8260C	3	ND	ND	4.6 µg/L	---
1,1,1 Trichloroethane	X		1	8260C	0.5	ND	ND	200 µg/L	---
1,1,2 Trichloroethane	X		1	8260C	0.75	ND	ND	5.0 µg/L	---
Trichloroethylene	X		1	8260C	0.5	ND	ND	5.0 µg/L	---
Tetrachloroethylene	X		1	8260C	0.5	ND	ND	5.0 µg/L	3.3
cis-1,2 Dichloroethylene	X		1	8260C	0.5	ND	ND	70 µg/L	---
Vinyl Chloride	X		1	8260C	1.0	ND	ND	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	X		1	8270D	NA	ND	ND	190 µg/L	
Diethylhexyl phthalate	X		1	8270D	5	ND	ND	101 µg/L	2.2
Total Group I PAHs		X	1	8270D	NA	2.8	2.8	1.0 µg/L	---
Benzo(a)anthracene		X	1	8270D	0.1	0.58	0.58	As Total PAHs	0.0038
Benzo(a)pyrene		X	1	8270D	0.1	0.54	0.54		0.0038
Benzo(b)fluoranthene		X	1	8270D	0.1	0.61	0.61		0.0038
Benzo(k)fluoranthene		X	1	8270D	0.1	0.25	0.25		0.0038
Chrysene		X	1	8270D	0.1	0.58	0.58		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	0.24	0.24		0.0038

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs		X	1	8270D	NA	8.58	8.58	100 µg/L	---
Naphthalene		X	1	8260C	0.1	0.38	0.38	20 µg/L	---
<b>E. Halogenated SVOCs</b>									
Total PCBs	X		1	608	0.2 -0.25	ND	ND	0.000064 µg/L	---
Pentachlorophenol	X		1	8270D	10	ND	ND	1.0 µg/L	---
<b>F. Fuels Parameters</b>									
Total Petroleum Hydrocarbons		X	1	1664A	4000	ND	ND	5.0 mg/L	---
Ethanol								Report mg/L	---
Methyl-tert-Butyl Ether	X		1	8260C	1	ND	ND	70 µg/L	
tert-Butyl Alcohol	X		1	8260C	10	ND	ND	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	X		1	8260C	2	ND	ND	90 µg/L in MA 140 µg/L in NH	---
<b>Other (i.e., pH, temperature, hardness, salinity, LC<sub>50</sub>, additional pollutants present); if so, specify:</b> See Attached Table 1									
Lead, dissolved		X	1	3005A		4.3	4.3		
pH		X	1						
Carbon Disulfide		X	0	8260C		NA	NA		
Dibenzofuran		X	0	8270D		NA	NA		
2-Methylnaphthalene		X	0	8270D	SIM	NA	NA		
Vanadium		X	0	3050B		NA	NA		
Silver		X	0	3050B		NA	NA		
Barium		X	0	3050B		NA	NA		
Beryllium		X	0	3050B		NA	NA		
Conductivity (umhos/cm)		X	0	1,9050A		NA	NA		



### 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:

Types of treatment checked above 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), 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: **75 gpm**

Is use of a flow meter feasible? (check one): ☒ Yes ☐ No, if so, provide justification:

Provide the proposed maximum effluent flow in gpm. **75 gpm**

Provide the average effluent flow in gpm. **20 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)	
<input type="checkbox"/> Algaecides/biocides <input type="checkbox"/> Antifoams <input type="checkbox"/> Coagulants <input type="checkbox"/> Corrosion/scale inhibitors <input type="checkbox"/> Disinfectants <input checked="" type="checkbox"/> Flocculants <input type="checkbox"/> Neutralizing agents <input type="checkbox"/> Oxidants <input type="checkbox"/> Oxygen <input type="checkbox"/> scavengers <input checked="" type="checkbox"/> pH conditioners <input type="checkbox"/> Bioremedial agents, including microbes <input type="checkbox"/> Chlorine or chemicals containing chlorine <input type="checkbox"/> 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): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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): <input type="checkbox"/> Yes <input type="checkbox"/> No	

### G. Endangered Species Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:
<input checked="" type="checkbox"/> <b>FWS Criterion A:</b> 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".
<input type="checkbox"/> <b>FWS Criterion B:</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): <input type="checkbox"/> Yes <input type="checkbox"/> No; if no, is consultation underway? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> <b>FWS Criterion C:</b> 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) <input type="checkbox"/> the operator <input type="checkbox"/> EPA <input type="checkbox"/> 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 ☒ N/A

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 ☐

Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.

Check one: Yes ☐ No ☐ N/A

Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.

Check one: Yes ☒ No ☐ NA ☐

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

Pending BWSC approval - permit submitted concurrently with RGP Permit

Check one: Yes ☐ No ☒ NA ☐

Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:

Check one: Yes ☐ No ☐ NA ☒

Signature:

Date:

9/12/18

Print Name and Title:

Ground Lessee: Haymarket Parcel 9 ~~Development~~ INVESTOR, LLC

Haymarket Parcel 9 Investor, LLC has been designated by property owner, MassDOT, as a long-term ground lessee for proposed development.

**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 ☐

Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.

Check one: Yes ☐ No ☐ N/A

Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.

Check one: Yes ☒ No ☐ NA ☐

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

Pending BWSC approval - permit submitted concurrently with RGP Permit

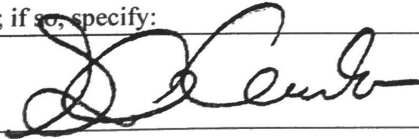
Check one: Yes ☐ No ☒ NA ☐

Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit

Check one: Yes ☐ No ☐ NA ☒

☐ Other; if so, specify:

Signature:



Date:

9-10-18

Print Name and Title:  
Operator:

J Derenzo Company

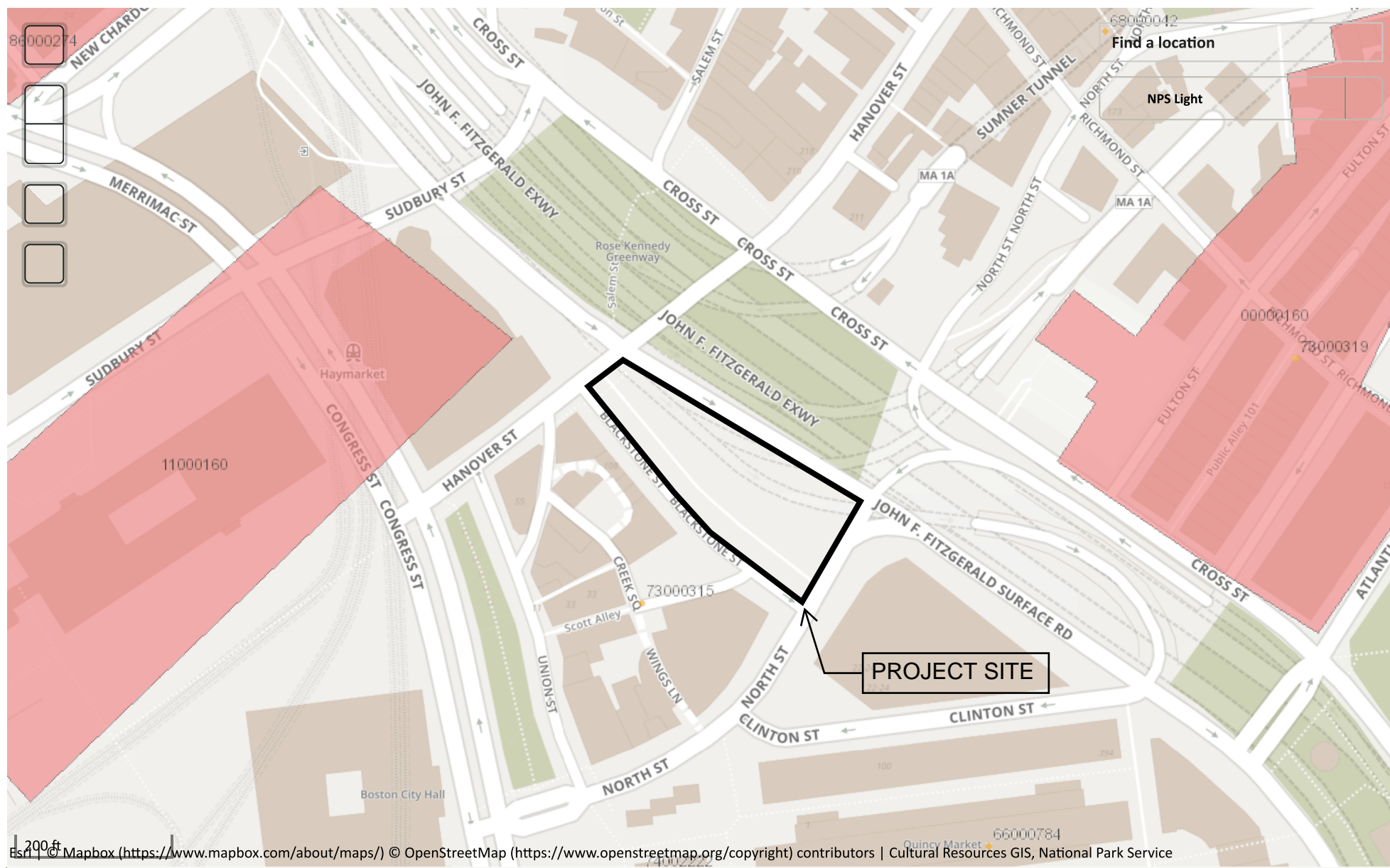
## **APPENDIX B**

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

# National Register of Historic Places

National Park Service  
U.S. Department of the Interior

Public, non-restricted data depicting National Register spatial data processed by the Cultural Resources GIS facility. ...





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

Note: Not all properties are digitized

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

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



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

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

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



# 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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Bing MassDOT Street View

Base Layer  
Inventory Layers  
MassGIS Layers

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

Username:   
Password:  Login

/1




# 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.AK 

**Historic Name:** Blackstone Block Historic District

**Common Name:**

**Address:**

**City/Town:** Boston

**Village/Neighborhood:** Central Business District; Custom House - Markets

**Local No:**

**Year Constructed:**

**Architect(s):**

**Architectural Style(s):**

**Use(s):** Commercial District

**Significance:** Architecture; Commerce; Community Planning

**Area(s):**

**Designation(s):** Nat'l Register District (05/26/1973)

**Building Material(s):**

Digital Photo  
Not Yet  
Available

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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:

August 07, 2018

Consultation Code: 05E1NE00-2018-SLI-2636

Event Code: 05E1NE00-2018-E-06164

Project Name: Parcel 9

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](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

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## Project Summary

Consultation Code: 05E1NE00-2018-SLI-2636

Event Code: 05E1NE00-2018-E-06164

Project Name: Parcel 9

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/42.36108079705683N71.05085608424298W>



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 Fisheries<sup>1</sup>, 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.





# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

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



January 20, 2017

To Whom It May Concern:

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

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

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

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

Sincerely yours,

Thomas R. Chapman  
Supervisor  
New England Field Office



# IPaC resource list

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

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

## Project information

### NAME

Parcel 9

### LOCATION

Suffolk County, Massachusetts



### DESCRIPTION

Construction dewatering

## Local office

New England Ecological Services Field Office

☎ (603) 223-2541

📠 (603) 223-0104

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

<http://www.fws.gov/newengland>

NOT FOR CONSULTATION

# Endangered species

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

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

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

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

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

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

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

- 
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
  2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

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

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

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

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

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

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

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

NAME

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

BIRD DOES NOT LIKELY BREED IN  
YOUR PROJECT AREA.)

### American Oystercatcher *Haematopus palliatus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8935>

Breeds Apr 15 to Aug 31

### Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Oct 15 to Aug 31

### Black Skimmer *Rynchops niger*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/5234>

Breeds May 20 to Sep 15

### Bobolink *Dolichonyx oryzivorus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Jul 31

### Buff-breasted Sandpiper *Calidris subruficollis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9488>

Breeds elsewhere

### Canada Warbler *Cardellina canadensis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Aug 10

### Dunlin *Calidris alpina arctica*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Breeds elsewhere

### King Rail *Rallus elegans*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8936>

Breeds May 1 to Sep 5

### Least Tern *Sterna antillarum*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Breeds Apr 20 to Sep 10

**Lesser Yellowlegs** *Tringa flavipes*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Breeds elsewhere

**Long-eared Owl** *asio otus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3631>

Breeds elsewhere

**Nelson's Sparrow** *Ammodramus nelsoni*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 15 to Sep 5

**Prairie Warbler** *Dendroica discolor*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 1 to Jul 31

**Purple Sandpiper** *Calidris maritima*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

**Red-throated Loon** *Gavia stellata*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

**Ruddy Turnstone** *Arenaria interpres morinella*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Breeds elsewhere

**Rusty Blackbird** *Euphagus carolinus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

**Saltmarsh Sparrow** *Ammodramus caudacutus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 15 to Sep 5

**Seaside Sparrow** *Ammodramus maritimus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Aug 20

**Semipalmated Sandpiper** *Calidris pusilla*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere



**Short-billed Dowitcher** *Limnodromus griseus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9480>

**Snowy Owl** *Bubo scandiacus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

**Whimbrel** *Numenius phaeopus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9483>

**Willet** *Tringa semipalmata*

Breeds Apr 20 to Aug 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

**Wood Thrush** *Hylocichla mustelina*

Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

## Probability of Presence Summary

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

### Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week

of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .

- The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

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

### Breeding Season (■)

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

### Survey Effort (|)

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

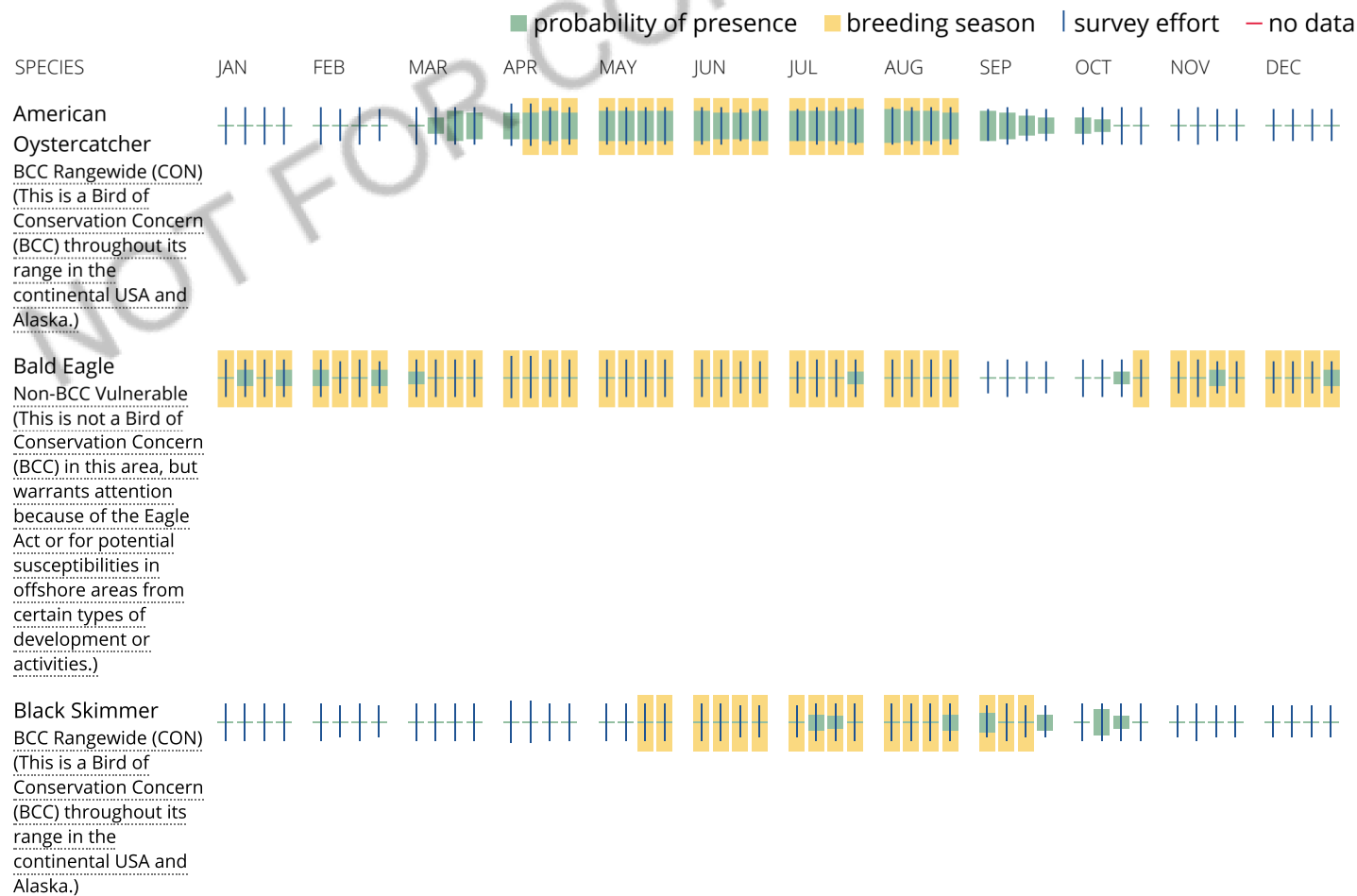
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (—)

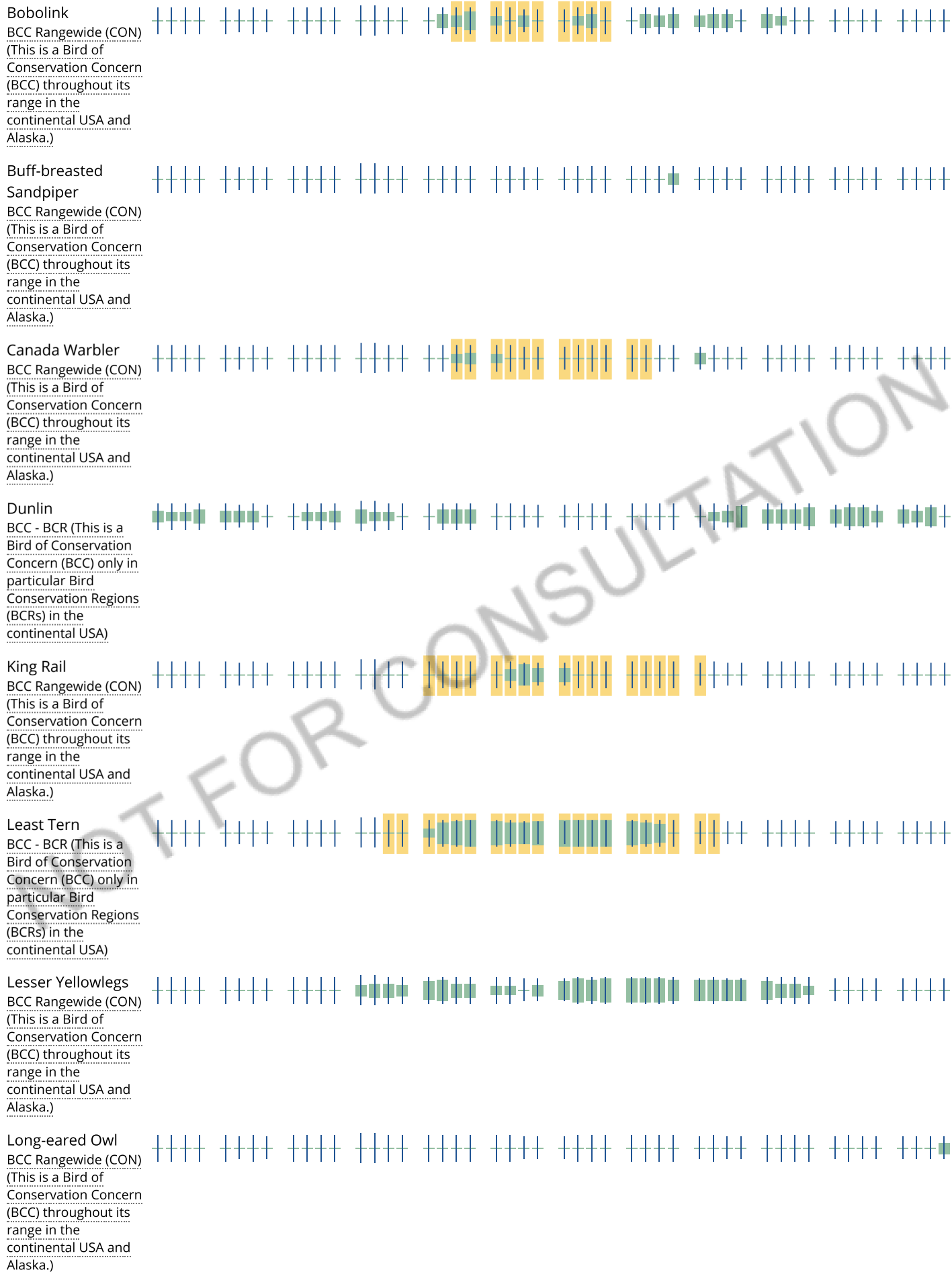
A week is marked as having no data if there were no survey events for that week.

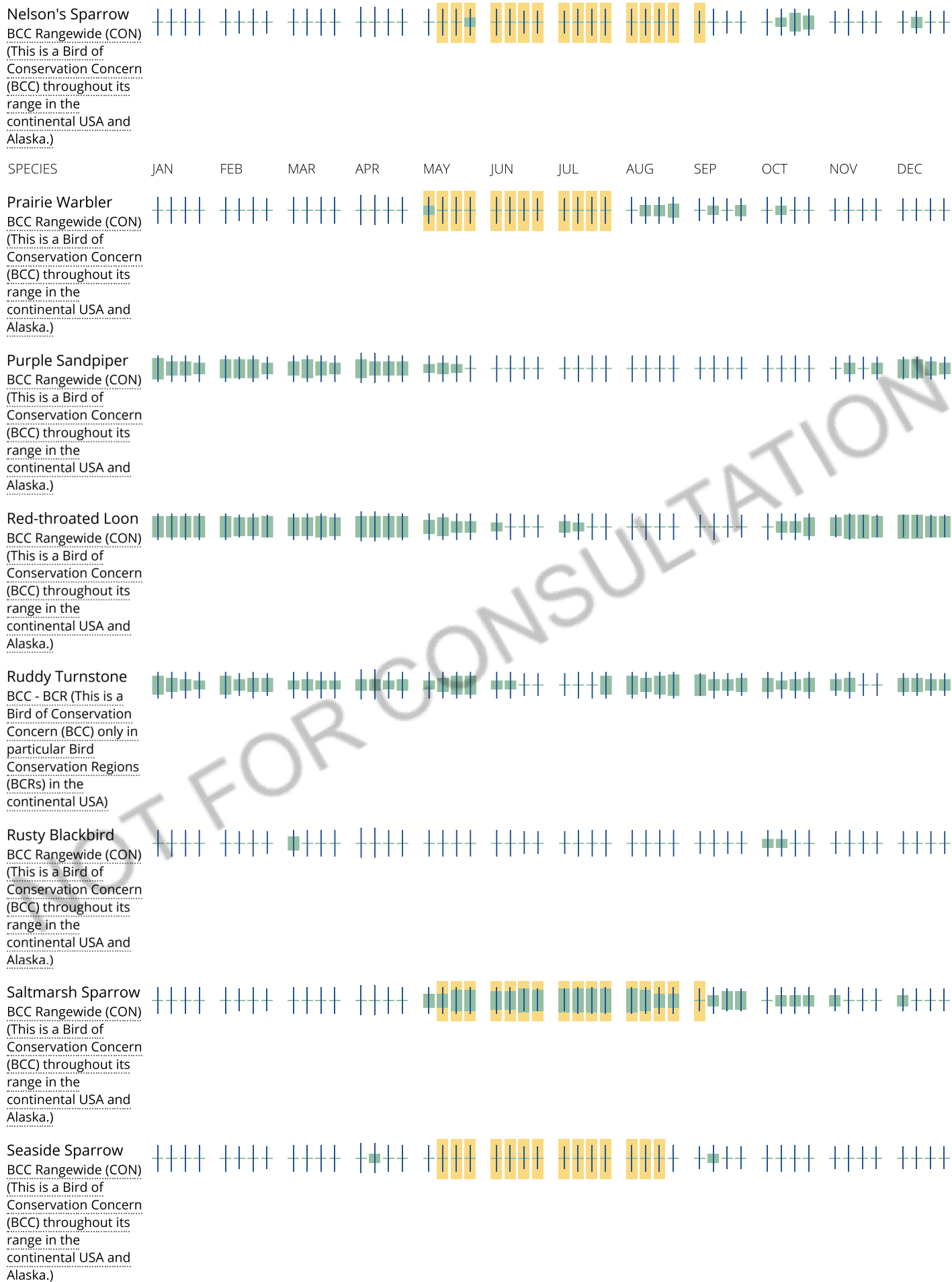
### Survey Timeframe

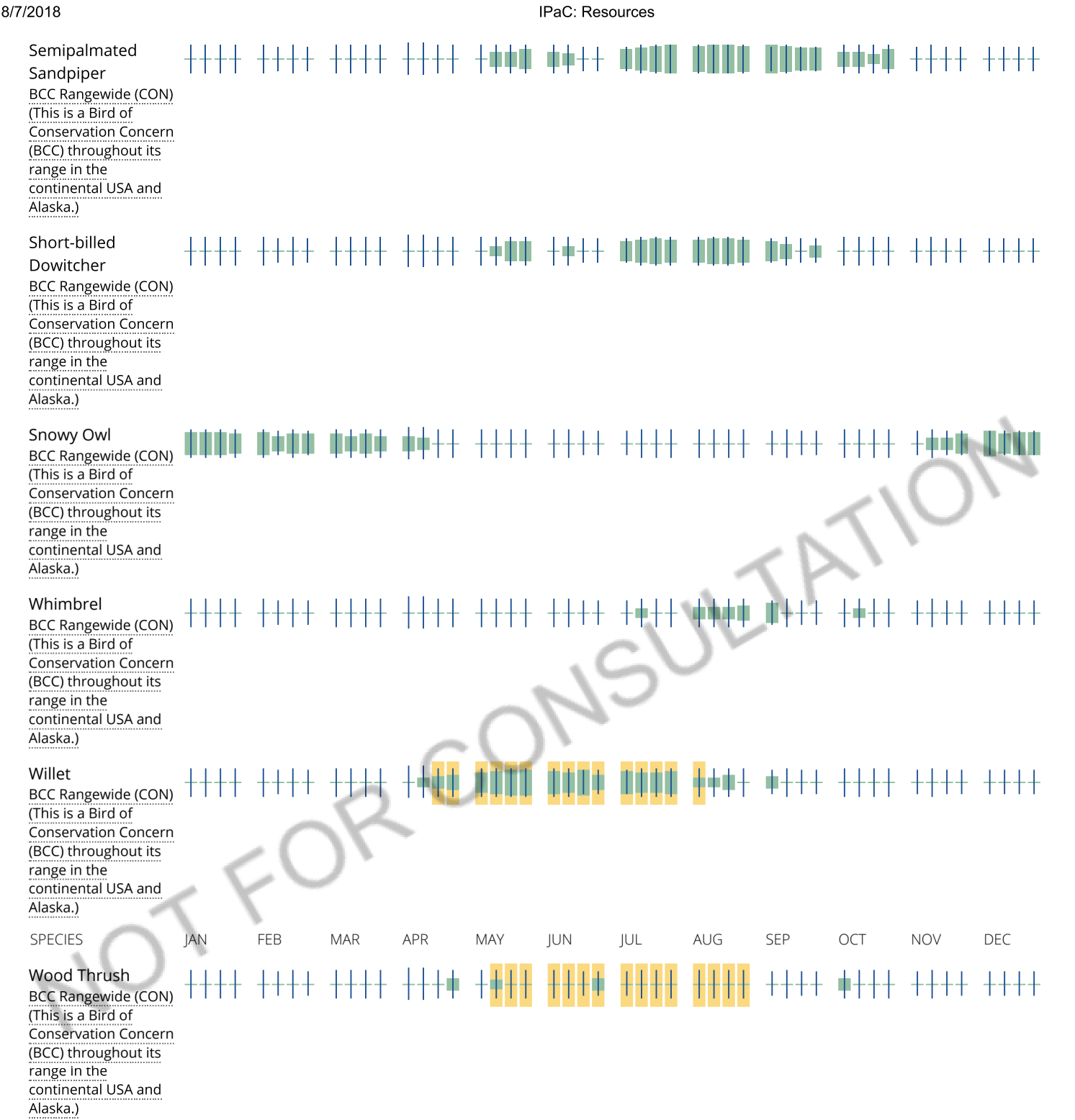
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.











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

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

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

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

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

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

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

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

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

### **What are the levels of concern for migratory birds?**

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

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

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

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review.

Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

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

### What if I have eagles on my list?

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

### Proper Interpretation and Use of Your Migratory Bird Report

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

## Facilities

### Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

## Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

### Data limitations

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

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

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

### Data exclusions

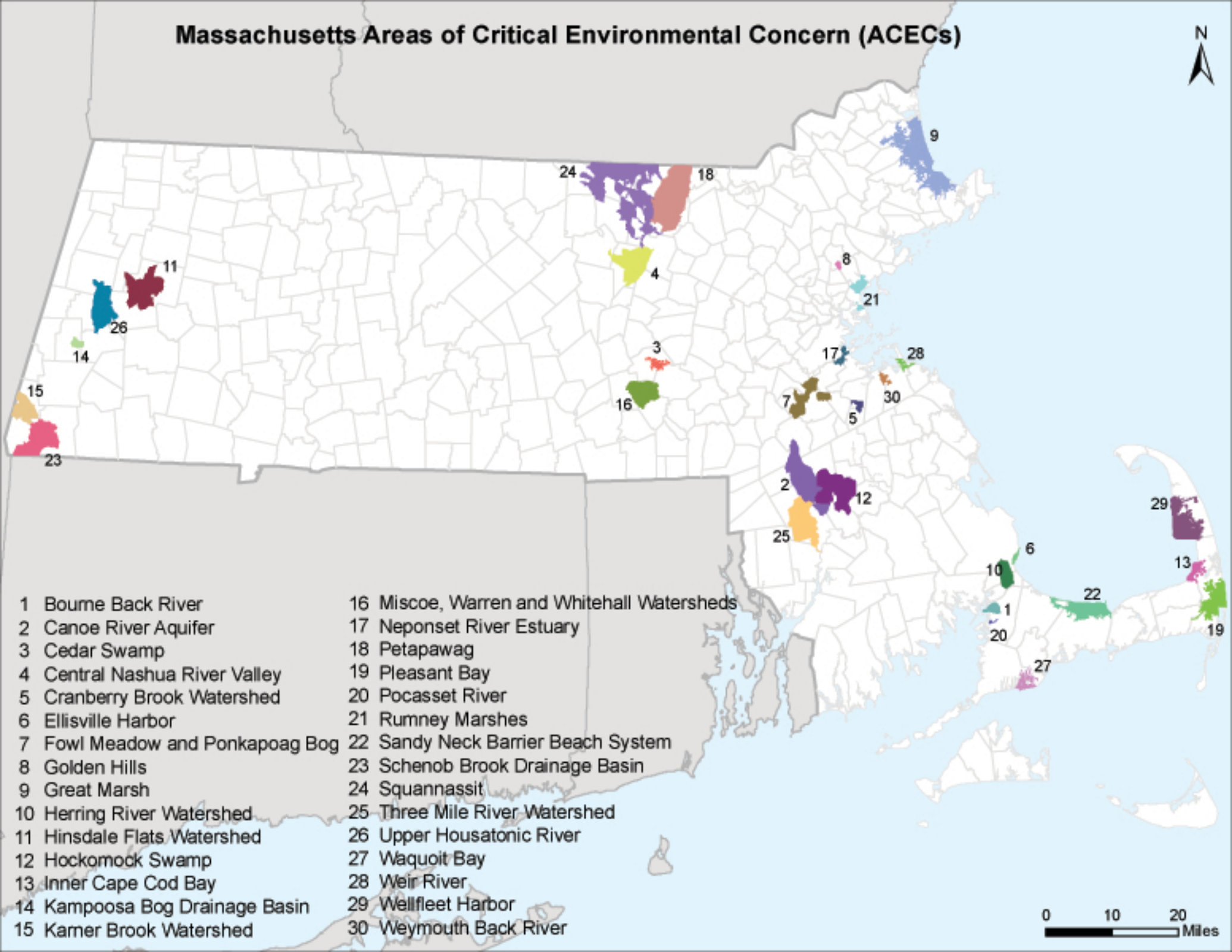
Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and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

### Data precautions

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



# Massachusetts Areas of Critical Environmental Concern (ACECs)



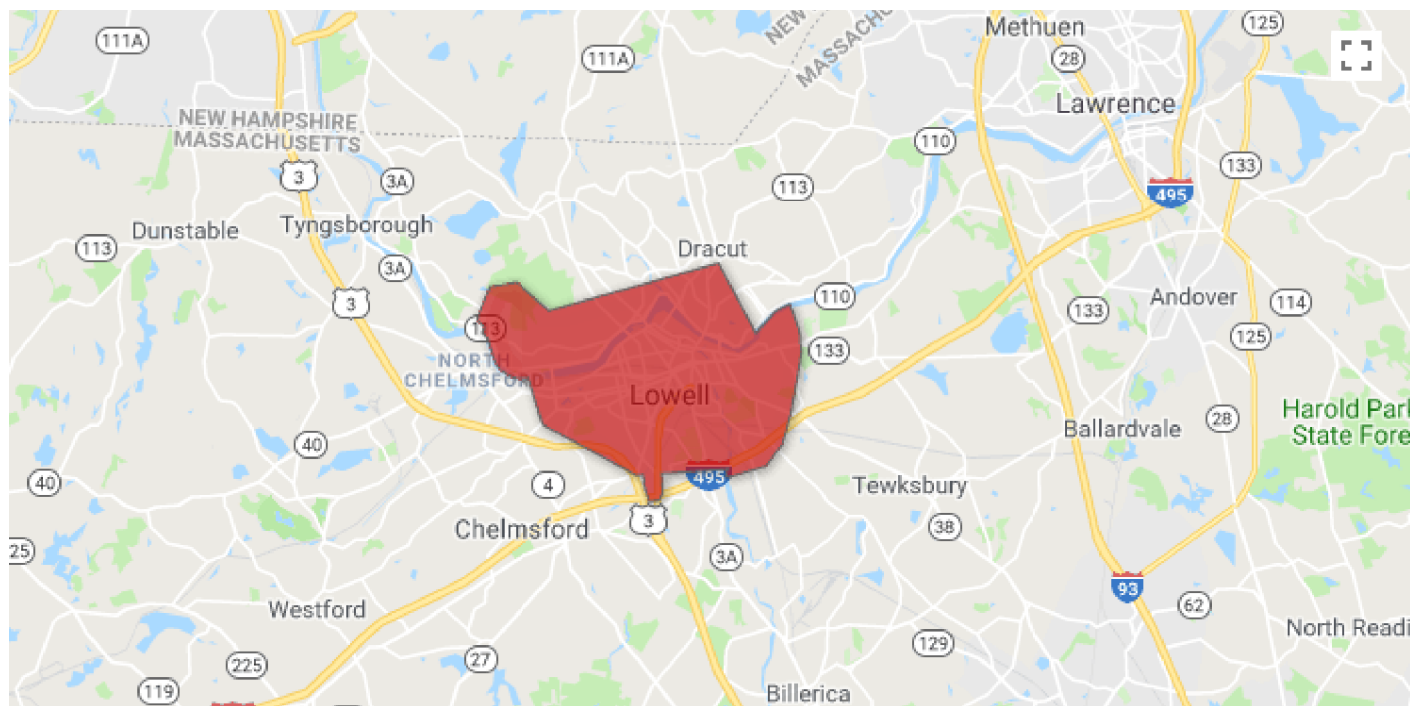
- |                                 |  |
|---------------------------------|--|
| 1 Bourne Back River             | 16 Miscoe, Warren and Whitehall Watersheds |
| 2 Canoe River Aquifer           | 17 Neponset River Estuary                  |
| 3 Cedar Swamp                   | 18 Petapawag          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

0 10 20 Miles

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

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

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



Google

Map data by Google

Showing 1 to 8 of 8 entries

Search:

First Previous 1 Next Last

Town	Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Obs
LOWELL	Butterfly/Moth	<i>Cicinnus melsheimeri</i>	Melsheimer's Sack Bearer	T	Historic
LOWELL	Vascular Plant	<i>Deschampsia cespitosa</i> ssp. <i>glauca</i>	Tufted Hairgrass	E	1882
LOWELL	Vascular Plant	<i>Elymus villosus</i>	Hairy Wild Rye	E	1882
LOWELL	Reptile	<i>Emydoidea blandingii</i>	Blanding's Turtle	T	2007
LOWELL	Bird	<i>Falco peregrinus</i>	Peregrine Falcon	T	2017
LOWELL	Dragonfly/Damselfly	<i>Gomphus vastus</i>	Cobra Clubtail	SC	2004

Town	Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Obs
LOWELL	Vascular Plant	Liatris scariosa var. novae-angliae	New England Blazing Star	SC	1882
LOWELL	Dragonfly/Damselfly	Neurocordulia obsoleta	Umber Shadowdragon	SC	2004

Show 100 ▾ entries

Show Additional Info

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## MASSACHUSETTS AREAS OF CRITICAL ENVIRONMENTAL CONCERN

November 2010

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**Total Approximate Acreage: 268,000 acres**

Approximate acreage and designation date follow ACEC names below.

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**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

**Towns with ACECs within their Boundaries****November 2010**

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

# 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 <sup>1</sup>	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 <sup>1</sup>	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 <sup>1</sup>	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

Updated 02/05/2016



**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES  
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
	Red Knot <sup>1</sup>	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 <sup>1</sup>	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 <sup>1</sup>	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 <sup>1</sup>	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

<sup>1</sup>Migratory only, scattered along the coast in small numbers

-Eastern cougar and gray wolf are considered extirpated in Massachusetts.

-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.

-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

## **APPENDIX D**

### **Boston Water and Sewer Commission Permit Application**



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

13 September 2018  
File No. 131268-002

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

Attention: Matthew Tuttle

Subject: Request for Approval of Temporary Construction Dewatering  
Parcel 9 Haymarket Hotel  
Blackstone Street and North Street  
Boston, Massachusetts

Dear Mr. Tuttle:

On behalf of our client, Haymarket Parcel 9 Investor, LLC, this letter submits the Dewatering Discharge Permit Application in support of the proposed Parcel 9 Haymarket Hotel site located at Blackstone Street and North Street in Boston, Massachusetts.

Dewatering is necessary to enable construction excavations in-the-dry, and is anticipated to begin in October 2018 and continue for up to 6 months. Prior to discharge, collected water will be routed through a sedimentation tank and bag filter at minimum to remove suspended solids and 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.

A handwritten signature in blue ink, appearing to read "M. Cronan", is placed over a light blue rectangular background.

Michael J. Cronan, LSP  
Senior Project Manager

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: Haymarket Parcel 9 Development, LLC Address: 451 D Street, Suite 100, Boston, MA 02210

Phone Number: 617-999-5951 Fax number: \_\_\_\_\_

Contact person name: Yvette Tetreault Title: \_\_\_\_\_

Cell number: 617-999-5951 Email address: ytetreault@cvprop.com

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

### Owner's Information (if different from above):

Owner of property being dewatered: Haymarket Parcel 9 Investor, LLC has been designated by property owner, MassDOT, as a long-term ground lessee for proposed development.

Owner's mailing address: \_\_\_\_\_ Phone number: \_\_\_\_\_

### Location of Discharge & Proposed Treatment System(s):

Street number and name: Blackstone and North Street Neighborhood Financial District

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. SDO 058 Receiving Waters Boston Inner Harbor

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

<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; _____

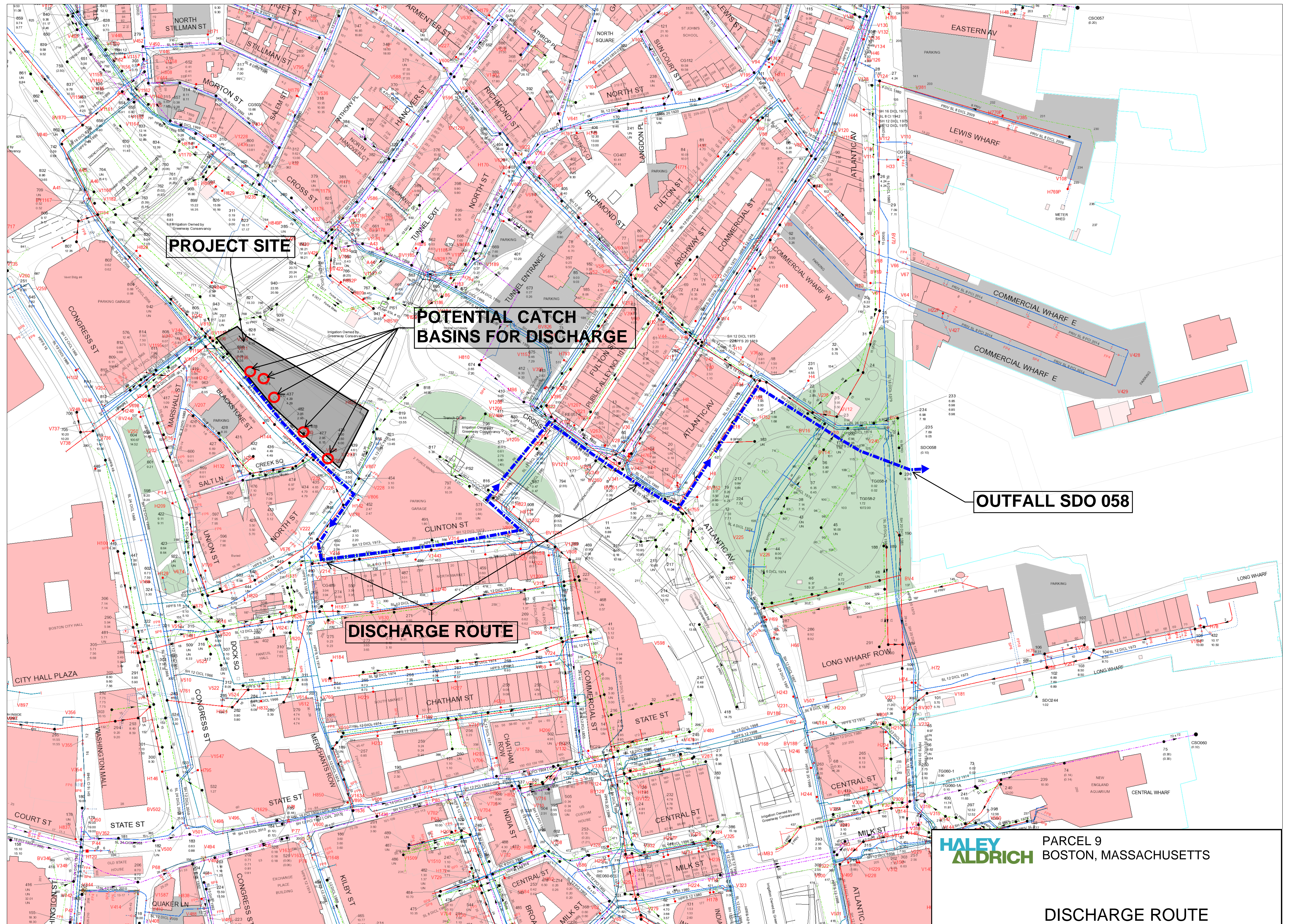
1. Attach a Site Plan showing the source of the discharge and the location of the point of discharge (i.e. the sewer pipe or catch basin). Include meter type, meter number, size, make and start reading. Note. All discharges to the Commission's sewer system will be assessed current sewer charges.
2. If 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: [tuttlemp@bwsc.org](mailto:tuttlemp@bwsc.org)  
Phone: 617-989-7204 Fax: 617-989-7716

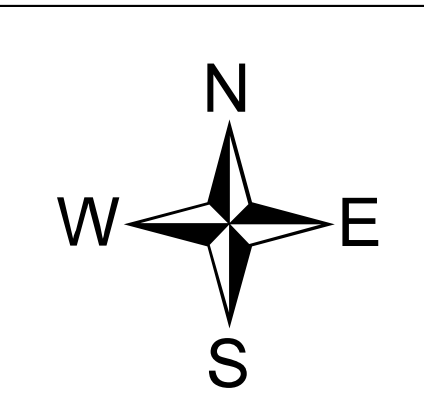
Signature of Authorized Representative for Property Owner: \_\_\_\_\_

Date: 9/12/18






**NOTES:**  
1. FIGURE FROM BOSTON WATER AND SEWER COMMISSION AND  
REVISED BY HALEY & ALDRICH ON 7 AUGUST 2018



0 65 130 260 390 520  
Feet



PARCEL 9  
BOSTON, MASSACHUSETTS

**DISCHARGE ROUTE**

AUGUST 2018

**FIGURE 1**



## **APPENDIX E**

### **Laboratory Data Reports**



## ANALYTICAL REPORT

Lab Number:	L1822896
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Teresa Cooper
Phone:	(617) 886-7358
Project Name:	CA/T PARCEL 9 DEVELOPMENT
Project Number:	131268-003 SID 3
Report Date:	06/29/18

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](http://www.alphalab.com)



**Project Name:** CA/T PARCEL 9 DEVELOPMENT  
**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896  
**Report Date:** 06/29/18

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1822896-01	HA-18-B207 (OW)	WATER	BLACKSTONE STREET, BOSTON, MA	06/18/18 14:05	06/18/18

**Project Name:** CA/T PARCEL 9 DEVELOPMENT  
**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896  
**Report Date:** 06/29/18

### 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:** CA/T PARCEL 9 DEVELOPMENT  
**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896  
**Report Date:** 06/29/18

### Case Narrative (continued)

#### Report Revision

June 29, 2018: The results for Dissolved Lead are now reported.

#### Report Submission

June 25, 2018: This final report includes the results of all requested analyses.

June 24, 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.

#### Chlorine, Total Residual

The WG1127230-4 MS recovery (0%), performed on L1822896-01 (HA-18-B207 (OW)), is outside the acceptance criteria; however, the associated LCS recovery is within criteria. No further action was taken.

#### Phenolics, Total

The WG1127744-4 MS recovery (22%), performed on L1822896-01 (HA-18-B207 (OW)), is outside the acceptance criteria; however, the associated LCS recovery is within criteria. No further action was taken.

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: 06/29/18

# ORGANICS



# **VOLATILES**

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS**

Lab ID: L1822896-01  
 Client ID: HA-18-B207 (OW)  
 Sample Location: BLACKSTONE STREET, BOSTON, MA

Date Collected: 06/18/18 14:05  
 Date Received: 06/18/18  
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water  
 Analytical Method: 1,8260C  
 Analytical Date: 06/20/18 08:17  
 Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	2.5	--	1
1,3-Dichlorobenzene	ND		ug/l	2.5	--	1
1,4-Dichlorobenzene	ND		ug/l	2.5	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Acetone	ND		ug/l	5.0	--	1
Tert-Butyl Alcohol	ND		ug/l	10	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS**

Lab ID: L1822896-01

Date Collected: 06/18/18 14:05

Client ID: HA-18-B207 (OW)

Date Received: 06/18/18

Sample Location: BLACKSTONE STREET, 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
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	107		70-130

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS**

Lab ID: L1822896-01  
 Client ID: HA-18-B207 (OW)  
 Sample Location: BLACKSTONE STREET, BOSTON, MA

Date Collected: 06/18/18 14:05  
 Date Received: 06/18/18  
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water  
 Analytical Method: 1,8260C-SIM(M)  
 Analytical Date: 06/20/18 08:17  
 Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	3.0	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
1,2-Dichloroethane-d4			92		70-130	

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS**

Lab ID: L1822896-01  
 Client ID: HA-18-B207 (OW)  
 Sample Location: BLACKSTONE STREET, BOSTON, MA

Date Collected: 06/18/18 14:05  
 Date Received: 06/18/18  
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Extraction Method: EPA 504.1

Analytical Method: 14,504.1

Extraction Date: 06/20/18 10:00

Analytical Date: 06/20/18 13:49

Analyst: AWS

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: CA/T PARCEL 9 DEVELOPMENT

Lab Number: L1822896

Project Number: 131268-003 SID 3

Report Date: 06/29/18

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C  
 Analytical Date: 06/20/18 07:44  
 Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1127836-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
Tetrachloroethene	ND		ug/l	0.50	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Vinyl chloride	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	2.5	--
1,3-Dichlorobenzene	ND		ug/l	2.5	--
1,4-Dichlorobenzene	ND		ug/l	2.5	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Acetone	ND		ug/l	5.0	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--



**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 06/20/18 07:44  
 Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1127836-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	103		70-130

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C-SIM(M)

Analytical Date: 06/20/18 07:44

Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1127841-5					
1,4-Dioxane	ND		ug/l	3.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 14,504.1  
Analytical Date: 06/20/18 11:55  
Analyst: AWS

Extraction Method: EPA 504.1  
Extraction Date: 06/20/18 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG1127875-1					
1,2-Dibromoethane	ND		ug/l	0.010	-- A

# **Lab Control Sample Analysis** Batch Quality Control

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896

**Report Date:** 06/29/18

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: WG1127836-3 WG1127836-4								
Methylene chloride	93		120		70-130	25	Q	20
1,1-Dichloroethane	110		110		70-130	0		20
Carbon tetrachloride	110		110		63-132	0		20
1,1,2-Trichloroethane	100		98		70-130	2		20
Tetrachloroethene	100		99		70-130	1		20
1,2-Dichloroethane	110		100		70-130	10		20
1,1,1-Trichloroethane	110		100		67-130	10		20
Benzene	100		100		70-130	0		25
Toluene	100		98		70-130	2		25
Ethylbenzene	100		100		70-130	0		20
Vinyl chloride	110		100		55-140	10		20
1,1-Dichloroethene	110		110		61-145	0		25
Trichloroethene	110		110		70-130	0		25
1,2-Dichlorobenzene	98		100		70-130	2		20
1,3-Dichlorobenzene	97		95		70-130	2		20
1,4-Dichlorobenzene	97		98		70-130	1		20
Methyl tert butyl ether	100		100		63-130	0		20
p/m-Xylene	100		90		70-130	11		20
o-Xylene	100		95		70-130	5		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Acetone	100		100		58-148	0		20
Tert-Butyl Alcohol	106		100		70-130	6		20
Tertiary-Amyl Methyl Ether	100		100		66-130	0		20

**Lab Control Sample Analysis****Batch Quality Control****Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
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Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1127836-3 WG1127836-4

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
1,2-Dichloroethane-d4	102		101		70-130
Toluene-d8	97		96		70-130
4-Bromofluorobenzene	103		104		70-130
Dibromofluoromethane	110		107		70-130

**Lab Control Sample Analysis****Batch Quality Control****Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1127841-3 WG1127841-4								
1,4-Dioxane	92		92		70-130	0		25

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
1,2-Dichloroethane-d4	96		94		70-130

**Lab Control Sample Analysis****Batch Quality Control****Project Name:** CA/T PARCEL 9 DEVELOPMENT**Project Number:** 131268-003 SID 3**Lab Number:** L1822896**Report Date:** 06/29/18

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>	<b>Column</b>
Microextractables by GC - Westborough Lab Associated sample(s): 01 Batch: WG1127875-2									
1,2-Dibromoethane	121	Q	-		80-120	-			A



**Matrix Spike Analysis***Batch Quality Control***Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>	<b>Column</b>
Microextractables by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127875-3 QC Sample: L1822896-01 Client ID: HA-18-B207 (OW)													
1,2-Dibromoethane	ND	0.25	0.311	124	Q	-	-		80-120	-		20	A

# SEMIVOLATILES

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS**

Lab ID: L1822896-01  
 Client ID: HA-18-B207 (OW)  
 Sample Location: BLACKSTONE STREET, BOSTON, MA

Date Collected: 06/18/18 14:05  
 Date Received: 06/18/18  
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water  
 Analytical Method: 1,8270D  
 Analytical Date: 06/22/18 03:01  
 Analyst: PS

Extraction Method: EPA 3510C  
 Extraction Date: 06/20/18 08:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Pentachlorophenol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		21-120
Phenol-d6	33		10-120
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	79		15-120
2,4,6-Tribromophenol	103		10-120
4-Terphenyl-d14	86		41-149

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS**

Lab ID: L1822896-01  
 Client ID: HA-18-B207 (OW)  
 Sample Location: BLACKSTONE STREET, BOSTON, MA

Date Collected: 06/18/18 14:05  
 Date Received: 06/18/18  
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 06/22/18 16:13  
 Analyst: DV

Extraction Method: EPA 3510C  
 Extraction Date: 06/20/18 08:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	0.95		ug/l	0.10	--	1
Fluoranthene	1.8		ug/l	0.10	--	1
Naphthalene	0.38		ug/l	0.10	--	1
Benzo(a)anthracene	0.58		ug/l	0.10	--	1
Benzo(a)pyrene	0.54		ug/l	0.10	--	1
Benzo(b)fluoranthene	0.61		ug/l	0.10	--	1
Benzo(k)fluoranthene	0.25		ug/l	0.10	--	1
Chrysene	0.58		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	0.70		ug/l	0.10	--	1
Benzo(ghi)perylene	0.22		ug/l	0.10	--	1
Fluorene	0.91		ug/l	0.10	--	1
Phenanthrene	2.6		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	0.24		ug/l	0.10	--	1
Pyrene	1.4		ug/l	0.10	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	36		21-120
Phenol-d6	26		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	63		15-120
2,4,6-Tribromophenol	89		10-120
4-Terphenyl-d14	76		41-149

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**Method Blank Analysis**  
**Batch Quality Control**Analytical Method: 1,8270D  
Analytical Date: 06/21/18 14:07  
Analyst: SZExtraction Method: EPA 3510C  
Extraction Date: 06/20/18 08:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1127794-1					
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--

## Tentatively Identified Compounds

No Tentatively Identified Compounds ND ug/l

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	28		21-120
Phenol-d6	20		10-120
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	62		15-120
2,4,6-Tribromophenol	65		10-120
4-Terphenyl-d14	80		41-149

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8270D-SIM  
 Analytical Date: 06/22/18 11:50  
 Analyst: DV

Extraction Method: EPA 3510C  
 Extraction Date: 06/20/18 08:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1127796-1					
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	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	26		21-120
Phenol-d6	19		10-120
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	55		15-120
2,4,6-Tribromophenol	68		10-120
4-Terphenyl-d14	79		41-149



# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Lab Number:** L1822896

**Project Number:** 131268-003 SID 3

**Report Date:** 06/29/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1127794-2 WG1127794-3								
Bis(2-ethylhexyl)phthalate	79		81		40-140	3		30
Butyl benzyl phthalate	76		77		40-140	1		30
Di-n-butylphthalate	76		77		40-140	1		30
Di-n-octylphthalate	80		82		40-140	2		30
Diethyl phthalate	71		74		40-140	4		30
Dimethyl phthalate	70		74		40-140	6		30
Pentachlorophenol	52		50		9-103	4		30
Phenol	24		26		12-110	8		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	34		37		21-120
Phenol-d6	25		26		10-120
Nitrobenzene-d5	65		74		23-120
2-Fluorobiphenyl	66		72		15-120
2,4,6-Tribromophenol	75		76		10-120
4-Terphenyl-d14	73		76		41-149



# **Lab Control Sample Analysis** Batch Quality Control

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896

**Report Date:** 06/29/18

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: WG1127796-2 WG1127796-3								
Acenaphthene	74		61		40-140	19		40
Fluoranthene	86		64		40-140	29		40
Naphthalene	59		49		40-140	19		40
Benzo(a)anthracene	78		57		40-140	31		40
Benzo(a)pyrene	76		64		40-140	17		40
Benzo(b)fluoranthene	78		58		40-140	29		40
Benzo(k)fluoranthene	83		62		40-140	29		40
Chrysene	82		60		40-140	31		40
Acenaphthylene	69		57		40-140	19		40
Anthracene	79		61		40-140	26		40
Benzo(ghi)perylene	80		58		40-140	32		40
Fluorene	79		64		40-140	21		40
Phenanthrene	74		58		40-140	24		40
Dibenzo(a,h)anthracene	86		63		40-140	31		40
Indeno(1,2,3-cd)pyrene	80		57		40-140	34		40
Pyrene	83		62		40-140	29		40

**Lab Control Sample Analysis****Batch Quality Control****Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1127796-2 WG1127796-3								

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
2-Fluorophenol	32		24		21-120
Phenol-d6	24		18		10-120
Nitrobenzene-d5	62		51		23-120
2-Fluorobiphenyl	57		48		15-120
2,4,6-Tribromophenol	72		58		10-120
4-Terphenyl-d14	81		61		41-149

# PCBS

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS**

Lab ID: L1822896-01  
 Client ID: HA-18-B207 (OW)  
 Sample Location: BLACKSTONE STREET, BOSTON, MA

Date Collected: 06/18/18 14:05  
 Date Received: 06/18/18  
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water  
 Analytical Method: 5,608  
 Analytical Date: 06/21/18 14:07  
 Analyst: WR

Extraction Method: EPA 608  
 Extraction Date: 06/20/18 21:21  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 06/21/18  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 06/21/18

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	81		30-150	A
Decachlorobiphenyl	66		30-150	A

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 5,608  
 Analytical Date: 06/21/18 13:05  
 Analyst: WR

Extraction Method: EPA 608  
 Extraction Date: 06/20/18 21:21  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 06/21/18  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 06/21/18

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG1128093-1						
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	77		30-150	A
Decachlorobiphenyl	79		30-150	A

**Lab Control Sample Analysis****Batch Quality Control****Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>	<b>Column</b>
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG1128093-2									
Aroclor 1016	93		-		30-150	-		30	A
Aroclor 1260	102		-		30-150	-		30	A

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>	<b>Column</b>
2,4,5,6-Tetrachloro-m-xylene	84				30-150	A
Decachlorobiphenyl	83				30-150	A

**Matrix Spike Analysis****Batch Quality Control****Project Name:** CA/T PARCEL 9 DEVELOPMENT**Project Number:** 131268-003 SID 3**Lab Number:** L1822896**Report Date:** 06/29/18

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>	<b>Column</b>
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1128093-3 QC Sample: L1800006-127 Client ID: MS Sample													
Aroclor 1016	ND	3.12	2.83	91		-	-		40-126	-		30	A
Aroclor 1260	ND	3.12	3.11	100		-	-		40-127	-		30	A

<b>Surrogate</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>	<b>Column</b>
2,4,5,6-Tetrachloro-m-xylene	81				30-150	A
Decachlorobiphenyl	82				30-150	A

# **Lab Duplicate Analysis** **Batch Quality Control**

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896

**Report Date:** 06/29/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1128093-4 QC Sample: L1800006-127 Client ID: DUP Sample						
Aroclor 1016	ND	ND	ug/l	NC		30 A
Aroclor 1221	ND	ND	ug/l	NC		30 A
Aroclor 1232	ND	ND	ug/l	NC		30 A
Aroclor 1242	ND	ND	ug/l	NC		30 A
Aroclor 1248	ND	ND	ug/l	NC		30 A
Aroclor 1254	ND	ND	ug/l	NC		30 A
Aroclor 1260	ND	ND	ug/l	NC		30 A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		81		30-150	A
Decachlorobiphenyl	84		86		30-150	A



## METALS

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS**

Lab ID: L1822896-01

Date Collected: 06/18/18 14:05

Client ID: HA-18-B207 (OW)

Date Received: 06/18/18

Sample Location: BLACKSTONE STREET, BOSTON, MA

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Antimony, Total	ND		mg/l	0.00400	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Arsenic, Total	0.00809		mg/l	0.00100	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Cadmium, Total	0.00087		mg/l	0.00020	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Chromium, Total	0.03817		mg/l	0.00100	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Copper, Total	0.02901		mg/l	0.00100	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Iron, Total	10.5		mg/l	0.050	--	1	06/20/18 10:00	06/20/18 21:32	EPA 3005A	19,200.7	AB
Lead, Total	0.4165		mg/l	0.00100	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	06/19/18 11:36	06/20/18 13:20	EPA 245.1	3,245.1	MG
Nickel, Total	0.02217		mg/l	0.00200	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
Zinc, Total	0.2933		mg/l	0.01000	--	1	06/20/18 10:00	06/20/18 17:21	EPA 3005A	3,200.8	AM
<b>General Chemistry - Mansfield Lab</b>											
Chromium, Trivalent	0.038		mg/l	0.010	--	1		06/20/18 17:21	NA	107,-	
<b>Dissolved Metals - Mansfield Lab</b>											
Lead, Dissolved	0.0043		mg/l	0.0010	--	1	06/29/18 06:30	06/29/18 10:32	EPA 3005A	3,200.8	AM



Project Name: CA/T PARCEL 9 DEVELOPMENT

Lab Number: L1822896

Project Number: 131268-003 SID 3

Report Date: 06/29/18

## 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: WG1127472-1										
Mercury, Total	ND		mg/l	0.0002	--	1	06/19/18 11:36	06/20/18 09:38	3,245.1	MG

### 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: WG1127527-1										
Antimony, Total	ND		mg/l	0.00400	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Lead, Total	ND		mg/l	0.00100	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	06/20/18 10:00	06/20/18 15:11	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	06/20/18 10:00	06/20/18 15:11	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: WG1127529-1										
Iron, Total	ND		mg/l	0.050	--	1	06/20/18 10:00	06/20/18 16:28	19,200.7	AB

### Prep Information

Digestion Method: EPA 3005A



**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18

## Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1130794-1										
Lead, Dissolved	ND		mg/l	0.0010	--	1	06/29/18 06:30	06/29/18 09:17	3,200.8	AM

### Prep Information

Digestion Method: EPA 3005A



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896

**Report Date:** 06/29/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1127472-2								
Mercury, Total	103		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1127527-2								
Antimony, Total	105		-		85-115	-		
Arsenic, Total	106		-		85-115	-		
Cadmium, Total	111		-		85-115	-		
Chromium, Total	97		-		85-115	-		
Copper, Total	97		-		85-115	-		
Lead, Total	111		-		85-115	-		
Nickel, Total	99		-		85-115	-		
Selenium, Total	112		-		85-115	-		
Silver, Total	102		-		85-115	-		
Zinc, Total	108		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1127529-2								
Iron, Total	113		-		85-115	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1130794-2								
Lead, Dissolved	110		-		85-115	-		

# Matrix Spike Analysis

## Batch Quality Control

**Project Name:** CA/T PARCEL 9 DEVELOPMENT  
**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896  
**Report Date:** 06/29/18

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: WG1127472-3 QC Sample: L1822431-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.0049	98		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1127472-5 QC Sample: L1822440-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.0050	100		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1127527-3 QC Sample: L1821665-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.6048	121		-	-		70-130	-		20
Arsenic, Total	ND	0.12	0.1279	106		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05417	106		-	-		70-130	-		20
Chromium, Total	ND	0.2	0.1939	97		-	-		70-130	-		20
Copper, Total	0.0079	0.25	0.2537	98		-	-		70-130	-		20
Lead, Total	ND	0.51	0.5657	111		-	-		70-130	-		20
Nickel, Total	0.0072	0.5	0.5087	100		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1317	110		-	-		70-130	-		20
Silver, Total	ND	0.05	0.05073	101		-	-		70-130	-		20
Zinc, Total	0.07005	0.5	0.6072	107		-	-		70-130	-		20

# **Matrix Spike Analysis** **Batch Quality Control**

**Project Name:** CA/T PARCEL 9 DEVELOPMENT  
**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896  
**Report Date:** 06/29/18

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: WG1127527-5    QC Sample: L1822322-01    Client ID: MS Sample									
Antimony, Total	ND	0.5	0.5609	112	-	-	70-130	-	20
Arsenic, Total	ND	0.12	0.1281	107	-	-	70-130	-	20
Cadmium, Total	0.00034	0.051	0.05378	105	-	-	70-130	-	20
Chromium, Total	ND	0.2	0.1843	92	-	-	70-130	-	20
Copper, Total	0.00261	0.25	0.2378	94	-	-	70-130	-	20
Lead, Total	0.00118	0.51	0.5363	105	-	-	70-130	-	20
Nickel, Total	0.00632	0.5	0.4679	92	-	-	70-130	-	20
Selenium, Total	ND	0.12	0.1304	109	-	-	70-130	-	20
Silver, Total	ND	0.05	0.04912	98	-	-	70-130	-	20
Zinc, Total	ND	0.5	0.5104	102	-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01    QC Batch ID: WG1127529-3    QC Sample: L1821665-01    Client ID: MS Sample									
Iron, Total	0.400	1	1.45	105	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01    QC Batch ID: WG1127529-7    QC Sample: L1822322-01    Client ID: MS Sample									
Iron, Total	0.440	1	1.45	101	-	-	75-125	-	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01    QC Batch ID: WG1130794-3    QC Sample: L1822896-01    Client ID: HA-18-B207 (OW)									
Lead, Dissolved	0.0043	0.51	0.5364	104	-	-	70-130	-	20

# Lab Duplicate Analysis

Batch Quality Control

Project Name: CA/T PARCEL 9 DEVELOPMENT

Project Number: 131268-003 SID 3

Lab Number: L1822896

Report Date: 06/29/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1127472-4 QC Sample: L1822431-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1127472-6 QC Sample: L1822440-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1127527-4 QC Sample: L1821665-01 Client ID: DUP Sample						
Lead, Total	ND	0.00104	mg/l	NC		20
Zinc, Total	0.07005	0.06892	mg/l	2		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1127527-6 QC Sample: L1822322-01 Client ID: DUP Sample						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	ND	ND	mg/l	NC		20
Cadmium, Total	0.00034	0.00032	mg/l	6		20
Chromium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.00261	0.00273	mg/l	4		20
Lead, Total	0.00118	0.00128	mg/l	8		20
Nickel, Total	0.00632	0.00598	mg/l	6		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20



# Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896

**Report Date:** 06/29/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1127529-8 QC Sample: L1822322-01 Client ID: DUP Sample					
Iron, Total	0.440	0.458	mg/l	4	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1130794-4 QC Sample: L1822896-01 Client ID: HA-18-B207 (OW)					
Lead, Dissolved	0.0043	0.0044	mg/l	3	20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**SAMPLE RESULTS****Lab ID:** L1822896-01**Date Collected:** 06/18/18 14:05**Client ID:** HA-18-B207 (OW)**Date Received:** 06/18/18**Sample Location:** BLACKSTONE STREET, 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
<b>General Chemistry - Westborough Lab</b>										
Solids, Total Suspended	230		mg/l	10	NA	2	-	06/20/18 22:00	121,2540D	CW
Cyanide, Total	ND		mg/l	0.005	--	1	06/20/18 07:15	06/20/18 11:54	121,4500CN-CE	LH
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	06/18/18 21:30	121,4500CL-D	AS
Nitrogen, Ammonia	4.36		mg/l	0.075	--	1	06/20/18 13:30	06/21/18 22:29	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	4.00	--	1	06/21/18 17:00	06/21/18 21:30	74,1664A	ML
Phenolics, Total	ND		mg/l	0.030	--	1	06/20/18 08:00	06/21/18 05:35	4,420.1	GD
Chromium, Hexavalent	ND		mg/l	0.010	--	1	06/19/18 01:00	06/19/18 01:50	1,7196A	MA
<b>Anions by Ion Chromatography - Westborough Lab</b>										
Chloride	4160		mg/l	50.0	--	100	-	06/20/18 20:33	44,300.0	AU



Project Name: CA/T PARCEL 9 DEVELOPMENT

Lab Number: L1822896

Project Number: 131268-003 SID 3

Report Date: 06/29/18

### 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: WG1127230-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	06/18/18 21:30	121,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1127261-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	06/19/18 01:00	06/19/18 01:46	1,7196A	MA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1127724-1										
Cyanide, Total	ND		mg/l	0.005	--	1	06/20/18 07:15	06/20/18 11:26	121,4500CN-CE	LH
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1127744-1										
Phenolics, Total	ND		mg/l	0.030	--	1	06/20/18 08:00	06/21/18 05:29	4,420.1	GD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1127889-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	06/20/18 13:30	06/21/18 22:01	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1128045-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	06/20/18 22:00	121,2540D	CW
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1128098-1										
Chloride	ND		mg/l	0.500	--	1	-	06/20/18 17:33	44,300.0	AU
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1128490-1										
TPH, SGT-HEM	ND		mg/l	4.00	--	1	06/21/18 17:00	06/21/18 21:30	74,1664A	ML





## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896

**Report Date:** 06/29/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1127230-2								
Chlorine, Total Residual	93		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1127261-2								
Chromium, Hexavalent	95		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1127724-2								
Cyanide, Total	100		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1127744-2								
Phenolics, Total	95		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1127889-2								
Nitrogen, Ammonia	99		-		80-120	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1128098-2								
Chloride	104		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1128490-2								
TPH	88		-		64-132	-		34

# **Matrix Spike Analysis** **Batch Quality Control**

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896

**Report Date:** 06/29/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127230-4 QC Sample: L1822896-01 Client ID: HA-18-B207 (OW)												
Chlorine, Total Residual	ND	0.248	ND	0	Q	-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127261-4 QC Sample: L1822896-01 Client ID: HA-18-B207 (OW)												
Chromium, Hexavalent	ND	0.1	0.097	97		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127724-4 QC Sample: L1822862-01 Client ID: MS Sample												
Cyanide, Total	0.011	0.2	0.202	95		-	-		90-110	-		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127744-4 QC Sample: L1822896-01 Client ID: HA-18-B207 (OW)												
Phenolics, Total	ND	0.4	0.089	22	Q	-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127889-4 QC Sample: L1821666-01 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	3.05	76	Q	-	-		80-120	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1128098-3 QC Sample: L1822288-05 Client ID: MS Sample												
Chloride	0.658	4	4.87	105		-	-		90-110	-		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1128490-4 QC Sample: L1822729-01 Client ID: MS Sample												
TPH	ND	25	21.6	86		-	-		64-132	-		34

# **Lab Duplicate Analysis** *Batch Quality Control*

**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896

**Report Date:** 06/29/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127230-3 QC Sample: L1822862-01 Client ID: DUP Sample						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127261-3 QC Sample: L1822896-01 Client ID: HA-18-B207 (OW)						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127724-3 QC Sample: L1822862-02 Client ID: DUP Sample						
Cyanide, Total	0.010	0.008	mg/l	21		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127744-3 QC Sample: L1822896-01 Client ID: HA-18-B207 (OW)						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1127889-3 QC Sample: L1821666-01 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1128045-2 QC Sample: L1822896-01 Client ID: HA-18-B207 (OW)						
Solids, Total Suspended	230	210	mg/l	9		29
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1128098-4 QC Sample: L1822288-05 Client ID: DUP Sample						
Chloride	0.658	0.655	mg/l	0		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1128490-3 QC Sample: L1822729-01 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34

**Project Name:** CA/T PARCEL 9 DEVELOPMENT**Lab Number:** L1822896**Project Number:** 131268-003 SID 3**Report Date:** 06/29/18**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1822896-01A	Vial HCl preserved	A	NA		2.5	Y	Absent		8260-SIM(14),8260(14)
L1822896-01B	Vial HCl preserved	A	NA		2.5	Y	Absent		8260-SIM(14),8260(14)
L1822896-01C	Vial HCl preserved	A	NA		2.5	Y	Absent		8260-SIM(14),8260(14)
L1822896-01D	Vial Na2S2O3 preserved	A	NA		2.5	Y	Absent		504(14)
L1822896-01E	Vial Na2S2O3 preserved	A	NA		2.5	Y	Absent		504(14)
L1822896-01F	Vial unpreserved	A	NA		2.5	Y	Absent		SUB-ETHANOL(14)
L1822896-01G	Plastic 500ml H2SO4 preserved	A	<2	<2	2.5	Y	Absent		NH3-4500(28)
L1822896-01H	Plastic 950ml unpreserved	A	7	7	2.5	Y	Absent		CL-300(28),HEXCR-7196(1),TRC-4500(1)
L1822896-01I	Plastic 950ml unpreserved	A	7	7	2.5	Y	Absent		TSS-2540(7)
L1822896-01J	Amber 950ml H2SO4 preserved	A	<2	<2	2.5	Y	Absent		TPHENOL-420(28)
L1822896-01K	Amber 1000ml HCl preserved	A	NA		2.5	Y	Absent		TPH-1664(28)
L1822896-01L	Amber 1000ml HCl preserved	A	NA		2.5	Y	Absent		TPH-1664(28)
L1822896-01M	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1822896-01N	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1822896-01O	Amber 1000ml Na2S2O3	A	7	7	2.5	Y	Absent		PCB-608(7)
L1822896-01P	Amber 1000ml Na2S2O3	A	7	7	2.5	Y	Absent		PCB-608(7)
L1822896-01Q	Plastic 250ml NaOH preserved	A	>12	>12	2.5	Y	Absent		HOLD-WETCHEM()
L1822896-01R	Plastic 250ml NaOH preserved	A	>12	>12	2.5	Y	Absent		TCN-4500(14)
L1822896-01S	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),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L1822896-01X	Plastic 120ml unpreserved split	A	7	7	2.5	Y	Absent		-
L1822896-01Y	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.5	Y	Absent		PB-2008S(180)



**Project Name:** CA/T PARCEL 9 DEVELOPMENT

**Project Number:** 131268-003 SID 3

Serial\_No:06291813:33

**Lab Number:** L1822896

**Report Date:** 06/29/18

**Container Information**

**Container ID    Container Type**

**Cooler    Initial  
pH    Final  
pH    Temp  
deg C    Pres    Seal**

**Frozen  
Date/Time**

**Analysis(\*)**

**Project Name:** CA/T PARCEL 9 DEVELOPMENT  
**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896  
**Report Date:** 06/29/18

## 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:** C/A/T PARCEL 9 DEVELOPMENT  
**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896  
**Report Date:** 06/29/18

#### 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 exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

**Project Name:** CA/T PARCEL 9 DEVELOPMENT  
**Project Number:** 131268-003 SID 3

**Lab Number:** L1822896  
**Report Date:** 06/29/18

## 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.
- 5 Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).
- 14 Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.
- 19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 74 Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.
- 107 Alpha Analytical - In-house calculation method.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

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

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





## Certification Information

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

### Westborough Facility

**EPA 624:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 300:** DW: Bromide

**EPA 6860:** SCM: Perchlorate

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

**SM4500:** NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### 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.



# 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: 490-154234-1

Client Project/Site: L1822896

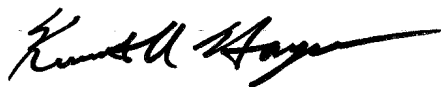
For:

Alpha Analytical Inc

145 Flanders Road

Westborough, Massachusetts 01581-1019

Attn: Melissa Gulli



Authorized for release by:

6/23/2018 3:47:33 PM

Ken Hayes, Project Manager II

(615)301-5035

[ken.hayes@testamericainc.com](mailto:ken.hayes@testamericainc.com)

### LINKS

Review your project  
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*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: L1822896

TestAmerica Job ID: 490-154234-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-154234-1	HA-18-B207 (OW)	Water	06/18/18 14:05	06/20/18 09:15

1

2

3

4

5

6

7

8

9

10

11

12



## Case Narrative

Client: Alpha Analytical Inc  
Project/Site: L1822896

TestAmerica Job ID: 490-154234-1

**Job ID: 490-154234-1**

**Laboratory: TestAmerica Nashville**

### Narrative

#### Job Narrative 490-154234-1

### Comments

No additional comments.

### Receipt

The sample was received on 6/20/2018 9:15 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.9° C.

### GC Semi VOA

Method 1671A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 490-523479.

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

## Definitions/Glossary

Client: Alpha Analytical Inc  
Project/Site: L1822896

TestAmerica Job ID: 490-154234-1

### Glossary

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

# Client Sample Results

Client: Alpha Analytical Inc  
Project/Site: L1822896

TestAmerica Job ID: 490-154234-1

**Client Sample ID: HA-18-B207 (OW)**

**Lab Sample ID: 490-154234-1**

**Date Collected: 06/18/18 14:05**

**Matrix: Water**

**Date Received: 06/20/18 09:15**

## Method: 1671A - Ethanol (GC/FID)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	ND		2000	500	ug/L	-		06/21/18 08:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Isopropyl acetate (Surr)	96		70 - 130					06/21/18 08:28	1

## QC Sample Results

Client: Alpha Analytical Inc  
Project/Site: L1822896

TestAmerica Job ID: 490-154234-1

## Method: 1671A - Ethanol (GC/FID)

Lab Sample ID: MB 490-523479/4

Matrix: Water

Analysis Batch: 523479

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethanol	ND		2000	500	ug/L	-		06/21/18 08:05	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Isopropyl acetate (Surr)	95		70 - 130					06/21/18 08:05	1

Lab Sample ID: LCS 490-523479/5

Matrix: Water

Analysis Batch: 523479

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethanol			50200	52640		ug/L	-	105	70 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
Isopropyl acetate (Surr)	92		70 - 130						

Lab Sample ID: LCSD 490-523479/6

Matrix: Water

Analysis Batch: 523479

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethanol			50200	53090		ug/L	-	106	70 - 130	1	20
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits								
Isopropyl acetate (Surr)	91		70 - 130								

TestAmerica Nashville

## QC Association Summary

Client: Alpha Analytical Inc  
Project/Site: L1822896

TestAmerica Job ID: 490-154234-1

### GC VOA

#### Analysis Batch: 523479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-154234-1	HA-18-B207 (OW)	Total/NA	Water	1671A	
MB 490-523479/4	Method Blank	Total/NA	Water	1671A	
LCS 490-523479/5	Lab Control Sample	Total/NA	Water	1671A	
LCSD 490-523479/6	Lab Control Sample Dup	Total/NA	Water	1671A	



## Lab Chronicle

Client: Alpha Analytical Inc  
Project/Site: L1822896

TestAmerica Job ID: 490-154234-1

**Client Sample ID: HA-18-B207 (OW)****Lab Sample ID: 490-154234-1****Date Collected: 06/18/18 14:05****Matrix: Water****Date Received: 06/20/18 09:15**

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			523479	06/21/18 08:28	NMB	TAL NSH

**Laboratory References:**

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

## Method Summary

Client: Alpha Analytical Inc  
Project/Site: L1822896

TestAmerica Job ID: 490-154234-1

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

## Accreditation/Certification Summary

Client: Alpha Analytical Inc  
Project/Site: L1822896

TestAmerica Job ID: 490-154234-1

### 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

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Nashville, TN

## COOLER RECEIPT FORM



490-154234 Chain of Custody

Cooler Received/Opened On 06-20-2018 @ 0915Time Samples Removed From Cooler 16:54 Time Samples Placed In Storage 17:05 (2 Hour Window)1. Tracking # 1ZES06540190949515 (last 4 digits, FedEx)Courier: VPS NDAIR Gun ID 31470368

pH Strip Lot \_\_\_\_\_

Chlorine Strip Lot \_\_\_\_\_

2. Temperature of rep. sample or temp blank when opened: 4.9 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen?

YES NO NA

4. 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 NA

6. Were custody papers inside cooler?

YES...NO...NAI certify that I opened the cooler and answered questions 1-6 (initial) ADH

7. Were custody seals on containers:

YES

NO

and intact

YES...NO NA

Were these signed and dated correctly?

YES...NO NA8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process:

Ice

Ice-pack

Ice (direct contact)

Dry Ice

Other

None

10. Did all containers arrive in good condition (unbroken)?

YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)?

YES...NO...NA

12. Did all container labels and tags agree with custody papers?

YES...NO...NA

13a. Were VOA vials received?

YES...NO...NA

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 # \_\_\_\_\_

I certify that I unloaded the cooler and answered questions 7-14 (initial) JD

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level?

YES...NO NA

b. Did the bottle labels indicate that the correct preservatives were used

YES...NO...NA

16. Was residual chlorine present?

YES...NO NAI certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) JD

17. Were custody papers properly filled out (ink, signed, etc)?

YES...NO...NA

18. Did you sign the custody papers in the appropriate place?


YES...NO...NA

19. Were correct containers used for the analysis requested?

YES...NO...NA

20. 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) JDI certify that I attached a label with the unique LIMS number to each container (initial) JD21. Were there Non-Conformance Issues at login? YES...NO Was a NCM generated? YES...NO...# \_\_\_\_\_

		<b>Subcontract Chain of Custody</b> Test America (Nashville) 2960 Foster Creighton Drive Nashville, TN 37204		<b>490-154234</b>		Job Number 2896	
<b>Client Information</b> Client: Alpha Analytical Labs Address: Eight Walkup Drive Westborough, MA 01581-1019 Phone: 603.319.5010 Email: mgulli@alphalab.com		<b>Project Information</b> Project Location: MA Project Manager: Melissa Gulli Turnaround & Deliverables Information Due Date: 06/29/18 Deliverables:		<b>Regulatory Requirements/Report Limits</b> State/Federal Program: Regulatory Criteria:			
Reference following Alpha Job Number on final report/deliverables: L1822896				Report to include Method Blank, LCS/LCSD:			
Additional Comments: Send all results/reports to subreports@alphalab.com							
Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC		
	HA-18-B207 (OW)	06-18-18 14:05	WATER	Ethanol by EPA 1671 Revision A			
Relinquished By:		Date/Time:		Received By:		Date/Time:	
				J. Gulli		06/20/18 0915	
Form No: AL_subcoc						TA-NAS 4.9	





## ANALYTICAL REPORT

Lab Number:	L1831427
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Denis Bell
Phone:	(617) 886-7300
Project Name:	PARCEL 9 HAYMARKET
Project Number:	131268-002
Report Date:	08/15/18

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).

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



**Project Name:** PARCEL 9 HAYMARKET  
**Project Number:** 131268-002

**Lab Number:** L1831427  
**Report Date:** 08/15/18

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1831427-01	HA18-BOSTON HARBOR_81018	WATER	BOSTON, MA	08/10/18 12:30	08/10/18

**Project Name:** PARCEL 9 HAYMARKET  
**Project Number:** 131268-002

**Lab Number:** L1831427  
**Report Date:** 08/15/18

### 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: 08/15/18

# **INORGANICS & MISCELLANEOUS**

Project Name: PARCEL 9 HAYMARKET

Project Number: 131268-002

Lab Number: L1831427

Report Date: 08/15/18

## SAMPLE RESULTS

Lab ID: L1831427-01

Client ID: HA18-BOSTON HARBOR\_81018

Sample Location: BOSTON, MA

Date Collected: 08/10/18 12:30

Date Received: 08/10/18

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	28		SU	2.0	--	1	-	08/14/18 05:38	121,2520B	UN
pH (H)	7.6		SU	-	NA	1	-	08/11/18 07:49	121,4500H+-B	MA
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	08/12/18 13:30	08/13/18 23:00	121,4500NH3-BH	AT





**Project Name:** PARCEL 9 HAYMARKET**Lab Number:** L1831427**Project Number:** 131268-002**Report Date:** 08/15/18**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: WG1145578-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	08/12/18 13:30	08/13/18 22:31	121,4500NH3-BH	AT

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PARCEL 9 HAYMARKET

**Project Number:** 131268-002

**Lab Number:** L1831427

**Report Date:** 08/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1145418-1								
pH	99		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1145578-2								
Nitrogen, Ammonia	98		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1146125-1								
SALINITY	99		-			-		

# Matrix Spike Analysis

## Batch Quality Control

**Project Name:** PARCEL 9 HAYMARKET

**Lab Number:** L1831427

**Project Number:** 131268-002

**Report Date:** 08/15/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1145578-4 QC Sample: L1831432-02 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	4.03	101		-	-		80-120	-		20

**Project Name:** PARCEL 9 HAYMARKET  
**Project Number:** 131268-002

## Lab Duplicate Analysis

*Batch Quality Control*

**Lab Number:** L1831427  
**Report Date:** 08/15/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1145418-2 QC Sample: L1831275-01 Client ID: DUP Sample						
pH	6.8	6.8	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1145578-3 QC Sample: L1831432-02 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1146125-2 QC Sample: L1831427-01 Client ID: HA18-BOSTON HARBOR_81018						
SALINITY	28	28	SU	0		

**Project Name:** PARCEL 9 HAYMARKET**Lab Number:** L1831427**Project Number:** 131268-002**Report Date:** 08/15/18**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information****Cooler**                      **Custody Seal**

A                                  Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1831427-01A	Plastic 60ml unpreserved	A	7	7	5.1	Y	Absent		PH-4500(.01)
L1831427-01B	Amber 120ml unpreserved	A	7	7	5.1	Y	Absent		SALINITY(28)
L1831427-01C	Plastic 500ml H2SO4 preserved	A	<2	<2	5.1	Y	Absent		NH3-4500(28)



**Project Name:** PARCEL 9 HAYMARKET  
**Project Number:** 131268-002

**Lab Number:** L1831427  
**Report Date:** 08/15/18

## 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:** PARCEL 9 HAYMARKET  
**Project Number:** 131268-002

**Lab Number:** L1831427  
**Report Date:** 08/15/18

#### 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 exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

**Project Name:** PARCEL 9 HAYMARKET  
**Project Number:** 131268-002

**Lab Number:** L1831427  
**Report Date:** 08/15/18

## 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 it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

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



**Alpha Analytical, Inc.**Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**Revision **11**

Published Date: 1/8/2018 4:15:49 PM

Page 1 of 1

**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, NO<sub>2</sub>, NO<sub>3</sub>.**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.

[illegible]



## **APPENDIX F**

### **Typical Dewatering Treatment System Information**



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



### **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.

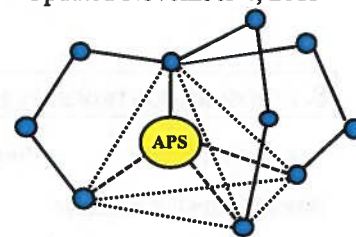
### **Precautions / Limitations**

- 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<sup>®</sup>  
**Supplied:** Applied Polymer Systems, Inc.  
519 Industrial Drive  
Woodstock, GA 30189  
Tel. 678-494-5998  
Fax. 678-494-5298  
[www.siltstop.com](http://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. 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) / <i>P. promelas</i> / 7 day / 77.8 ppm	IC 25 (Survival) / <i>C. dubia</i> / 7 day / 78.7 ppm
NOEC (Survival) / <i>P. promelas</i> / 7 day / 52.5 ppm	NOEC (Survival) / <i>C. dubia</i> / 7 day / 52.7 ppm
IC 25 (Growth) / <i>P. promelas</i> / 7 day / 50.1 ppm	IC 25 (Reproduction) / <i>C. dubia</i> / 7 day / 66.8 ppm
NOEC (Growth) / <i>P. promelas</i> / 7 day / 52.5 ppm	NOEC (Reproduction) / <i>C. dubia</i> / 7 day / 52.5 ppm

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

**13. DISPOSAL CONSIDERATIONS**

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

**14. TRANSPORT INFORMATION**

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

**15. REGULATORY INFORMATION**

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



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

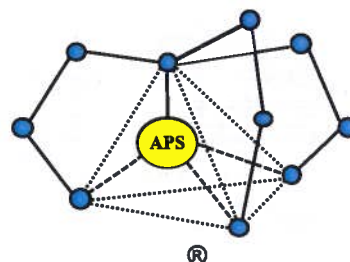
# 16. OTHER INFORMATION

## NFPA and HMIS ratings:

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

DATE EDITED: Nov 4<sup>th</sup> 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](http://www.siltstop.com)

### 2. HAZARD IDENTIFICATION

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

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

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

### 4. FIRST AID MEASURES

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

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

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

**Ingestion:** Consult a physician

### 5. FIRE-FIGHTING MEASURES

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

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

**Protective equipment for firefighters:** No special equipment required.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** No special precautions required.

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

### 7. HANDLING AND STORAGE

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

**Storage:** Keep in a cool, dry place.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

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

**Personal protection equipment**

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

**9. PHYSICAL AND CHEMICAL PROPERTIES**

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

**10. STABILITY AND REACTIVITY**

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

**11. TOXICOLOGICAL /**

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

**Acute toxicity**

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

**12. ECOLOGICAL INFORMATION****Chronic toxicity**

IC 25 (Survival) / *Ceriodaphnia dubia* / 7day / 122.5 ppm  
 NOEC (Survival) / *Ceriodaphnia dubia* / 7day / 52.5 ppm  
 IC 25 (Reproduction) / *Ceriodaphnia dubia* / 7day / 59.3 ppm  
 NOEC (Reproduction) / *Ceriodaphnia dubia* / 7day / 52.5 ppm

**13. DISPOSAL CONSIDERATIONS**

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

**14. TRANSPORT AND REGULATORY INFORMATION**

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

**15. TRANSPORT AND REGULATORY INFORMATION**

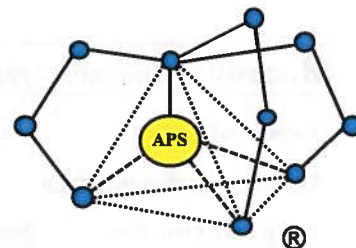
**TSCA Chemical Substances Inventory:** All components of this product are either listed on the inventory or are exempt from listing.  
**SARA Section 311 / 312 Hazard Class:** Not concerned  
**RCRA Status:** Not RCRA hazardous

**16. OTHER INFORMATION****NFPA and HMIS ratings:**

<b>NFPA</b>	<b>Health:</b>	<b>1</b>	<b>Flammability:</b>	<b>1</b>	<b>Reactivity:</b>	<b>0</b>
<b>HMIS</b>	<b>Health</b>	<b>1</b>	<b>Flammability</b>	<b>1</b>	<b>Reactivity</b>	<b>0</b>

**DATE EDITED: Jan 11<sup>th</sup> 2016**

# Applied Polymer Systems, Inc.



## Safety Data Sheet

### 1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

**Product Name:** APS 706b Flocc Log ®  
**Supplied:** 519 Industrial Drive  
Woodstock, GA 30189  
Tel. 678-494-5998  
Fax. 678-494-5298  
[www.siltstop.com](http://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:** Flocc 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) / <i>P. promelas</i> / 7 day / >1680 ppm	IC 25 (Survival) / <i>C. dubia</i> / 7 day / 257.3 ppm
NOEC (Survival) / <i>P. promelas</i> / 7 day / 1680 ppm	NOEC (Survival) / <i>C. dubia</i> / 7 day / 210 ppm
IC 25 (Growth) / <i>P. promelas</i> / 7 day / >1680 ppm	IC 25 (Reproduction) / <i>C. dubia</i> / 7 day / 91.6 ppm
NOEC (Survival) / <i>P. promelas</i> / 7 day / 1680 ppm	NOEC (Reproduction) / <i>C. dubia</i> / 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:**

<b>NFPA Health:</b>	<b>1</b>	<b>Flammability:</b>	<b>0</b>	<b>Reactivity:</b>	<b>0</b>
<b>HMIS Health</b>	<b>1</b>	<b>Flammability</b>	<b>0</b>	<b>Reactivity</b>	<b>0</b>

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

**9. PHYSICAL AND CHEMICAL PROPERTIES**

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

**10. STABILITY AND REACTIVITY**

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

**11. TOXICOLOGICAL INFORMATION**

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

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

**12. ECOLOGICAL INFORMATION**

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

IC <sub>25</sub> (Survival) / <i>P. promelas</i> / 7 day / 358 ppm	IC <sub>25</sub> (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 <sub>25</sub> (Growth) / <i>P. promelas</i> / 7 day / 94 ppm	IC <sub>25</sub> (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:**

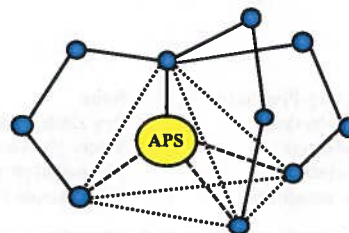
<b>NFPA</b>	<b>Health:</b>	<b>1</b>	<b>Flammability:</b>	<b>1</b>	<b>Reactivity:</b>	<b>0</b>
<b>HMIS</b>	<b>Health</b>	<b>1</b>	<b>Flammability</b>	<b>1</b>	<b>Reactivity</b>	<b>0</b>

DATE EDITED: Oct. 29<sup>th</sup> 2015



# Applied Polymer Systems, Inc.

## Safety Data Sheet



### 1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

**Product Name:** APS 703d Flocc Log®  
**Supplied:** Applied Polymer Systems, Inc.  
519 Industrial Drive  
Woodstock, GA 30189  
Tel. 678-494-5998  
Fax. 678-494-5298  
[www.siltstop.com](http://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:** Flocc Logs that become wet render surfaces extremely slippery.  
**Protective equipment for firefighters:** No special equipment required.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** No special precautions required.  
**Methods for cleaning up:** Dry wipe as well as possible. Keep in suitable and closed containers for disposal.  
After cleaning, flush away traces with water.

### 7. HANDLING AND STORAGE

**Handling:** Avoid contact with skin and eyes. Wash hands after handling.  
**Storage:** Keep in a cool, dry place.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering controls:** Use dry handling areas only.

#### Personal protection equipment

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

## 9. PHYSICAL AND CHEMICAL PROPERTIES

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

## 10. STABILITY AND REACTIVITY

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

## 11. TOXICOLOGICAL INFORMATION

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

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

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

IC 25 (Survival) / <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 4<sup>th</sup> 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**

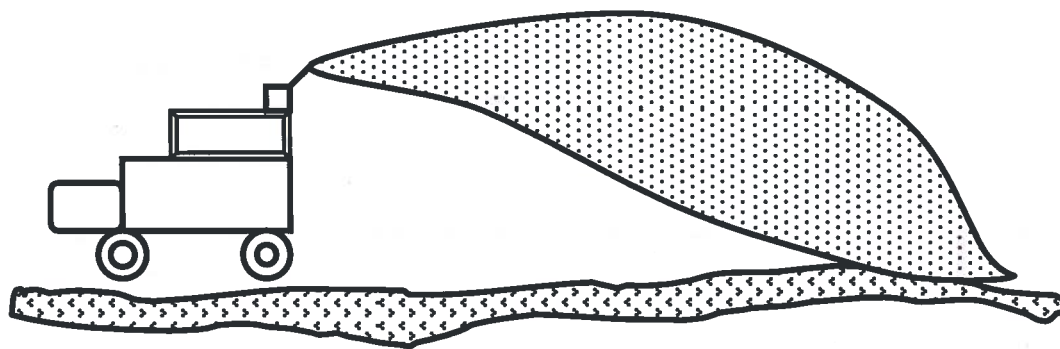
An operation and maintenance plan must be prepared for use by the operator responsible for PAM application. Plan items should include the following items.

- 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.





## **(Silt Stop Application of Temporary and Permanent Grassing)**



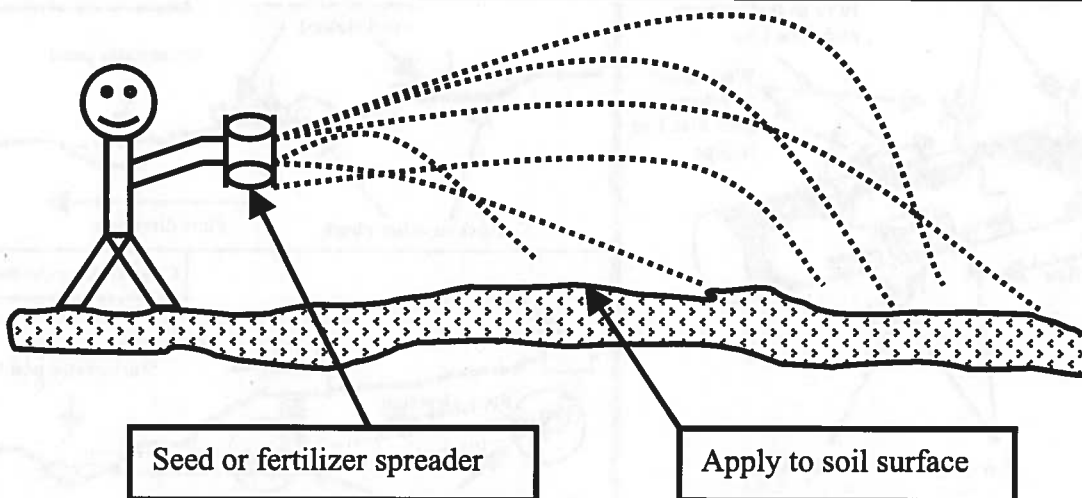
### **Notes:**

- 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)**



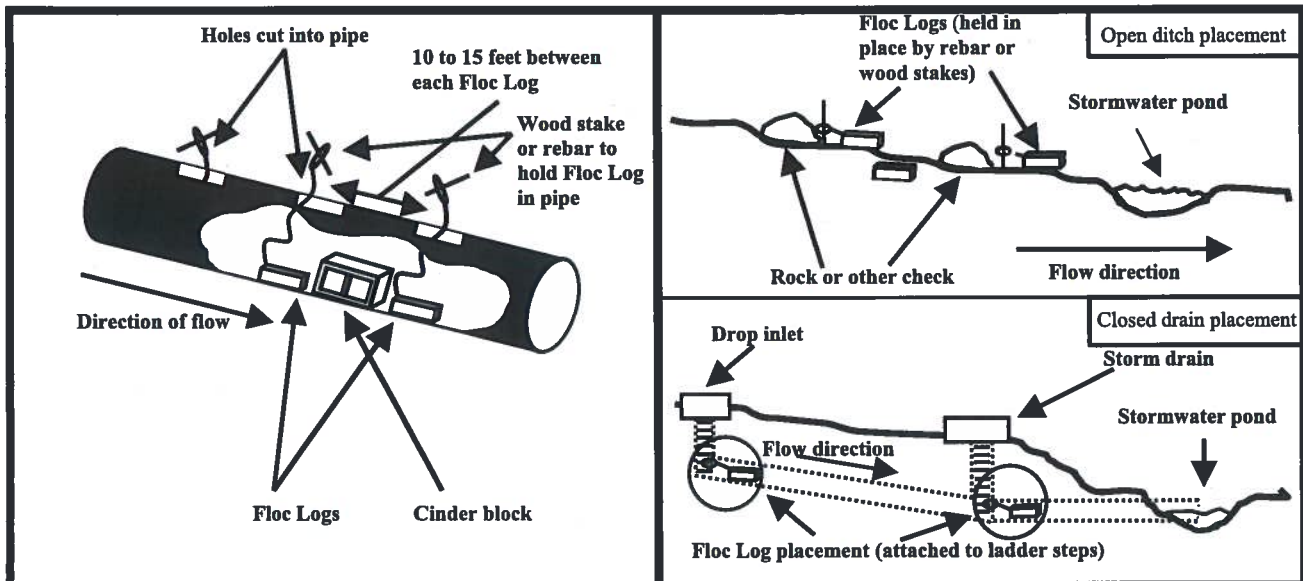
### **Notes:**

- 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)



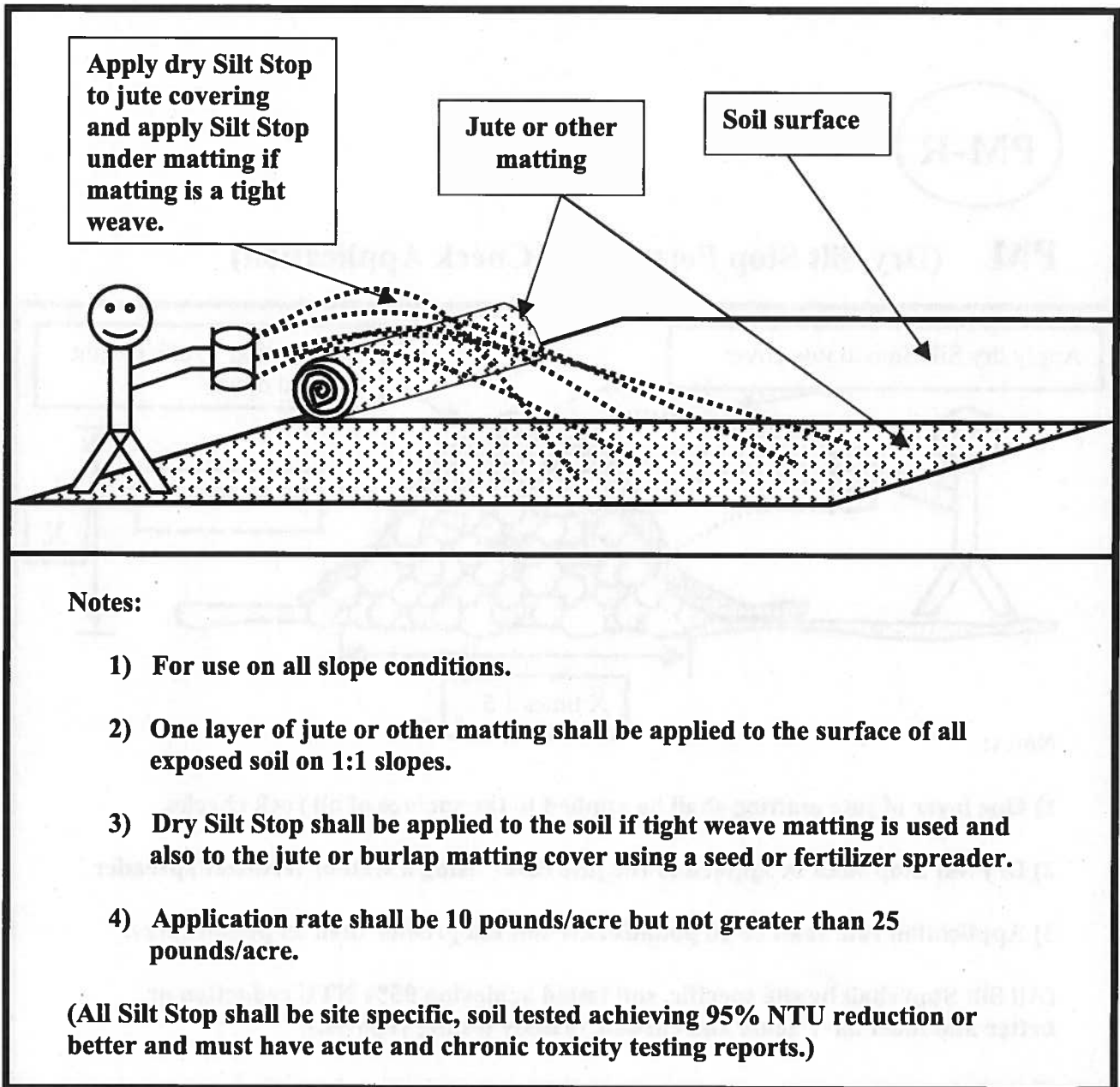
### Notes:

- 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.)

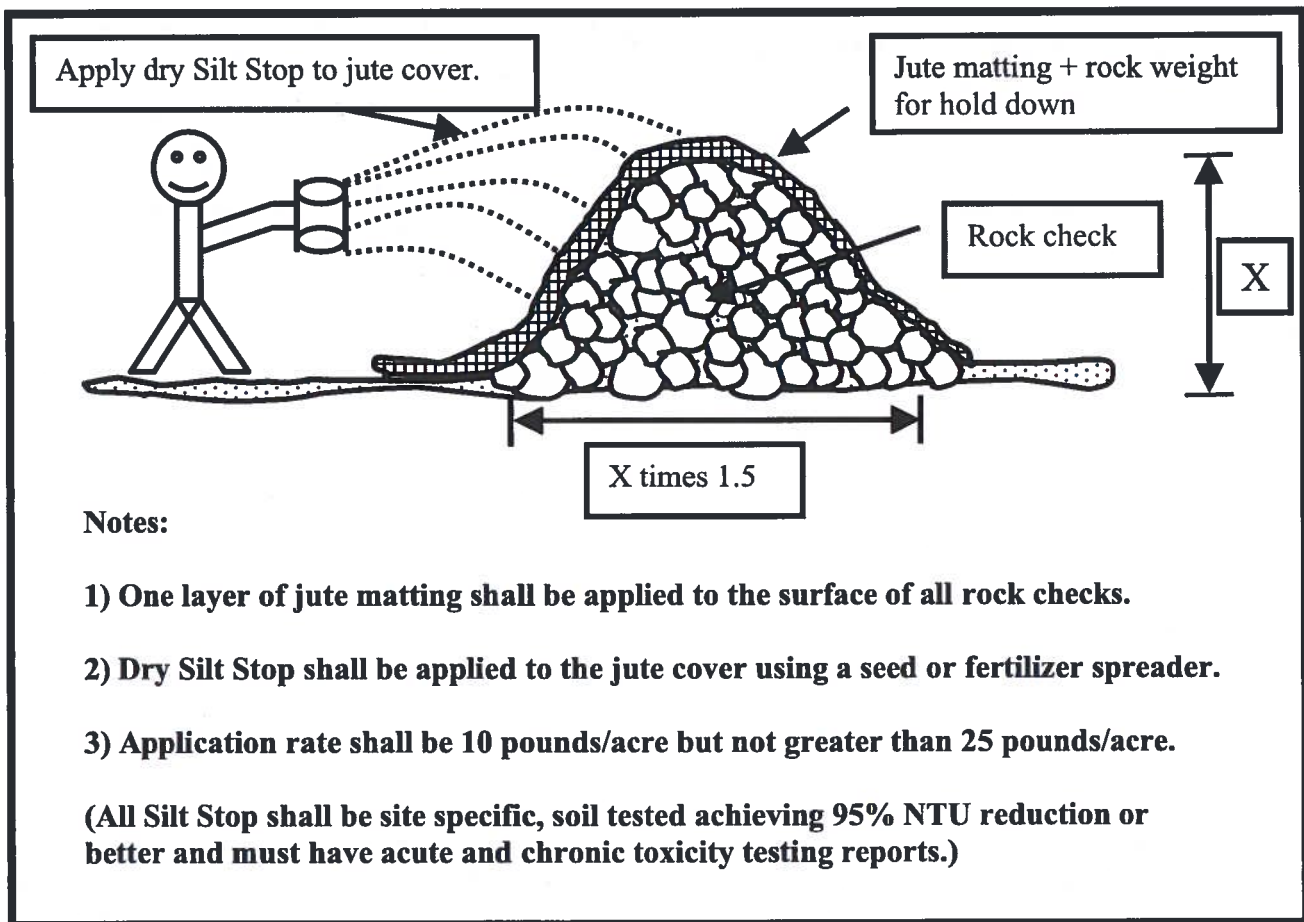
## PM-M

### (Dry Silt Stop Form Soft Armoring Technique for Matting)



PM-R

## PM (Dry Silt Stop Form Rock Check Application)

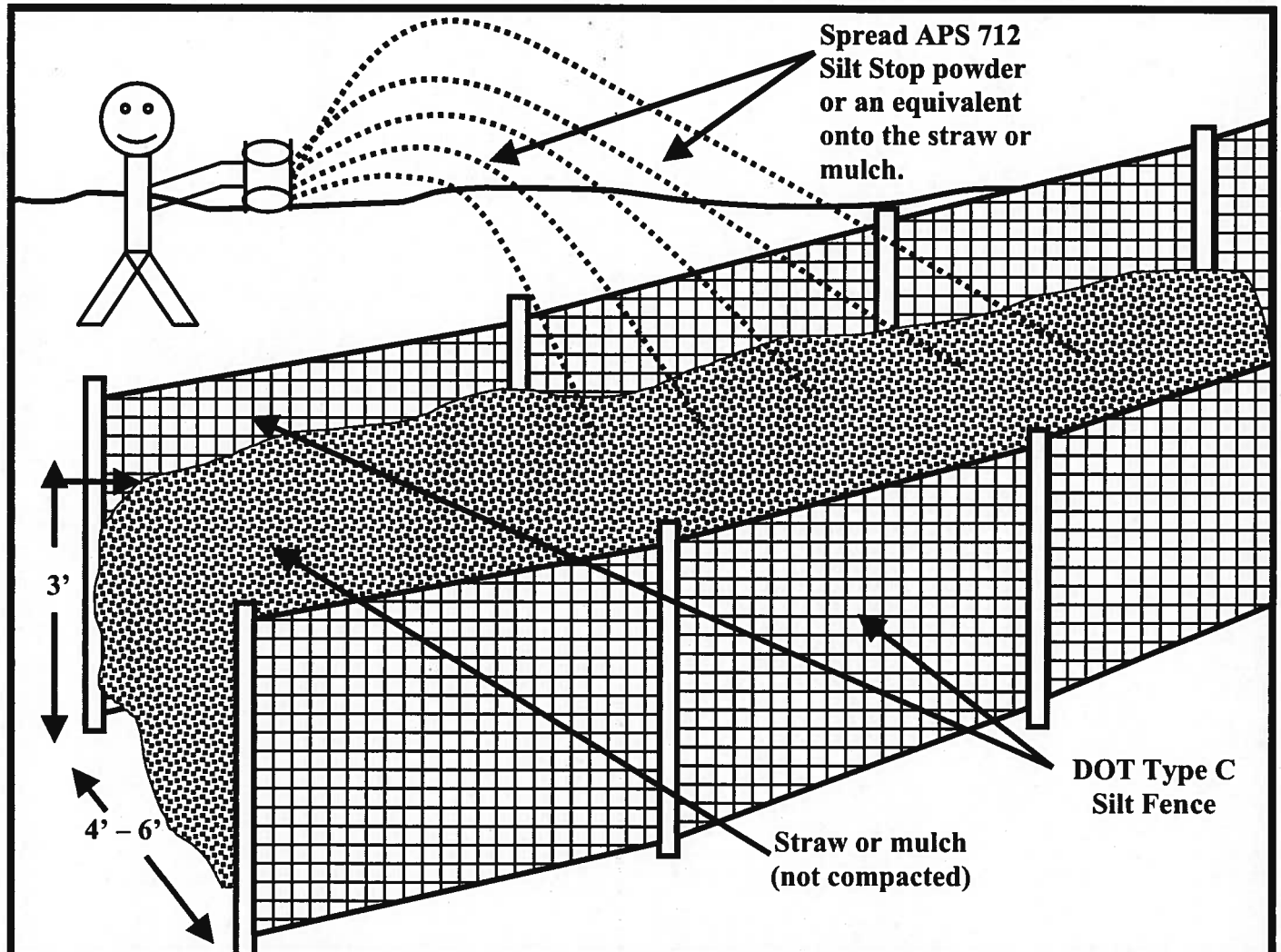




# SRB

## (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.)

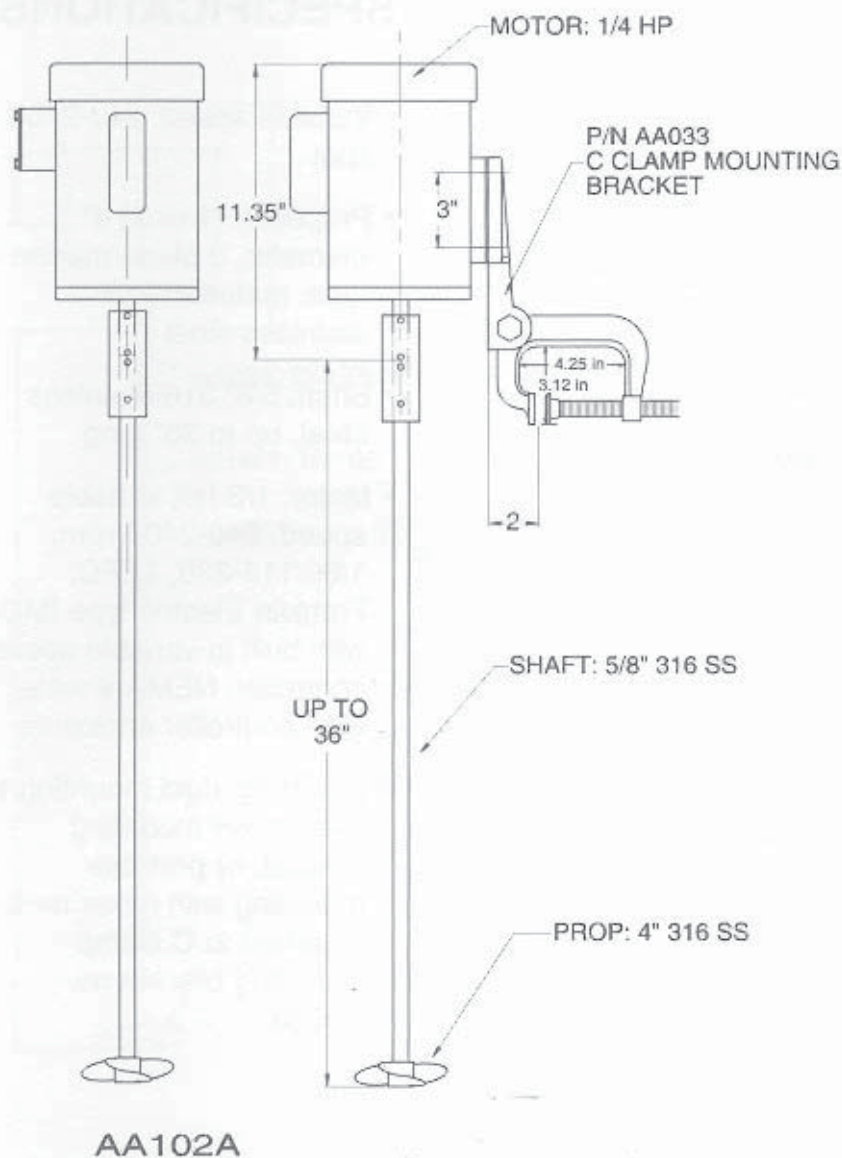


## pH System Components

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

## Controls



### Manual Stroke Rate

- Turn-Down Ratio 10:1

### Manual Stroke Length

- Turn-Down Ratio 10:1

### 4-20mADC Direct or External Pacing with Stop

- Automatic Control

## Operating Benefits

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



## Aftermarket

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





# PULSAtron® Series E Plus

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

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



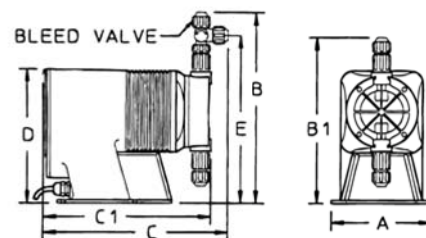
### Pre-Engineered Systems

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

■ 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.

**NEW**

### 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

UL US

CE

Meter only

2 year warranty  
Meter only

Model		+GF+ Signet 8750-1	+GF+ Signet 8750-2	+GF+ Signet 8750-3
Range	pH	0.00 to 14.00	0.00 to 14.00	0.00 to 14.00
	mV	-1000 to 2000 mV	-1000 to 2000 mV	-1000 to 2000 mV
Resolution	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)
	pH	0.01	0.01	0.01
Accuracy	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
Accuracy	Temperature	±0.5°C (±1°F)	±0.5°C (±1°F)	±0.5°C (±1°F)
	Temperature compensation	Automatic, 3 kΩ Balco	Automatic, 3 kΩ Balco	Automatic, 3 kΩ Balco
Control type		On/off (limit) or proportional	On/off (limit) or proportional	On/off (limit) or proportional
Number of set points		Two (low, high)	Two (low, high)	Two (low, high)
Output	Relay	—	Two SPDT relays, 5 A at 30 VDC or 250 VAC resistive load maximum	—
	Current	One 4 to 20 mA, isolated, fully adjustable and reversible	One 4 to 20 mA, isolated, fully adjustable and reversible	Two 4 to 20 mA, isolated, fully adjustable and reversible
	Open collector	One open-collector, optically isolated, 50 mA max	—	Two open-collector, optically isolated, 50 mA max
Dead band		User adjustable	User adjustable	User adjustable
Housing		NEMA 4X (IP65) front panel	NEMA 4X (IP65) front panel	NEMA 4X (IP65) front panel
Display		2 x 16 alphanumeric LCD	2 x 16 alphanumeric LCD	2 x 16 alphanumeric LCD
Dimensions (W x H x D)		Field-mount: 3 1/16" x 3 1/16" x 4 3/16" (96 x 96 x 106 mm) Panel-mount: 3 1/16" x 3 1/16" x 3 1/16" (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 R3/4"	

### 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 R3/4" 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)	
S-56561-03		ISO 7-1 R3/4"	
S-56561-10	pH, bulb style	3/4" NPT(M)	
S-56561-11		ISO 7-1 R3/4"	
S-56561-06	pH, HF-resistant bulb	3/4" NPT(M)	
S-56561-07		ISO 7-1 R3/4"	
S-56561-14	pH, LC bulb	3/4" NPT(M)	
S-56561-15		ISO 7-1 R3/4"	
S-56561-16	ORP, flat surface	3/4" NPT(M)	
S-56561-17		ISO 7-1 R3/4"	



# SECTION 1. PRODUCT IDENTIFICATION

**Trade Name** 77 % - 100 % Sulfuric Acid  
**Product Code** None  
**Manufacturers/Distributors** NorFalco Inc., 6000 Lombardo Center, The Genesis Bldg, suite 650 Seven Hills, OH 44131  
NorFalco Sales Inc., 6755 Mississauga Road, Suite 304, Mississauga, Ontario L5N 7Y2  
**Information Contact** André Auger, Administration Assistant  
**Product Information** 1-905-542-6901 (Mississauga)  
**Phone Number (Transportation Emergency)** Canada 1-877-ERP-ACID (377-2243)  
**Phone Number (Transportation Emergency)** U.S.A. 1-800-424-9300 CHEMTREC  
**Phone Number (Medical Emergency)** 1-418-656-8090  
**Phone Number (Emergency)** CANUTEC 1-613-996-6666  
**Synonyms** Dihydrogen Sulfate ; Oil of Vitriol ; Vitriol Brown Oil ; Sulphuric Acid.  
Acide sulfurique (French)  
Sulfuric Acid / H<sub>2</sub>SO<sub>4</sub>  
Acid  
**Name / Chemical Formula** Chemical industries ; Water treatment ; Fertilizer ; Pulp and Paper.  
**Chemical Family**  
**Utilization**  
**Manufacturers** CEZinc on behalf of Noranda Income Limited Partnership, Salaberry-de-Valleyfield (Quebec) Canada J6T 6L4  
Xstrata Copper, Home Smelter, Rouyn-Noranda (Quebec) J9X 5B6  
Xstrata Zinc, Brunswick Smelting, Belledune, New Brunswick E0B 1G0  
Xstrata Copper, Kidd Metallurgical Division, Timmins, Ontario P4N 7K1  
Xstrata Nickel, Sudbury Operations, Falconbridge, Ontario P0M 1S0

# SECTION 2. HAZARDS IDENTIFICATION

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



# SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS #	Percentage (%)	# CE	R Phrases <sup>1</sup>
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.  
Wash contaminated clothing before reusing. While the patient is being transported to a medical facility, continue the application of cold, wet compresses. If medical treatment must be delayed, repeat the flushing with cold water or soak the affected area with cold water to help remove the last traces of sulfuric acid. *Creams or ointments **SHOULD NOT** be applied before or during the washing phase of treatment.*

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

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

Notes to Physicians

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

**SECTION 5. FIRE-FIGHTING MEASURES**

Flash Point	Not available
Flammable Limits	Not available
Auto-Ignition Temperature	Not available
Products of Combustion	Releases of sulfur dioxide at extremely high temperatures.
Fire Hazard	Not flammable
Explosion Hazard	Reacts with most metals, especially when dilute : Hydrogen gas release ( <b>Extremely</b> flammable, explosive). Risk of explosion if acid combined with water, organic materials or base solutions in enclosed spaces (Vacuum 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. <b>Small fire</b> : Dry chemical or CO <sub>2</sub> . Move containers from fire area if you can do it without risk. <b>Large fire</b> : Flood fire area with large quantities of water, while knocking down vapors with water fog. If insufficient water supply: knock down vapors only. <b>Fire involving Tanks or Car/Trailer Loads</b> : 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 <b>Fire and Explosion Hazards</b> and <b>Safety Precautions</b> 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 <b>immediately</b> 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. <b>DO NOT</b> 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 <a href="http://www.norfalco.com">www.norfalco.com</a> .

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	# CAS	Control parameters	
		ACGIH (U.S.A.) 2008	OSHA (U.S.A.)
		TLV-TWA (mg/m <sup>3</sup> )	PEL - TWA (mg/m <sup>3</sup> )
Sulfuric (Acid)	7664-93-9	0.2 (thoracic fr.)	1
60 Deg Technical	7664-93-9	0.2 (thoracic fr.)	1
66 Deg Technical	7664-93-9	0.2 (thoracic fr.)	1
1.835 Electrolyte	7664-93-9	0.2 (thoracic fr.)	1
98 % Technical	7664-93-9	0.2 (thoracic fr.)	1
99 % Technical	7664-93-9	0.2 (thoracic fr.)	1
100 % Technical	7664-93-9	0.2 (thoracic fr.)	1
Water	7732-18-5	Not established	Not established

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



**Note :** Sulfuric (Acid) : Exposure limits may be different in other jurisdictions. NIOSH REL-TWA ( $\leq 10$  hours) :  $1 \text{ mg/m}^3$  ; IDLH :  $15 \text{ mg/m}^3$ .

*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)

**Molecular Weight** 98.08

**pH (1% soln/water)**  $< 1$

**Boiling Point**  $193^\circ\text{C}$  to  $327^\circ\text{C}$  ( $379^\circ\text{F}$  to  $621^\circ\text{F}$ ) @ 760 mm Hg

**Melting Point**  $-35^\circ\text{C}$  to  $11^\circ\text{C}$  ( $-31^\circ\text{F}$  to  $52^\circ\text{F}$ )

**Vapour Pressure**  $< 0.3 \text{ mm Hg}$  @  $25^\circ\text{C}$  ( $77^\circ\text{F}$ )

$< 0.6 \text{ mm Hg}$  @  $38^\circ\text{C}$  ( $100^\circ\text{F}$ )

**Odour**

Odourless

**Colour**

Colourless to light grey

**Volatility**

$< 1$  (Butyl Acetate = 1.0)

**Vapour Density**

3.4

**Dispersion**

Yes (Water)

**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  $\text{SO}_2$ ,  $\text{SO}_3$ )

**Polymerization** Polymerization will not occur.

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

**Corrosivity** Yes

**SECTION 11. TOXICOLOGICAL INFORMATION**

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

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

**Mutagenicity** Not applicable.

**Teratogenicity** Not applicable.

**Acute toxicity** ORAL (LD50) :  $2\,140 \text{ mg/kg}$  (Rat) ; INHALATION (LC50, 2 hours) :  $510 \text{ mg/m}^3$  (Rat) ;  $320 \text{ mg/m}^3$  (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.



Toxicity	<b>Contact (Skin)</b> : 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.
	<b>Contact (Eye)</b> : Possibility of corrosion or ulceration (Blindness may result). Repeated or prolonged exposure (Mist) : Possibility of eye irritation with tearing, pain or blurred vision.
	<b>Ingestion</b> : 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.
	Persons with the following pre-existing conditions warrant particular attention :
	<b>Sulfuric (Acid)</b> : 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	<b>Aquatic toxicity</b> : Slightly to moderately toxic. Bluegill Sunfish (LC50 ; 48 hours) : 49 mg/l (Tap water, 20 °C, conditions of bioessay not specified). (HSBD). Flounder (LC50 ; 48 hours) : 100-330 mg/l (Aerated water, conditions of bioessay not specified). (HSBD).
Toxicity to Animals	<b>EYE</b> : Concentrated compound is corrosive. 10 % solution : Moderate eye irritant. <b>SKIN</b> : 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</i> (RCRA) on disposal due to the corrosivity characteristic. <b>DO NOT</b> 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	PG II
Special Provisions (Transport)	None	
DOT (U.S.A.)/IMO (Maritime)	Proper Shipping Name	SULFURIC ACID
	Hazard Class	8
	UN N°	1830
	DOT/IMO Label	CORROSIVE
	Packing Group	II
	Reportable Quantity	1000 lbs (454 kg)
	Shipping Containers	Tank Cars, Tank Trucks, Vessel
ERG	Guide 137	



## SECTION 15 REGULATORY INFORMATION

Labeling (EEC)	EU (Directive 67/548/EEC) : <b>Sulfuric (Acid)</b> : C Corrosive (Pictogram) Annex I Index number : 016-020-00-8 ; EU Consolidated Inventories : EC Number 231-639-5 C ≥ 15 % C ; R35 ; S2, 26, 30, 45.
Risk Phrases (EEC)	R35- Causes severe burns
Safety Phrases (EEC)	S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice S30- Nerver add water to this product S36/37/39- Wear suitable protective clothing, gloves and eye/face protection S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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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</u> and <u>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 : <b>Sulfuric (Acid)</b> (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.)

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

### NPCA- HMIS Rating

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

## SECTION 16. OTHER INFORMATION

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

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

### Note

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

Because of its corrosive characteristics and inherent hazards, Sulfuric Acid should not be used in sewer or drain cleaners or any similar application; regardless of whether they are formulated for residential, commercial or industrial use. NorFalco will not knowingly sell sulfuric acid to individuals or companies who repackage the product for sale as sewer or drain cleaners, or any other similar use.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

For additional information, please visit our website : [www.norfalco.com](http://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

# NorFalco Inc. NorFalco Sales Inc.

**77% - 100% SULFURIC ACID**

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

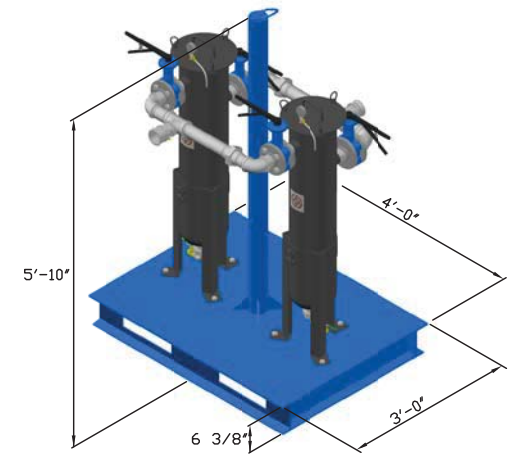
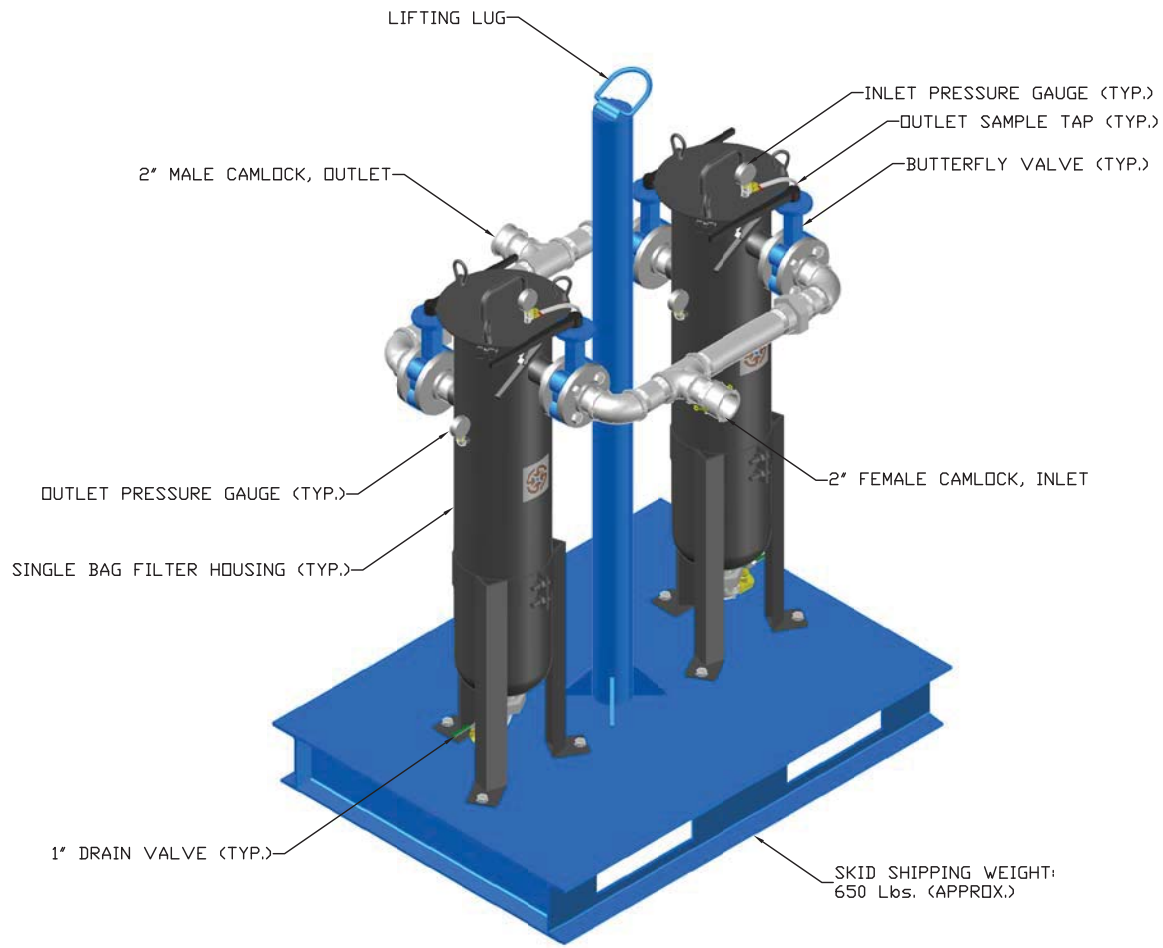
**Request to :** André Auger, Administration Assistant    Tel. : (905) 542-6901 extension 0    Fax : (905) 542-6914 / 6924  
NorFalco Sales Inc., 6755 Mississauga Road, Suite 304, Mississauga, Ontario L5N 7Y2

## **Notice to Reader**

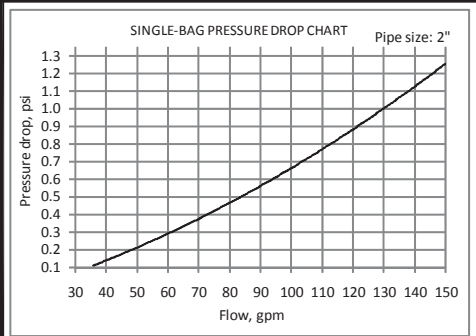
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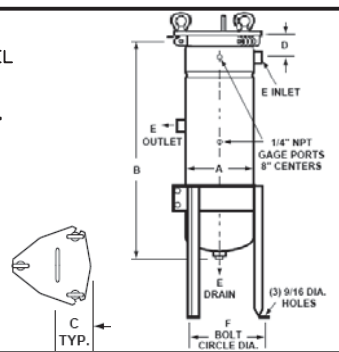
T:\Cad Files\Rentals - STANDARD DRAWINGS\EQUIPMENT SPECIFICATION\BAG FILTERS\ST-0002-SPC Rev-C Duplex Single Bag Filter Skid.dwg




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:  $\phi 12.0"$   
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			
 <b>GROUND/WATER TREATMENT &amp; TECHNOLOGY</b> P.O. BOX 1174 DENVILLE, NJ 07834			
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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) <sup>1</sup>	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
Permittivity	ASTM D4491	sec <sup>-1</sup>	1.7	
Flow Rate	ASTM D4491	gal/min/ft <sup>2</sup> (l/min/m <sup>2</sup> )	135 (5500)	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

<sup>1</sup> 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 <sup>2</sup> (m <sup>2</sup> )	500 (418)	600 (502)
Estimated Roll Weight	lb (kg)	133 (60)	160 (72)

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