



**NOTICE OF INTENT FOR DISCHARGE
UNDER MASSACHUSETTS
DEWATERING GENERAL PERMIT MAG070000**

**EMMANUAL COLLEGE - NEW RESIDENCE
HALL**

BOSTON, MASSACHUSETTS

SEPTEMBER 30, 2016

Prepared For:

U.S. Environmental Protection Agency
Dewatering GP Processing
Industrial Permit Unit (OEP 06-4)
5 POST OFFICE SQUARE – SUITE 100
BOSTON, MA 02109-3912

On Behalf Of:

Emmanuel College
400 The Fenway
Boston MA, 02115

2269 Massachusetts Avenue
Cambridge, MA 02140
www.mcphailgeo.com
(617) 868 1420

PROJECT NO. 5980



September 30, 2016

U.S. Environmental Protection Agency
Dewatering GP Processing
Industrial Permit Unit (OEP 06-4)
5 Post Office Square – Suite 100
Boston, MA 02109-3912

Attention: To Whom it May Concern

Reference: Emmanuel College – New Residence Hall; Boston, Massachusetts
Dewatering General Permit

Ladies and Gentlemen:

On behalf of Emmanuel College, McPhail Associates, LLC (McPhail) has prepared the attached Notice of Intent (NOI) for coverage under the Massachusetts Dewatering General Permit MAG070000 (DGP) for the discharge of construction dewatering effluent into the Charles River via the City of Boston storm drainage system. The temporary construction dewatering discharge will occur during construction of the proposed development at the former location of Julie Hall at Emmanuel College in Boston, Massachusetts (subject site). Refer to **Figure 1** entitled Project Location Plan for the general site locus.

These services were performed and this permit application was prepared in accordance with our proposal dated July 12, 2016, and the subsequent authorization of Emmanuel College. These services are subject to the limitations contained in **Appendix A**.

The required Notice of Intent Form contained in the DGP and Boston Water & Sewer Commission Dewatering Discharge Permit Application are included in **Appendix B**.

Applicant/Operator

The applicant for the Notice of Intent-Dewatering General Permit is:

Emmanuel College
400 The Fenway
Boston, MA 02115

Attention: Sister Anne Donovan

Office: (617) 732-1681
Email: donovan@emmanuel.edu



Site Location and Current Conditions

The proposed residence hall is to be located within the campus of Emmanuel College along the east side of Brookline Avenue, and bounded by Saint Joseph and Saint Ann Halls to the north, Marian Hall to the east, and Beth Israel Deaconess Medical Center to the south. The site is located at the former site of Julie Hall which has recently been demolished as part of the proposed development. Ground surface across the site gradually rises from the northwest to the southeast, ranging from about Elevation +20 to Elevation +25. The limits of the subject site are shown on the attached Subsurface Exploration Plan prepared by McPhail Associates (**Figure 2**).

Proposed Scope of Site Development

The proposed, structure is planned to have a 19-story east wing tower and a 6-story west wing. One level of below-grade parking and mechanical space is currently planned below the building wings as well as the interstitial space between. The below-grade level is understood to occupy a footprint of approximately 28,000 square feet as indicated on **Figure 2**, Subsurface Exploration Plan. The top of the lowest level floor slab will be at approximately Elevation +7.

Site Environmental Setting, Nearby DEP-listed Disposal Sites and Surrounding Historical Places

Based on an on-line edition of the Massachusetts Geographic Information Systems DEP Priority Resources Map (GIS Map) viewed on September 23, 2016, the subject site is not located within the boundaries of a Sole Source Aquifer, Potentially Productive Aquifer or within a Zone II, Interim Wellhead Protection Area as defined by the Massachusetts Department of Environmental Protection. Further, there are no public drinking water supply wells, no Areas of Critical Environmental Concern, no fish habitats, no habitats of Species of Special Concern or Threatened or Endangered Species within specified distances of the subject site.

The GIS Map indicates that an unnamed body of water is located approximately 100 feet northwest of the subject site at Higgins Circle which is also the closet protected open space. There are no areas designated as solid waste sites (landfills) noted as being located within 3,000 feet of the subject site. A copy of the Massachusetts GIS Priority Resources Map is included in **Appendix C**.

A review of the most recent National Register of Historical Places for Suffolk County in Boston, Massachusetts did not identify records or addresses of historic places that exist in the immediate vicinity of the subject site and/or outfall location.

McPhail recently completed a soil pre-characterization testing program for the off-site reuse of excess soils to be generated during the proposed construction. Those results indicated the presence of arsenic, lead, polynuclear aromatic hydrocarbons (PAH) and total petroleum



hydrocarbons (TPH) at concentrations that exceed applicable Reportable Concentrations pursuant to the provisions of the Massachusetts Contingency Plan 310 CMR 40.0000 (MCP). The release condition was limited to surficial urban fill material and is considered to be attributable to the presence of ash and cinders in the fill. The underlying natural soils were not impacted. Further, groundwater at the site has not been impacted by a release of arsenic, lead, PAH, or TPH.

Temporary Construction Dewatering

Subsurface explorations performed at the subject site encountered the surface of groundwater at a depth of about 12.6 feet below the existing ground surface corresponding to Elevation +9.8.

In order to perform the building excavations at the subject site, which are anticipated to extend below the groundwater level for construction of the foundations, and also to provide for management of water which may become trapped within the excavation areas following periods of precipitation, the construction dewatering discharge into the city's storm drain is necessary.

It is estimated that continuous groundwater discharge during the construction will be on the order of 25 to 50 gallons per minute (gpm). The maximum daily flow is estimated to be 72,000 GPD and the average monthly flow is estimated to be 54,000 GPD.

Given that the footprint of the proposed construction occupies a majority of the project site, temporary on-site collection and recharge of groundwater is not feasible. As a result, construction dewatering will require the discharge of collected groundwater and stormwater into the storm drain system under the requested DGP.

A review of available subgrade utility plans provided by the Boston Water and Sewer Commission (BWSC) indicates the presence of a dedicated storm drain system located adjacent to the subject site, beneath Brookline Avenue. As indicated by the BWSC utility plans, the storm drain flows north-northeast beneath Brookline Avenue, turning northwest beneath Deerfield Street and discharges into the Charles River at outfall SDO 042. The location of the relevant storm drain in relation to the subject site is indicated on **Figure 2**. The flow path of the discharge is shown in plans provided by the BWSC which are included in **Figure 3A through 3G**.

Summary of Groundwater Analysis

A total of three (3) representative groundwater samples identified as B-4 (OW) S-1 were submitted to a laboratory for chemical analysis. A summary of the analytical data are provided on **Table 1**. A copy of the laboratory reports are included in **Appendix D**.



July 21, 2016

One groundwater sample was collected and submitted to a laboratory for the analysis of total metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total suspended solids (TSS), chloride, total cyanide, total residual chlorine, total phenolics hexavalent chromium, poly chlorinated biphenyls (PCBs), microextrctables, and pH.

Results of the analysis indicated the presence of chloride, total phenolics, arsenic, chromium, copper, iron, lead, nickel, zinc and acetone above laboratory detection limits. In addition, levels of TSS were also detected at 130,000 micrograms per liter (ug/l). As a result, the detected levels of total metals was considered attributable to the elevated TSS levels and a second sample was collected and submitted to a laboratory for analysis.

July 27, 2016

One groundwater sample was collected and submitted to a laboratory for the analysis of total petroleum hydrocarbons (TPH). Results of the analysis did not indicate the presence of TPH above laboratory method detection limits.

August 18, 2016

Based on the results of the initial sampling event on July 27, 2016, and additional groundwater sample was collected and submitted to a laboratory for the analysis of total metals, dissolved metals, TSS, and pH.

With the exception of iron, results of the analysis did not indicate the presence of total or dissolved metals above laboratory detection limits. In addition, TSS levels were significantly lower at 10,000 ug/l, which confirms that the detected levels from the sampling event on July 21, 2016 are attributable to suspended solids.

Dissolved iron was detected at 100 ug/l which is below the US Environmental Protection Agency (EPA) established effluent limits. However, total iron was detected above the EPA limit at 3100 ug/l. As a result, treatment of groundwater which includes a sediment settling tank and bag filtration will be necessary to remove suspended iron from the groundwater.

pH: The tested sample exhibited a pH level of 6.2 Standard Units (S.U.) which is below the minimum limit of 6.5 S.U. for discharge into fresh waters.

TSS: The total suspended solids of the groundwater were tested to be 10,000 ug/l.



Groundwater Treatment

As previously mentioned the treatment of groundwater will be necessary to meet the applicable effluent limits established by the US EPA during construction dewatering prior to off-site discharge. The treatment system is to consist of one (1) sediment settling tank with a minimum capacity of 5,000-gallons and bag filters placed in-series. A schematic of the treatment system is shown on **Figure 4**.

Summary and Conclusions

The purpose of this report is to assess site environmental conditions and groundwater data to support an application for a Massachusetts Dewatering General Permit for off-site discharge of dewatered groundwater which will be encountered during the residential and commercial redevelopment located at Julie Hall at Emmanuel College in Boston, Massachusetts.

Based on the results of the above referenced groundwater analyses, treatment of construction dewatering will be necessary to meet allowable effluent limits established by the US EPA. The proposed construction dewatering effluent system will consist of one (1) sediment settling tank with a minimum capacity of 5,000-gallons and bag filters in-series to maintain levels of TSS within the limits established Massachusetts DGP. However, if required additional mitigative measures will be implemented to meet the allowable discharge limits.

We trust that the above satisfies your present requirements. Should you have any questions or comments concerning the above, please do not hesitate to contact us.

Very truly yours,

McPHAIL ASSOCIATES, LLC

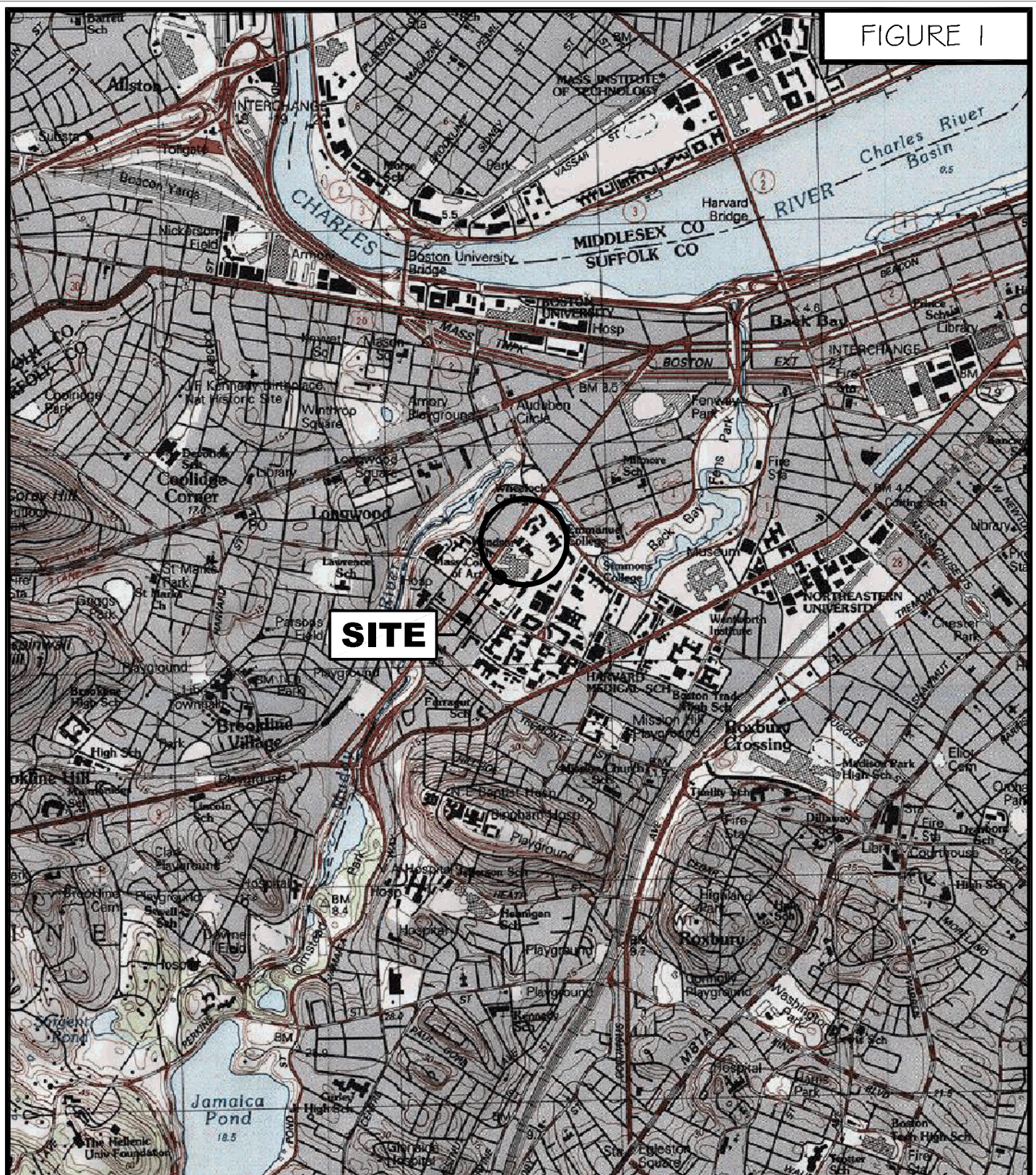
A blue ink signature of Brian Fong-Murdock, consisting of several fluid, connected strokes.

Brian Fong-Murdock

A blue ink signature of Joseph G. Lombardo, featuring a cursive style with a prominent initial 'J' and 'L'.

Joseph G. Lombardo, L.S.P.

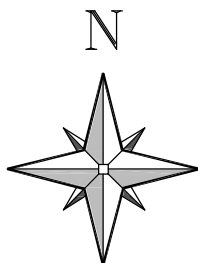
FIGURE I



SITE



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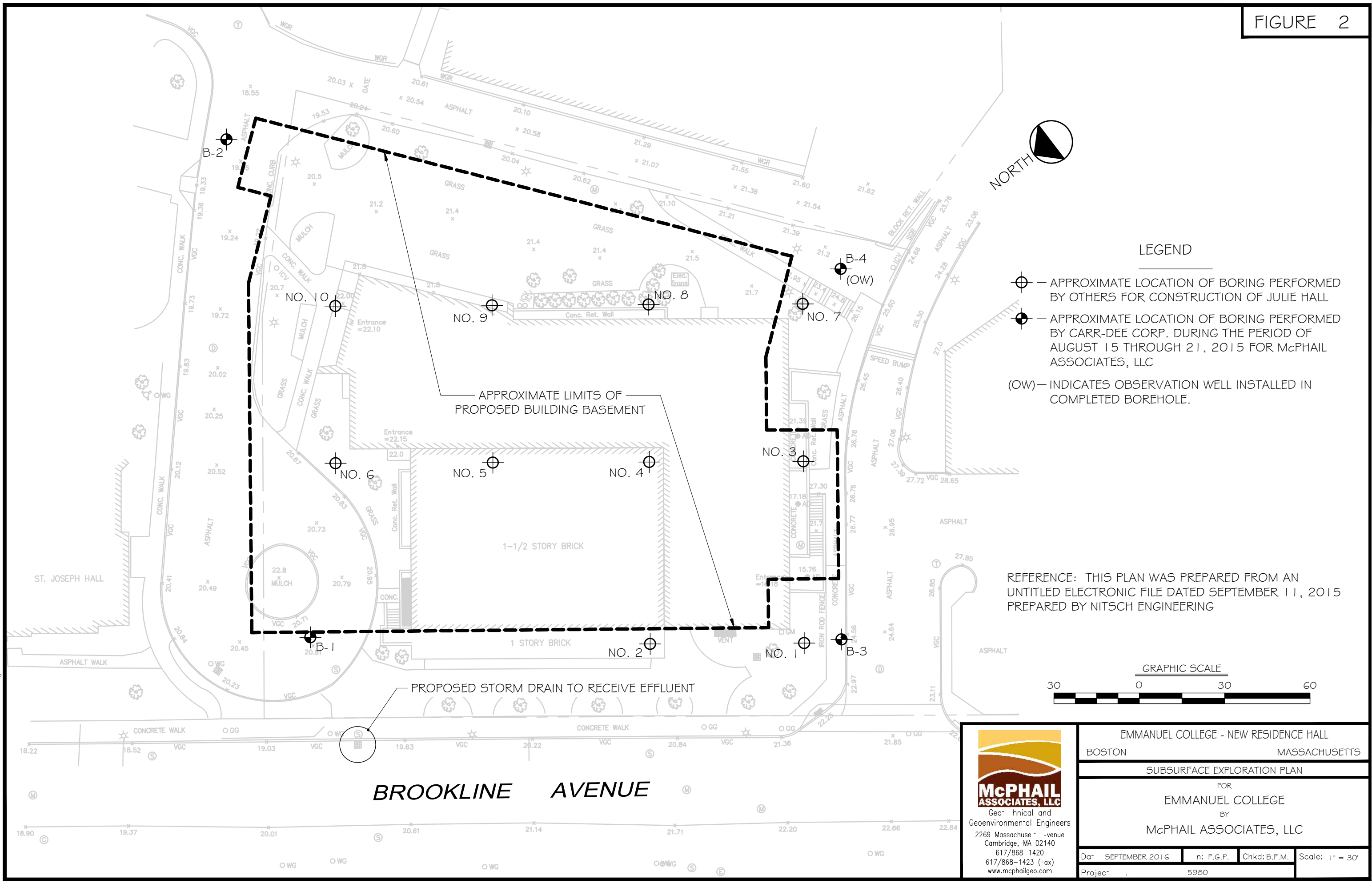
SCALE 1:25,000

PROJECT LOCATION PLAN

EMMANUEL COLLEGE
 NEW RESIDENCE HALL

BOSTON

MASSACHUSETTS



LEGEND

- APPROXIMATE LOCATION OF BORING PERFORMED BY OTHERS FOR CONSTRUCTION OF JULIE HALL
- APPROXIMATE LOCATION OF BORING PERFORMED BY CARR-DEE CORP. DURING THE PERIOD OF AUGUST 15 THROUGH 21, 2015 FOR McPHAIL ASSOCIATES, LLC
- (OW) — INDICATES OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE.

REFERENCE: THIS PLAN WAS PREPARED FROM AN UNTITLED ELECTRONIC FILE DATED SEPTEMBER 11, 2015 PREPARED BY NITSCH ENGINEERING

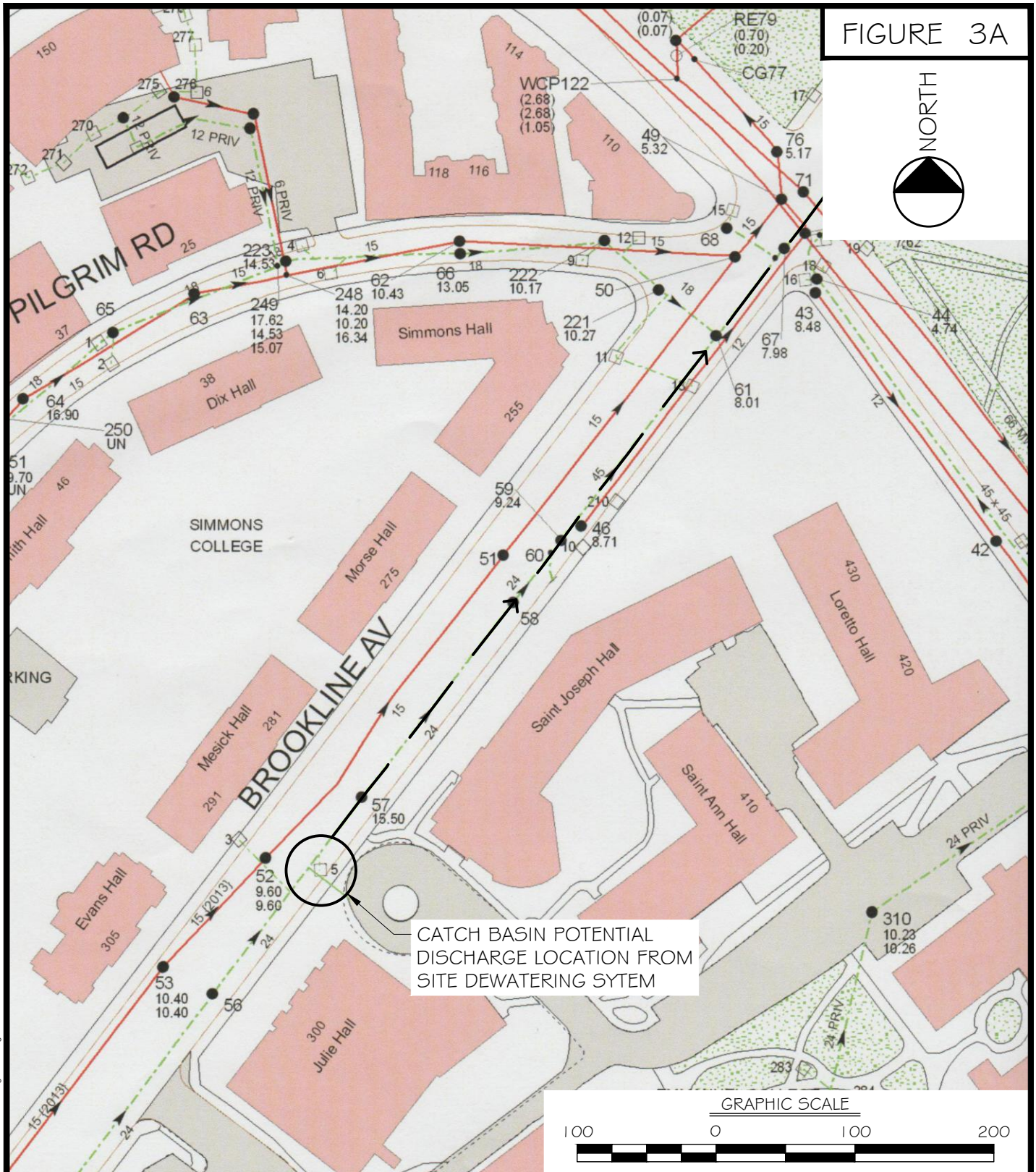


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EMMANUEL COLLEGE - NEW RESIDENCE HALL			
BOSTON		MASSACHUSETTS	
SUBSURFACE EXPLORATION PLAN			
FOR EMMANUEL COLLEGE BY McPHAIL ASSOCIATES, LLC			
Date: SEPTEMBER 2016	Drawn: F.G.P.	Checked: B.F.M.	Scale: 1" = 30'
Project: 5980			

FIGURE 3A



CATCH BASIN POTENTIAL DISCHARGE LOCATION FROM SITE DEWATERING SYSTEM



LEGEND

➤ — INDICATES DIRECTION OF FLOW

REFERENCE: THIS PLAN WAS PREPARED FROM A 100-SCALE DRAWING ENTITLED "BOSTON WATER AND SEWER" PRINTED ON SEPTEMBER 26, 2016 BY BOSTON WATER AND SEWER COMMISSION.



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EMMANUEL COLLEGE - NEW RESIDENCE HALL
 BOSTON MASSACHUSETTS

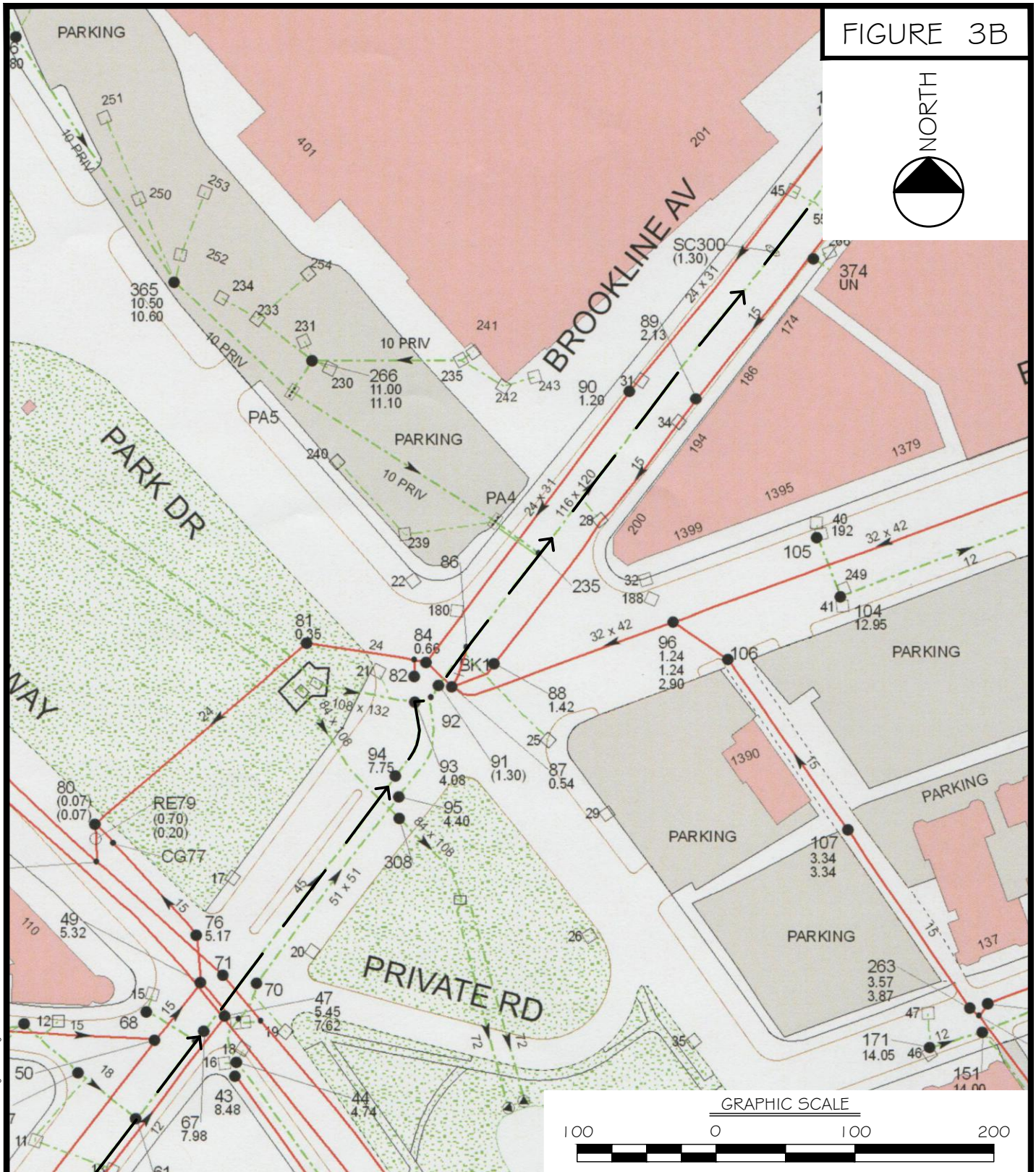
DISCHARGE LOCATION PLAN

FOR
 EMMANUEL COLLEGE
 BY
 McPHAIL ASSOCIATES, LLC

Date: SEPTEMBER 2016	Dwn: F.G.P.	Chkd: B.F.M.	Scale: 1" = 100'
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FIGURE 3B



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LEGEND

↗ — INDICATES DIRECTION OF FLOW

REFERENCE: THIS PLAN WAS PREPARED FROM A 100-SCALE DRAWING ENTITLED "BOSTON WATER AND SEWER" PRINTED ON SEPTEMBER 26, 2016 BY BOSTON WATER AND SEWER COMMISSION.

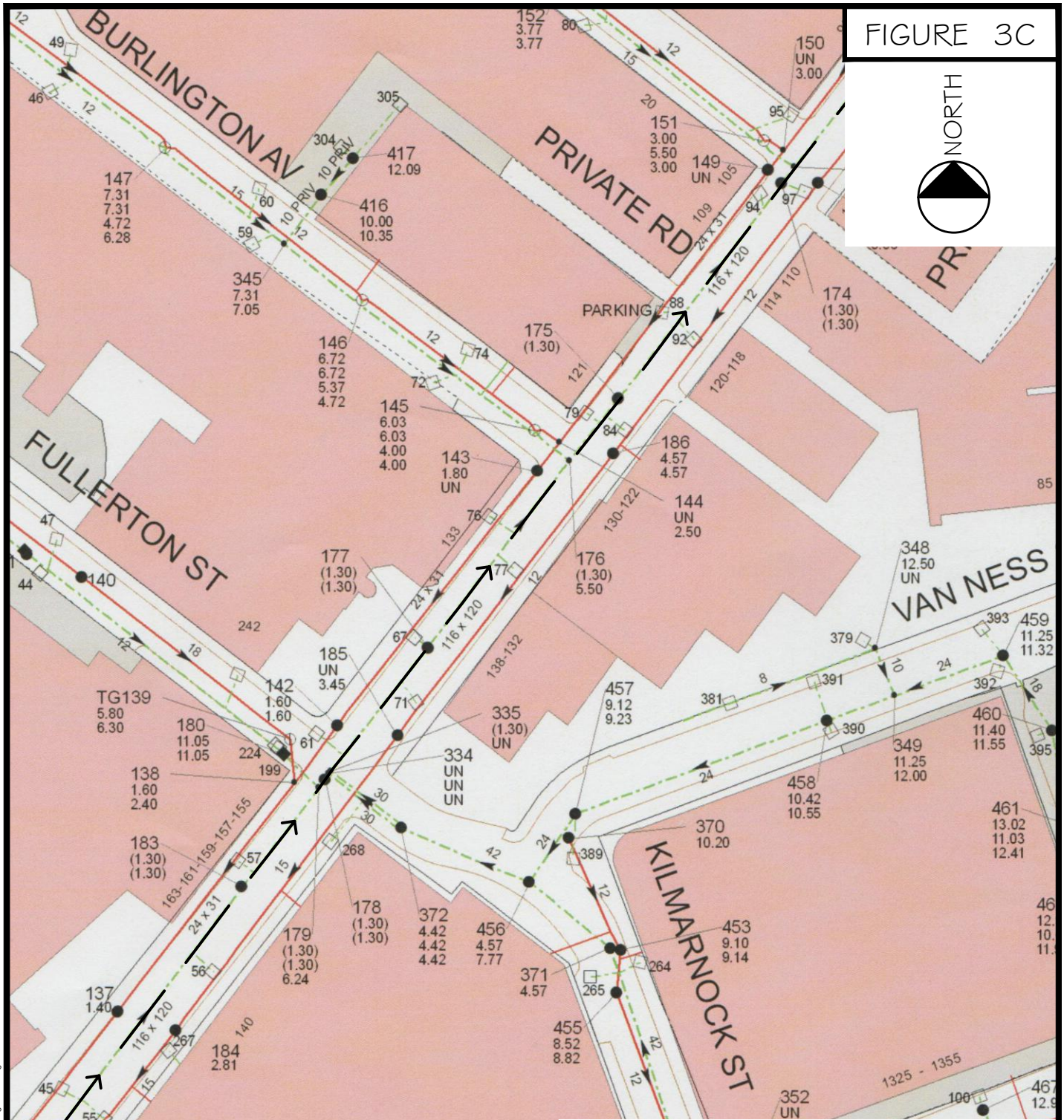


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BOSTON		MASSACHUSETTS	
DISCHARGE LOCATION PLAN			
FOR			
EMMANUEL COLLEGE			
BY			
McPHAIL ASSOCIATES, LLC			
Date: SEPTEMBER 2016	Dwn: F.G.P.	Chkd: B.F.M.	Scale: 1" = 100'
Project: 5980			

FIGURE 3C



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LEGEND

↗ — INDICATES DIRECTION OF FLOW

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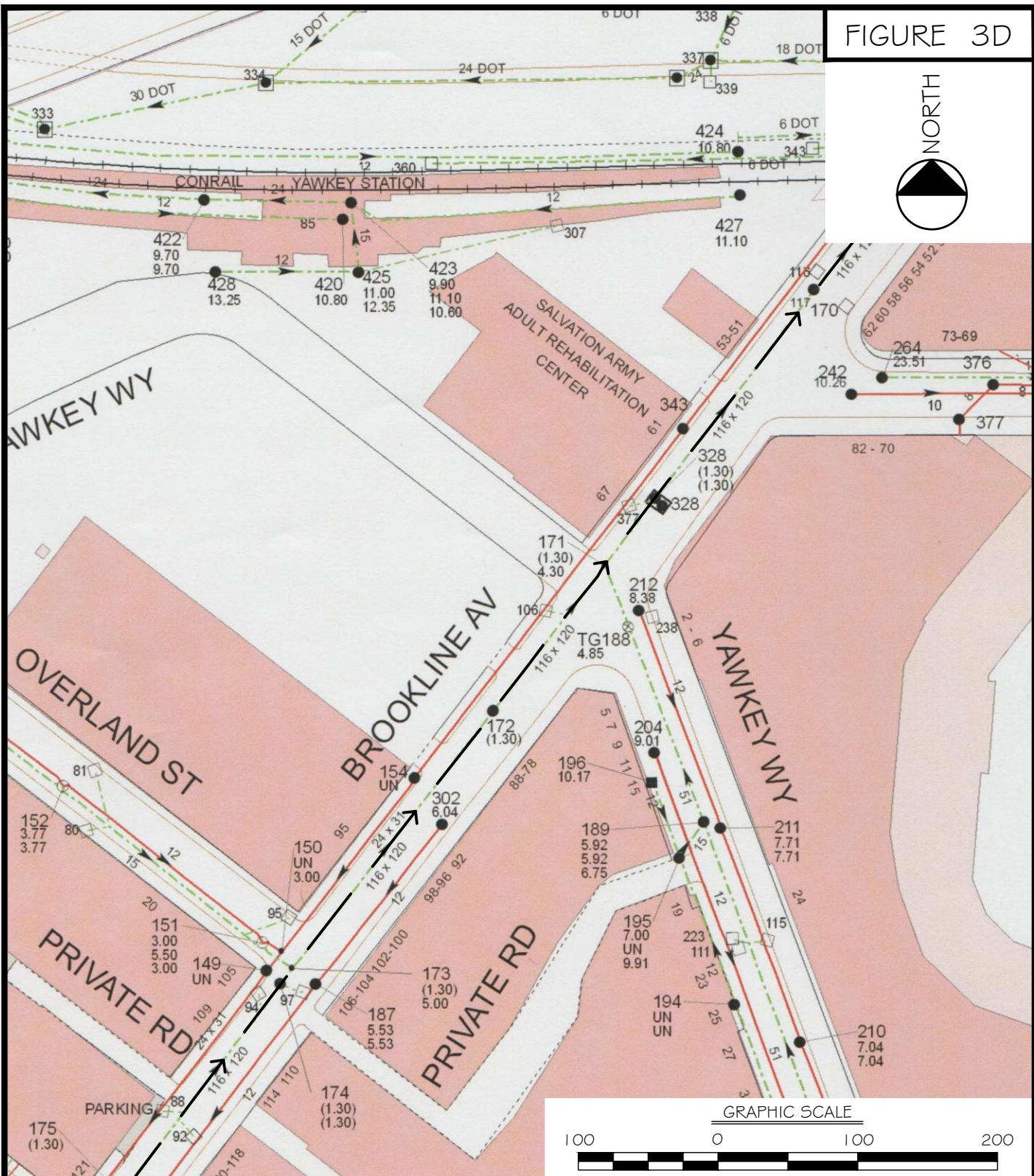
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 BOSTON MASSACHUSETTS

DISCHARGE LOCATION PLAN

FOR
 EMMANUEL COLLEGE
 BY
 McPHAIL ASSOCIATES, LLC

Date: SEPTEMBER 2016	Dwn: F.G.P.	Chkd: B.F.M.	Scale: 1" = 100'
Project: 5980			

FIGURE 3D



LEGEND

↗ — INDICATES DIRECTION OF FLOW

REFERENCE: THIS PLAN WAS PREPARED FROM A 100-SCALE DRAWING ENTITLED "BOSTON WATER AND SEWER" PRINTED ON SEPTEMBER 26, 2016 BY BOSTON WATER AND SEWER COMMISSION.



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 BOSTON MASSACHUSETTS

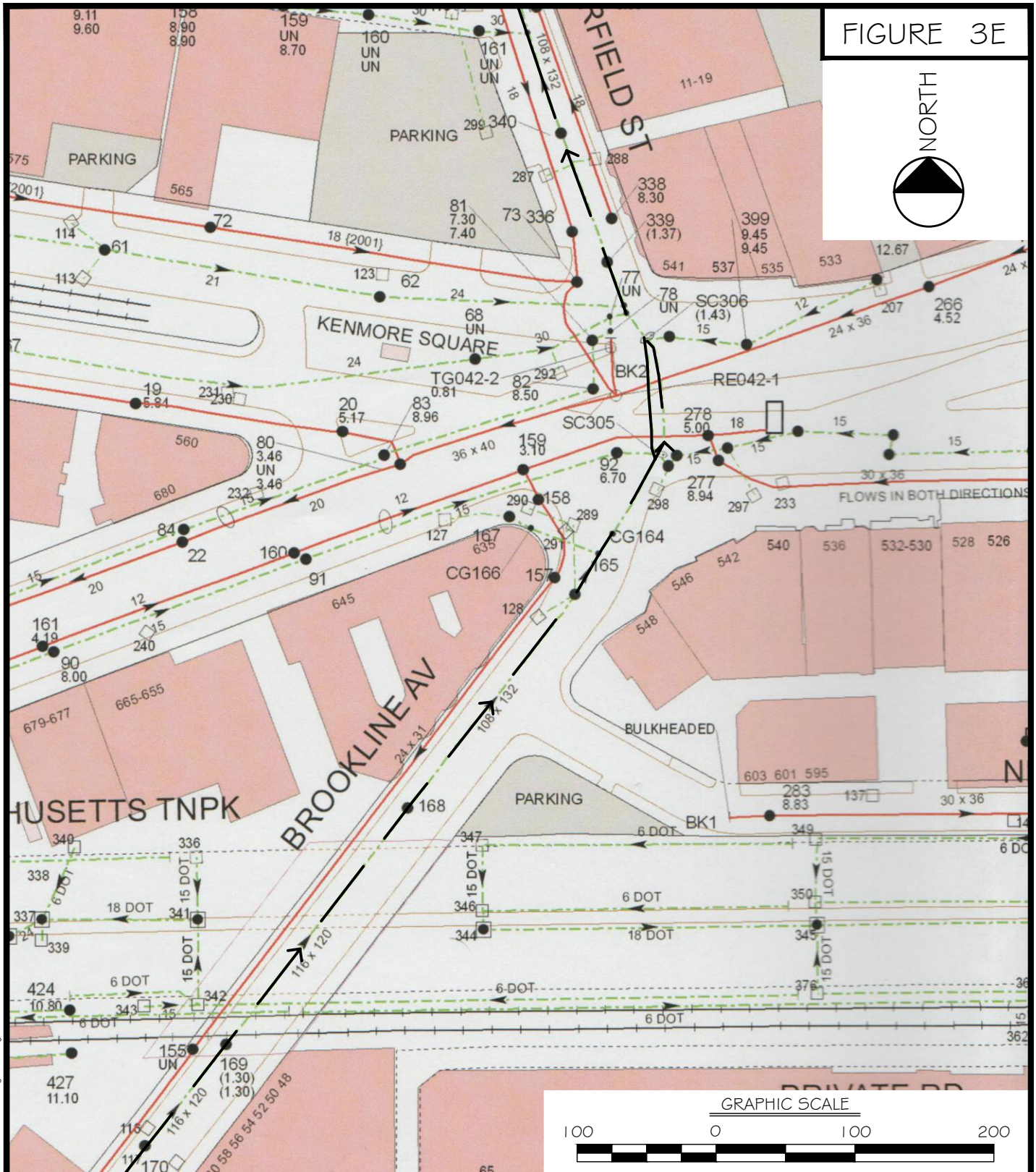
DISCHARGE LOCATION PLAN

FOR
 EMMANUEL COLLEGE
 BY
 McPHAIL ASSOCIATES, LLC

Date: SEPTEMBER 2016	Dwn: F.G.P.	Chkd: B.F.M.	Scale: 1" = 100'
Project: 5980			

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FIGURE 3E



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REFERENCE: THIS PLAN WAS PREPARED FROM A 100-SCALE DRAWING ENTITLED "BOSTON WATER AND SEWER" PRINTED ON SEPTEMBER 26, 2016 BY BOSTON WATER AND SEWER COMMISSION.

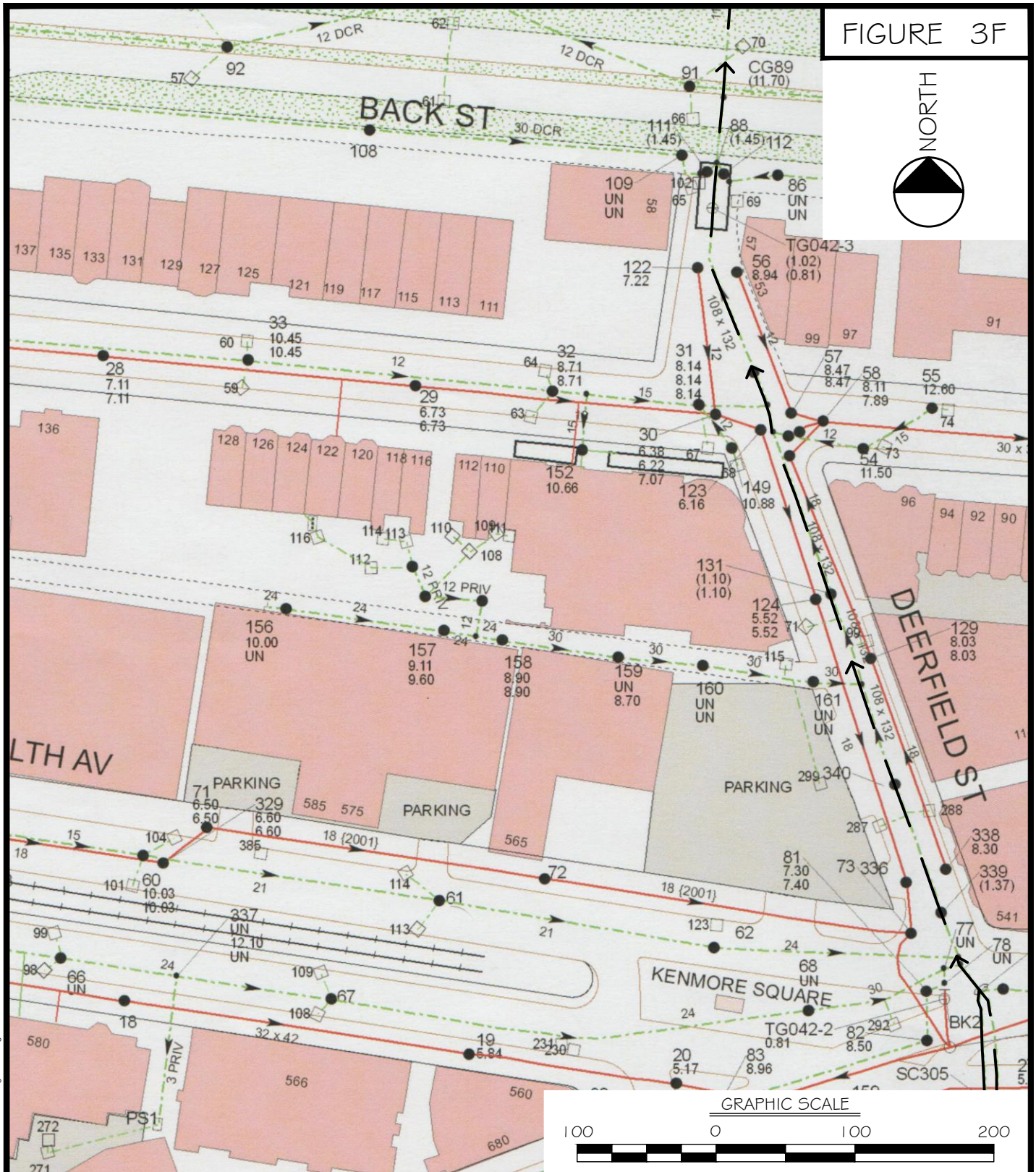


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BOSTON		MASSACHUSETTS	
DISCHARGE LOCATION PLAN			
FOR			
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BY			
McPHAIL ASSOCIATES, LLC			
Date: SEPTEMBER 2016	Dwn: F.G.P.	Chkd: B.F.M.	Scale: 1" = 100'
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FIGURE 3F



LEGEND

↗ — INDICATES
DIRECTION OF FLOW

REFERENCE: THIS PLAN WAS
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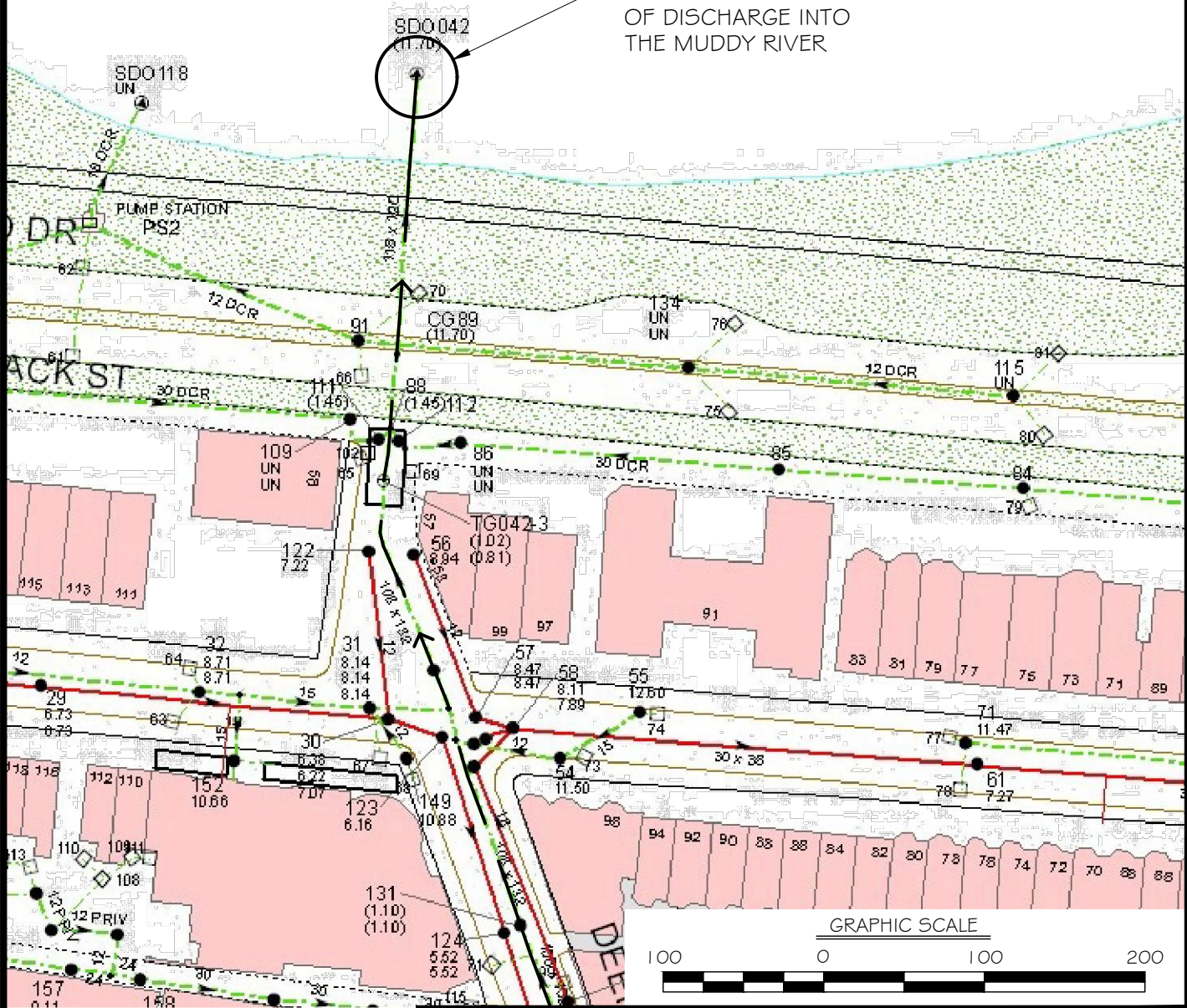
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DISCHARGE LOCATION PLAN			
FOR			
EMMANUEL COLLEGE			
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Date: SEPTEMBER 2016	Dwn: F.G.P.	Chkd: B.F.M.	Scale: 1" = 100'
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FIGURE 3G



APPROXIMATE LOCATION OF DISCHARGE INTO THE MUDDY RIVER



LEGEND

↗ — INDICATES DIRECTION OF FLOW

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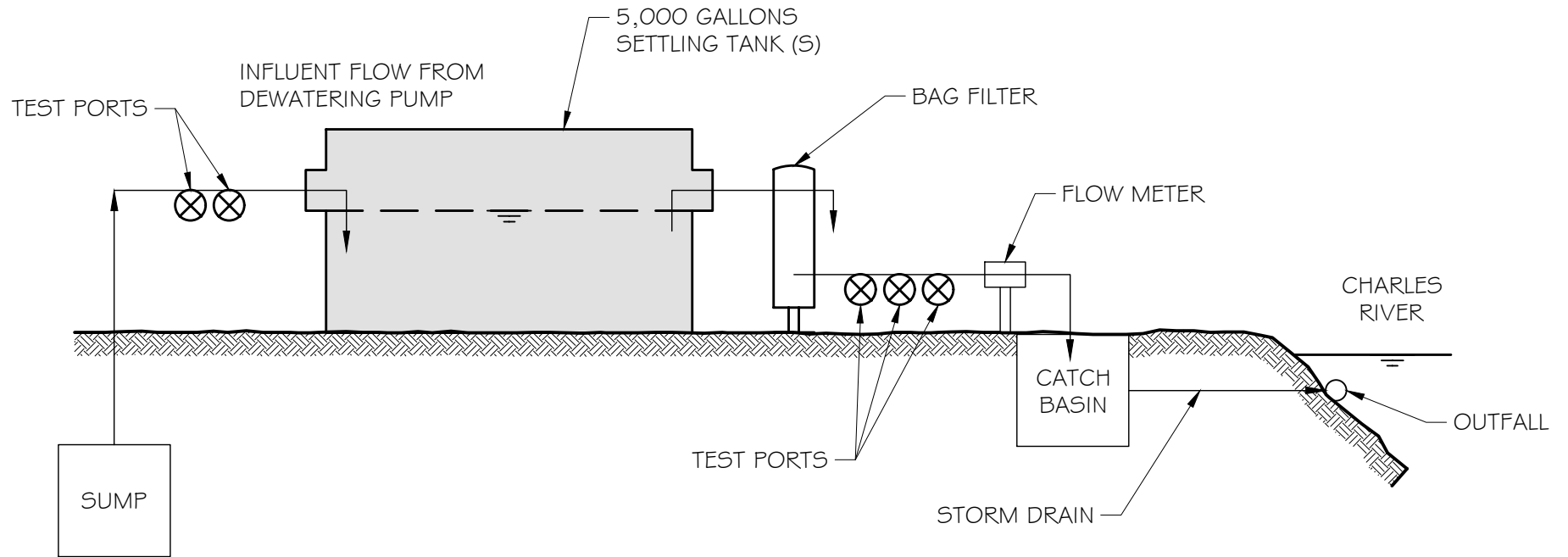
EMMANUEL COLLEGE - NEW RESIDENCE HALL
 BOSTON MASSACHUSETTS

DISCHARGE LOCATION PLAN

FOR
 EMMANUEL COLLEGE
 BY
 McPHAIL ASSOCIATES, LLC

Date : SEPTEMBER 2016	Drawn : F.G.P.	Checked : B.F.M.	Scale : 1" = 100'
Project :	5980		

FIGURE 4



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EMMANUEL COLLEGE - NEW RESIDENCE HALL
 BOSTON MASSACHUSETTS

SCHEMATIC OF WATER FLOW

FOR
 EMMANUEL COLLEGE
 BY
 McPHAIL ASSOCIATES, LLC
 CONSULTING GEOTECHNICAL ENGINEERS

Date: SEPTEMBER 2016	Dwn: F.G.P.	Chkd: B.F.M.	Scale: N.T.S.
Project No: 5980			

Table - 1
Analytical Results - Groundwater

New Residence Hall, Emmanuel College, Boston Massachusetts
Project No. 5980

LOCATION	RCGW-2 Limits	DGP Limits	B-4 (OW) S-1	B-4 (OW) S-1	B-4 (OW) S-1
			7/21/2016	7/27/2016	8/18/2016
SAMPLING DATE			L1622774-01	L1623371-01	L1625934-01
LAB SAMPLE ID					
General Chemistry					
Total Suspended Solids (ug/l)		30,000	130000	-	10000
Chloride		Monitor Only	670000	-	-
Total Cyanide (ug/l)		5.2	ND(6.3)	-	-
Total Residual Chlorine (ug/l)		11	ND(10)	-	-
pH (H) (SU)		6.5-8.3	6.3	-	6.2
Total Phenolics (ug/l)			91	-	-
Hexavalent Chromium (ug/l)		11.4	ND(5)	-	-
Microextractables by GC					
1,2-Dibromoethane (ug/l)	2		ND(0.005)	-	-
SUM			ND	-	-
Polychlorinated Biphenyls by GC (ug/l)					
SUM		0.000064	ND	-	-
Semivolatile Organics by GC/MS (ug/l)					
SUM			ND	-	-
Semivolatile Organics by GC/MS-SIM (ug/l)					
SUM			ND	-	-
Total Metals (ug/l)					
Total Antimony	8	5.6	ND(1)	-	ND(25)
Total Arsenic	0.9	10	4.4	-	ND(2.5)
Total Cadmium	0.004	0.2	ND(0.1)	-	ND(2)
Total Chromium	0.3		11.1	-	ND(5)
Total Copper	100	5.2	27.8	-	ND(5)
Total Iron		1000	8510	-	3100
Total Lead	0.01	1.3	17.5	-	ND(5)
Total Mercury	0.02	0.9	ND(0.1)	-	ND(0.1)
Total Nickel	0.2	29	8.8	-	ND(12.5)
Total Selenium	0.1	5	ND(2.5)	-	ND(5)
Total Silver	0.007	1.2	ND(0.2)	-	ND(3.5)
Total Zinc	0.9	66.6	48.9	-	ND(25)
MCP Dissolved Metals (ug/l)					
Dissolved Antimony	8	5.6	-	-	ND(25)
Dissolved Arsenic	900		-	-	ND(2.5)
Dissolved Cadmium	4	0.2	-	-	ND(2)
Dissolved Chromium	300		-	-	ND(5)
Dissolved Copper	100	5.2	-	-	ND(5)
Dissolved Iron		1000	-	-	100
Dissolved Lead	10	1.3	-	-	ND(5)
Dissolved Mercury	20		-	-	ND(0.1)
Dissolved Nickel	0.2		-	-	ND(12.5)
Dissolved Selenium	100		-	-	ND(5)
Dissolved Silver	7	0.2	-	-	ND(3.5)
Dissolved Zinc	0.9		-	-	ND(25)
Volatile Organics by GC/MS (ug/l)					
Acetone	50000		5.2	-	-
SUM			5.2	-	-
Volatile Organics by GC/MS-SIM (ug/l)					
1,4-Dioxane	6000		ND(1.5)	-	-
SUM			-	-	-
Petroleum Hydrocarbon Quantitation (ug/l)					
TPH	5000		-	ND(100)	-

Tested compounds not show do not exceed laboratory detection limits
 ND - Not detected above the laboratory
 method detection limits (#)



**APPENDIX A:
LIMITATIONS**



LIMITATIONS

The purpose of this report is to present a summary of environmental conditions, including the results of testing of groundwater samples obtained from a groundwater monitoring well on the property located at Emmanuel College in Boston, Massachusetts in support of an application for approval of temporary construction dewatering discharge of groundwater into surface waters of the Commonwealth of Massachusetts under EPA's Massachusetts Dewatering General Permit MAG070000.

The observations were made under the conditions stated in this report. The conclusions presented above were based on these observations. If variations in the nature and extent of subsurface conditions between the spaced subsurface explorations become evident in the future, it will be necessary to re-evaluate the conclusions presented herein after performing on-site observations and noting the characteristics of any variations.

The conclusions submitted in this report are based in part upon analytical data obtained from analysis of groundwater samples, and are contingent upon their validity. The data have been reviewed, and interpretations have been made in the text. It should also be noted that fluctuations in the types and levels of contaminants and variations in their flow paths may occur due to changes in seasonal water table, past practices used in disposal and other factors.

Laboratory analyses have been performed for specific constituents during the course of this assessment, as described in the text. However, it should be noted that additional constituents not searched for during the current study may be present in soil and/or groundwater at the site.

This report and application have been prepared on behalf of and for the exclusive use of Emmanuel College. This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, other than the submission to relevant governmental agencies, nor used in whole or in part by any other party without prior written consent of McPhail Associates, LLC.



APPENDIX B:

**NOTICE OF INTENT - NPDES DEWATERING GENERAL PERMIT
BOSTON WATER & SEWER DEWATERING DISCHARGE PERMIT
APPLICATION**

II. Suggested Notice of Intent (NOI) Format

1. General facility information. Please provide the following information about the facility.

<p>a) Name of facility: New Residence Hall</p>	<p>Mailing Address for the Facility: 400 The Fenway</p>	
<p>b) Location Address of the Facility (if different from mailing address):</p>	<p>Facility Location longitude: <u>-71.1038</u> latitude: <u>42.3415</u></p>	<p>Type of Business: Facility SIC codes:</p>
	<p>c) Name of facility owner: <u>Emmanuel College</u> Owner's email: <u>donovan@emmanuel.edu</u> Owner's Tel #: <u>617-732-1681</u> Owner's Fax #: _____ Address of owner (if different from facility address) Owner is (check one): 1. Federal _____ 2. State _____ 3. Private <input checked="" type="checkbox"/> 4. Other _____ (Describe) _____</p>	
<p>Legal name of Operator, if not owner: <u>SAME</u> Operator Contact Name: _____ Operator Tel Number: _____ Fax Number: _____ Operator's email: _____ Operator Address (if different from owner)</p>		
<p>d) Attach a topographic map indicating the location of the facility and the outfall(s) to the receiving water. Map attached? <input checked="" type="checkbox"/></p>		
<p>e) Check Yes or No for the following: 1. Has a prior NPDES permit been granted for the discharge? Yes _____ No <input checked="" type="checkbox"/> If Yes, Permit Number: _____ 2. Is the discharge a "new discharger" as defined by 40 CFR Section 122.2? Yes _____ No <input checked="" type="checkbox"/> 3. Is the facility covered by an individual NPDES permit? Yes _____ No <input checked="" type="checkbox"/> If Yes, Permit Number _____ 4. Is there a pending application on file with EPA for this discharge? Yes _____ No <input checked="" type="checkbox"/> If Yes, date of submittal: _____</p>		

2. Discharge information. Please provide information about the discharge, (attaching additional sheets as needed)

a) Name of receiving water into which discharge will occur: Charles River

State Water Quality Classification: Class B _____ Freshwater: _____ Marine Water: _____

b) Describe the discharge activities for which the owner/applicant is seeking coverage:

- ✓ 1. Construction dewatering of groundwater intrusion and/or storm water accumulation.
- 2. Short-term or long-term dewatering of foundation sumps.
- 3. Other.

c) Number of outfalls 1

For each outfall:

d) Estimate the maximum daily and average monthly flow of the discharge (in gallons per day – GPD). Max Daily Flow 72,000 GPD
Average Monthly Flow 54,000 GPD

e.) What is the maximum and minimum monthly pH of the discharge (in s.u.)? Max pH 8.3 Min pH 6.5

f.) Identify the source of the discharge (i.e. potable water, surface water, or groundwater). If groundwater, the facility shall submit effluent test results, as required in Section 4.4.5 of the General Permit. Groundwater (see attached report)

g.) What treatment does the wastewater receive prior to discharge? Sedimentation Settling Tank and Bag Filters in series (see attached report)

h.) Is the discharge continuous? Yes _____ No If no, is the discharge periodic (P) (occurs regularly, i.e., monthly or seasonally, but is not continuous all year) or intermittent (I) (occurs sometimes but not regularly) or both (B) _____

If (P), number of days or months per year of the discharge _____ and the specific months of discharge _____;

If (I), number of days/year there is a discharge 5-7 days/week

Is the discharge temporary? Yes No _____

If yes, approximate start date of dewatering October 17, 2016 approximate end date of dewatering April 10, 2017

i.) Latitude and longitude of each discharge within 100 feet (See http://www.epa.gov/tri/report/siting_tool): Outfall 1: long. -71.097 lat. 42.351; Outfall 2: long. _____ lat. _____; Outfall 3: long. _____ lat. _____.

j.) If the source of the discharge is potable water, please provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water and attach any calculation sheets used to support stream flow and dilution calculations _____ cfs

(See Appendix VIII for equations and additional information)

<p>MASSACHUSETTS FACILITIES: See Section 3.4 and Appendix 1 of the General Permit for more information on Areas of Critical Environmental Concern (ACEC):</p> <p>k.) Does the discharge occur in an ACEC? Yes _____ No <u>✓</u></p> <p>If yes, provide the name of the ACEC:</p>

3. Contaminant Information

<p>a) Are any pH neutralization and/or dechlorination chemicals used in the discharge? If so, include the chemical name and manufacturer; maximum and average daily quantity used as well as the maximum and average daily expected concentrations (mg/l) in the discharge, and the vendor's reported aquatic toxicity (NOAEL and/or LC₅₀ in percent for aquatic organism(s)). No</p> <p>b) Please report any known remediation activities or water-quality issues in the vicinity of the discharge.</p>

4. Determination of Endangered Species Act Eligibility: Provide documentation of ESA eligibility as required at Part 3.4 and Appendix IV. In addition, respond to the following questions.

<p>a) Which of the three eligibility criteria listed in Appendix IV, Criterion (A, B, or C) have you met? <u>A</u> _____ See letter report</p> <p>b) Please attach documentation with your NOI supporting your response. Please see Appendix IV for acceptable documentation</p>
--

5. Documentation of National Historic Preservation Act requirements: Please respond to the following questions:

<p>a) See Screening Process in Appendix III and respond to questions regarding your site and any historic properties listed or eligible for listing on the National Register of Historic Places. Question 1: Yes _____ No <u>✓</u> ; Question 2: No _____ Yes _____</p> <p>b) Have any State or Tribal historic preservation officers been consulted in this determination? Yes _____ or No <u>✓</u> If yes, attach the results of the consultation(s).</p> <p>c) Which of the three National Historic Preservation Act eligibility criterion listed in Appendix III, Criterion (A, B, or C) have you met? <u>A</u> _____</p> <p>d) Is the project located on property of religious or cultural significance to an Indian Tribe? Yes _____ or No <u>✓</u> If yes, provide that name of the Indian Tribe associated with the property. _____</p>

6. Supplemental Information: Please provide any supplemental information. Attach any analytical data used to support the application. Attach any certification(s) required by the general permit

7. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22 (see below) including the following certification:

I certify under penalty of law that (1) no biocides or other chemical additives except for those used for pH adjustment and/or dechlorination are used in the dewatering system; (2) the discharge consists solely of dewatering and authorized pH adjustment and/or dechlorination chemicals; (3) the discharge does not come in contact with any raw materials, intermediate product, water product or finished product; (4) if the discharge of dewatering subsequently mixes with other permitted wastewater (i.e. stormwater) prior to discharging to the receiving water, any monitoring provided under this permit will be only for dewatering discharge; (5) where applicable, the facility has complied with the requirements of this permit specific to the Endangered Species Act and National Historic Preservation Act; and (6) this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate 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, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Facility Name: New Residence Hall - Emmanuel College

Operator signature: *Sr. Anne M. Donovan*

Print Full Name and Title: *Sr. Anne M. Donovan, VP of Finance/Treasurer*

Date: *9/30/16*

Federal regulations require this application to be signed as follows:

1. For a corporation, by a principal executive officer of at least the level of vice president;
2. For partnership or sole proprietorship, by a general partner or the proprietor, respectively, or,
3. For a municipality, State, Federal or other public facility, by either a principal executive officer or ranking elected official.



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

DEWATERING DISCHARGE PERMIT APPLICATION

OWNER / AUTHORIZED APPLICANT PROVIDE INFORMATION HERE:

Company Name: Emmanuel College Address: 400 The Fenway

Phone Number: 617-732-1681 Fax number: _____

Contact person name: Sister Anne Donovan Title: VP of Finance and Treasury

Cell number: _____ Email address: donovan@emmanuel.edu

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

Owner's Information (if different from above):

Owner of property being dewatered: SAME

Owner's mailing address: _____ Phone number: _____

Location of Discharge & Proposed Treatment System(s):

Street number and name: 304 Brookline Avenue Neighborhood Boston

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

Describe Proposed Pre-Treatment System(s): Sediment Settling Tank and Bag Filters

BWSC Outfall No. SDO 042 Receiving Waters Charles River

Temporary Discharges (Provide Anticipated Dates of Discharge): From _____ To _____

<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 type="checkbox"/> Trench Excavation
<input 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
Phone: 617-989-7204 Fax: 617-989-7716

Signature of Authorized Representative for Property Owner: Sister Anne M. Donovan

Date: 9/30/16



APPENDIX C:

MASSACHUSETTS PHASE I SITE ASSESSMENT MAP

MASSACHUSETTS AREAS OF ENVIRONMENTAL CONCERN

**IPAC TRUST RESOURCE REPORT AND
CORRESPONDENCE WITH U.S. FISH AND WILDLIFE SERVICE**

MassDEP - Bureau of Waste Site Cleanup

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

Site Information:

BOSTON, MA

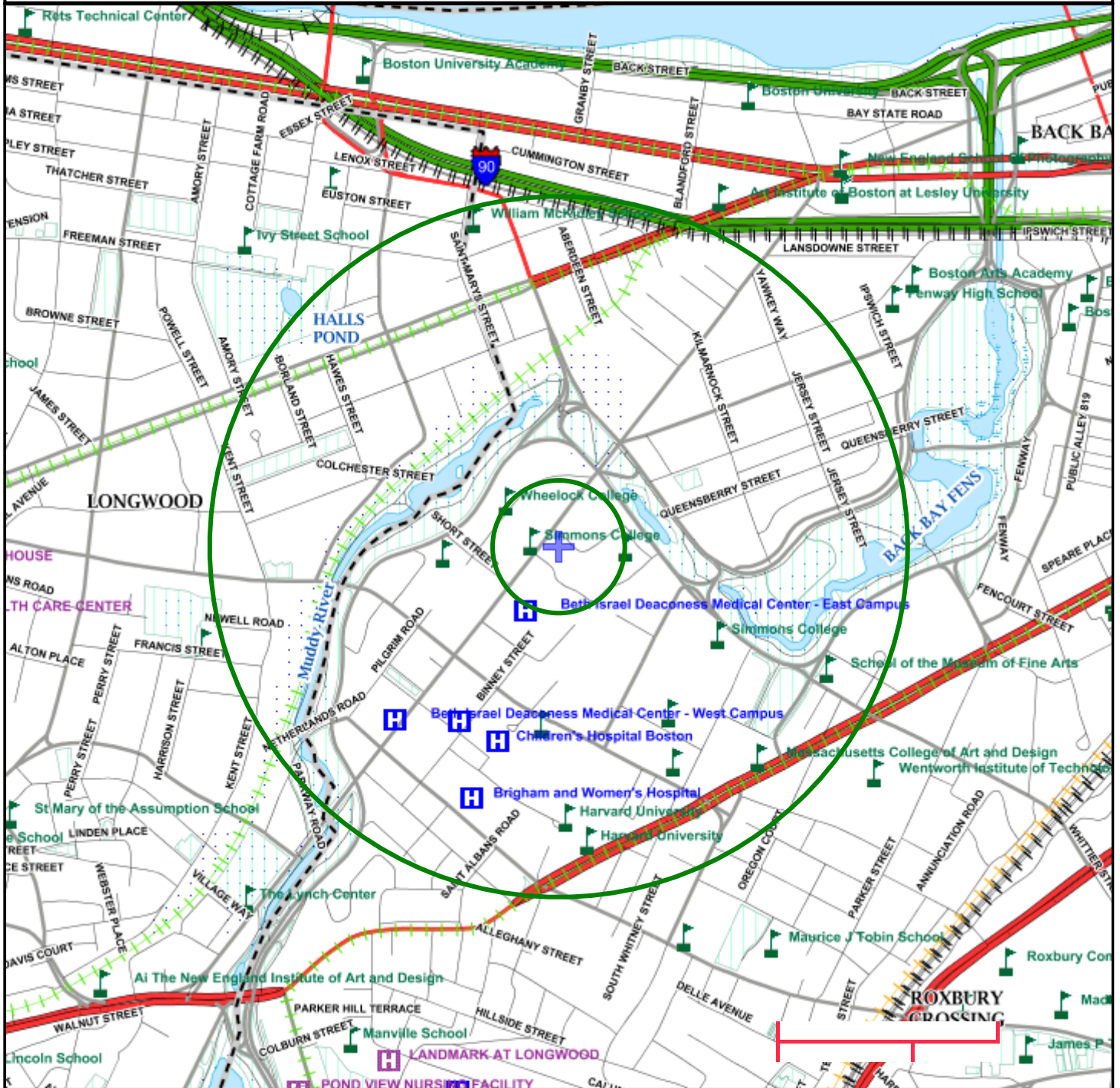
NAD83 UTM Meters:
4689800mN , 326652mE (Zone: 19)
September 27, 2016

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



MassDEP

Commonwealth of Massachusetts
Department of Environmental Protection



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

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

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

Aquifers: Medium Yield, High Yield, EPA Sole Source.....

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

PWS Protection Areas: Zone II, IWPA, Zone A

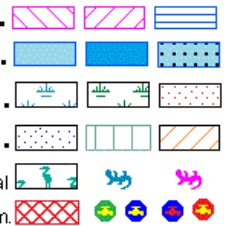
Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

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

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



MASSACHUSETTS AREAS OF CRITICAL ENVIRONMENTAL CONCERN

June 2009

Total Approximate Acreage: 268,000 acres

Approximate acreage and designation date follow ACEC names below.

Bourne Back River

(1,850 acres, 1989) Bourne

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

Cedar Swamp

(1,650 acres, 1975) Hopkinton and Westborough

Central Nashua River Valley

(12,900 acres, 1996) Bolton, Harvard, Lancaster, and Leominster

Cranberry Brook Watershed

(1,050 acres, 1983) Braintree and Holbrook

Ellisville Harbor

(600 acres, 1980) Plymouth

Fowl Meadow and Ponkapoag Bog

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

Golden Hills

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

Great Marsh (originally designated as Parker River/Essex Bay)

(25,500 acres, 1979) Essex, Gloucester, Ipswich, Newbury, and Rowley

Herring River Watershed

(4,450 acres, 1991) Bourne and Plymouth

Hinsdale Flats Watershed

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

Hockomock Swamp

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

Inner Cape Cod Bay

(2,600 acres, 1985) Brewster, Eastham, and Orleans

Kampoosa Bog Drainage Basin

(1,350 acres, 1995) Lee and Stockbridge

Karner Brook Watershed

(7,000 acres, 1992) Egremont and Mount Washington

Miscoe, Warren, and Whitehall Watersheds

(8,700 acres, 2000) Grafton, Hopkinton, and Upton

Neponset River Estuary

(1,300 acres, 1995) Boston, Milton, and Quincy

Petapawag

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

Pleasant Bay

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

Pocasset River

(160 acres, 1980) Bourne

Rumney Marshes

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

Sandy Neck Barrier Beach System

(9,130 acres, 1978) Barnstable and Sandwich

Schenob Brook Drainage Basin

(13,750 acres, 1990) Mount Washington and Sheffield

Squannassit

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

Three Mile River Watershed

(14,280 acres, 2008) Dighton, Norton, Taunton

Upper Housatonic River

(12,280 acres, 2009) Lee, Lenox, Pittsfield, Washington

Waquoit Bay

(2,580 acres, 1979) Falmouth and Mashpee

Weir River

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

Wellfleet Harbor

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

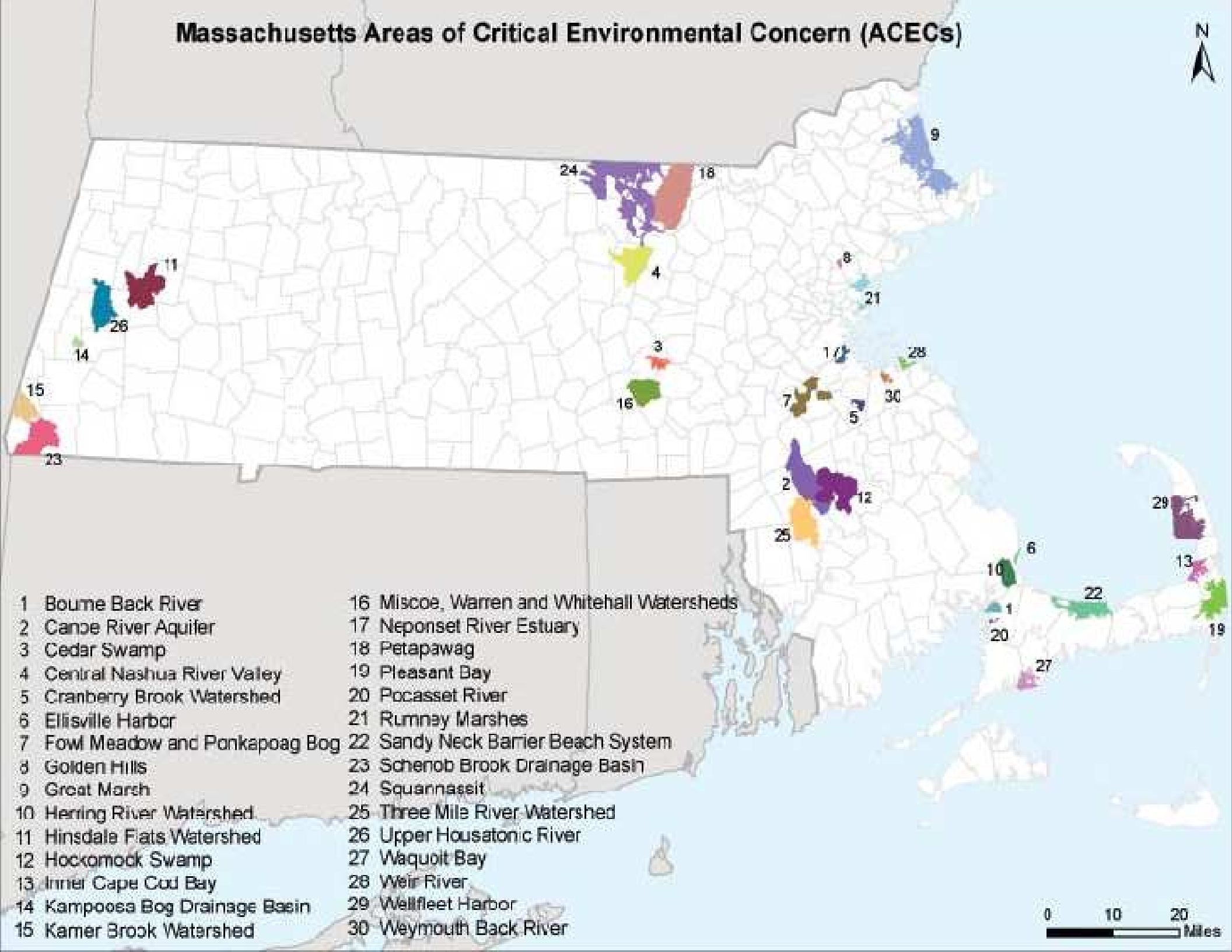
Weymouth Back River

(800 acres, 1982) Hingham and Weymouth

Towns with ACECs within their Boundaries
June 2009

TOWN	ACEC	TOWN	ACEC
Ashby	Squannassit	Mt. Washington	Karner Brook Watershed
Ayer	Petapawag		Schenob Brook
	Squannassit	Newbury	Great Marsh
Barnstable	Sandy Neck Barrier Beach System	Norton	Hockomock Swamp
Bolton	Central Nashua River Valley		Canoe River Aquifer
Boston	Rumney Marshes		Three Mile River Watershed
	Fowl Meadow and Ponkapoag Bog	Norwood	Fowl Meadow and Ponkapoag Bog
	Neponset River Estuary	Orleans	Inner Cape Cod Bay
Bourne	Pocasset River		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		

Massachusetts Areas of Critical Environmental Concern (ACECs)



- 1 Bourne Back River
- 2 Canoe River Aquifer
- 3 Cedar Swamp
- 4 Central Nashua River Valley
- 5 Cranberry Brook Watershed
- 6 Ellisville Harbor
- 7 Fowl Meadow and Ponkapoag Bog
- 8 Golden Hills
- 9 Great Marsh
- 10 Herring River Watershed
- 11 Hinsdale Flats Watershed
- 12 Hockomock Swamp
- 13 Inner Cape Cod Bay
- 14 Kampooosa Bog Drainage Basin
- 15 Kame Brook Watershed

- 16 Miscoe, Warren and Whitehall Watersheds
- 17 Neponset River Estuary
- 18 Petapawag
- 19 Pleasant Bay
- 20 Pocasset River
- 21 Rummey Marshes
- 22 Sandy Neck Barrier Beach System
- 23 Schenob Brook Drainage Basin
- 24 Squannassit
- 25 Three Mile River Watershed
- 26 Upper Housatonic River
- 27 Waquoit Bay
- 28 Weir River
- 29 Wellfleet Harbor
- 30 Weymouth Back River



**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	Boume (north of the Cape Cod Canal)
Berkshire	Bog Turtle	Threatened	Wetlands	Egremont and Sheffield
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	Raynham and Taunton
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
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	Glocester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
Franklin	Northeastern bulrush	Endangered	Wetlands	Montague
	Dwarf wedgemussel	Endangered	Mill River	Whately
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.	Hadley, Hatfield, Amherst and Northampton
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
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
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, and Wareham
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Plymouth, Marion, Wareham, and Mattapoisett.
Suffolk	Piping Plover	Threatened	Coastal Beaches	Winthrop
Worcester	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Leominster

- 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.

7/31/2008



APPENDIX E

AREAS OF CRITICAL CONCERN, ENDANGERED AND THREATENED SPECIES

There are no surface water bodies or wetlands located within the subject site boundaries. The nearest surface water body is the Charles River, located about 800 feet to the south of the subject site. Groundwater at the subject site is not considered a current or a potential source of drinking water, and the subject site is not located within minimum distances from drinking water sources as prescribed by the MCP. There are no known public or private drinking water supply wells located within the boundaries of the subject site nor are such wells known to be located within 0.5 miles of the subject site. The site is not located within Zone II, Interim Wellhead Protection Area or within Zone A of a Class A surface water reservoir. There are no Areas of Critical Environmental Concern (ACEC) located within the site boundaries..

A review of the federal listing of threatened and endangered species published by the U.S. Fish and Wildlife Service identified no threatened and/or endangered species or critical habitats at or in the vicinity of the discharge location and/or discharge outfall. In addition, a review of the Massachusetts Division of Fisheries and Wildlife on-line database identified no threatened or endangered species at the point of discharge and/or the discharge outfall.

Based upon the above, the site is considered criterion A pursuant to Appendix III of the DGP.



APPENDIX F

NATIONAL REGISTER OF HISTORIC PLACES

The National Register of Historic Places on-line database was reviewed for listings located within the immediate vicinity of the subject site in Boston, Massachusetts. A review of the most recent National Register of Historical Places for Middlesex County, Massachusetts did not identify records or addresses of Historic Places that exist in the immediate vicinity of the outfall location. The nearest listing of a National Historic Place to the subject site is the Harvard Square Historic District located approximately 1000 feet to the northeast of the subject site. We do not anticipate that dewatering activities at the subject site will affect the Harvard Square Historic District.

Based upon the above, the site is considered Criterion 1 pursuant to Appendix III of the DGP.

Emmanuel College 5980

IPaC Trust Resources Report

Generated September 26, 2016 09:40 AM MDT, IPaC v3.0.9

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.

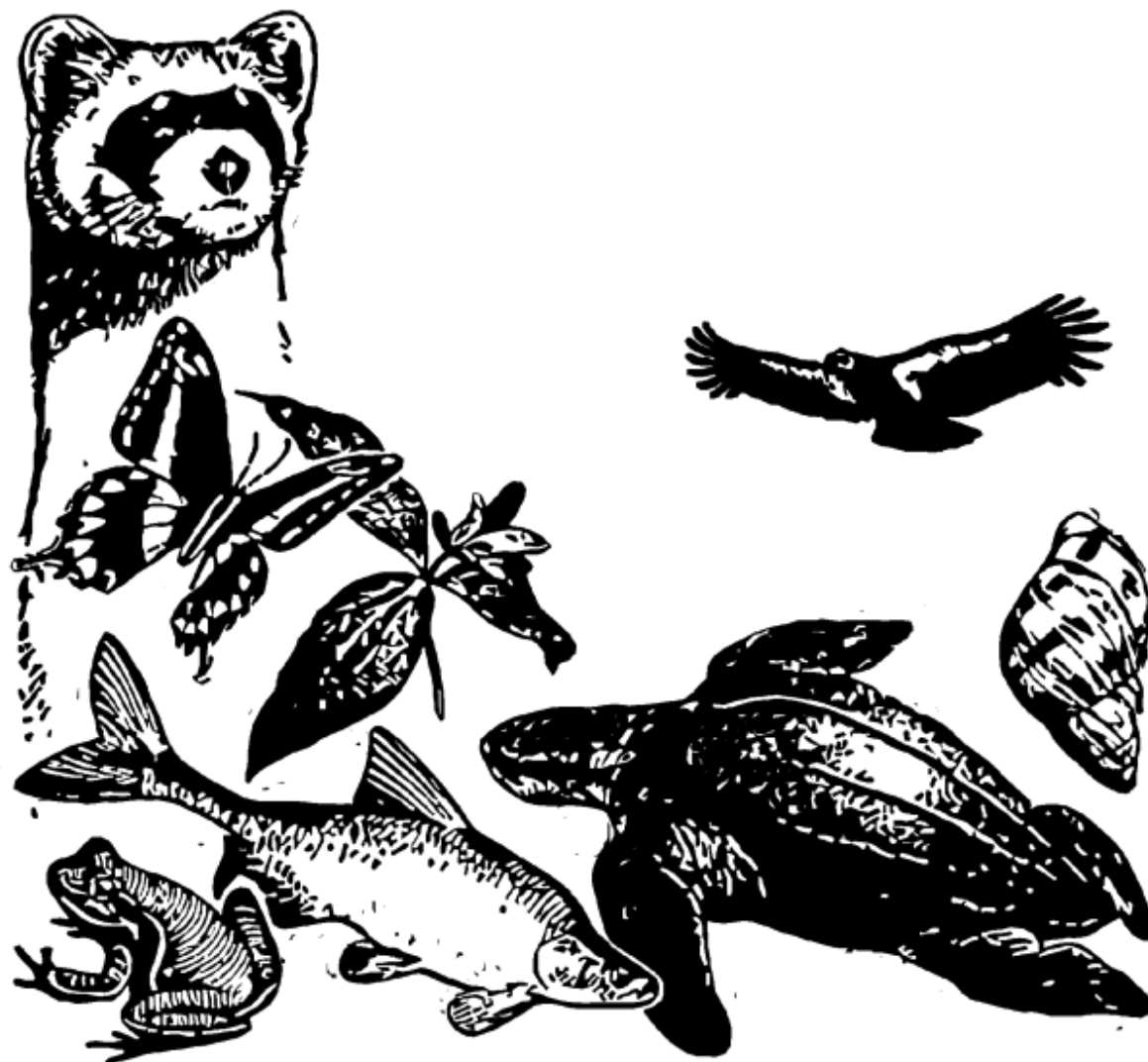


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IPaC Trust Resources Report	1
Project Description	1
Endangered Species	2
Migratory Birds	3
Refuges & Hatcheries	5
Wetlands	6

U.S. Fish & Wildlife Service

IPaC Trust Resources Report



NAME

Emmanuel College 5980

LOCATION

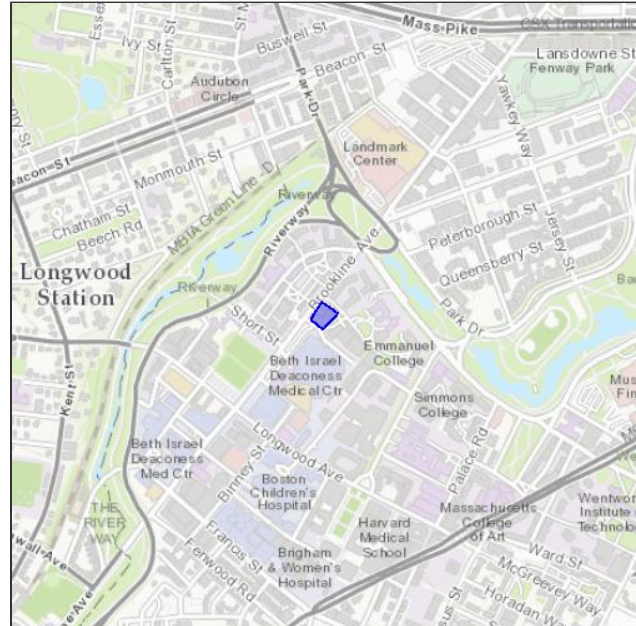
Suffolk County, Massachusetts

DESCRIPTION

New Residence Hall

IPAC LINK

<https://ecos.fws.gov/ipac/project/7QBJA-RJ5JR-FVBBP-L6RTX-OUKGIQ>



U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the [Endangered Species Program](#) of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

[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 either from the Regulatory Documents section in IPaC or from the local field office directly.

There are no endangered species in this location

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.^[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data
<http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The following species of migratory birds could potentially be affected by activities in this location:

American Oystercatcher <i>Haematopus palliatus</i>	Bird of conservation concern
On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0G8	
American Bittern <i>Botaurus lentiginosus</i>	Bird of conservation concern
On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0F3	
Bald Eagle <i>Haliaeetus leucocephalus</i>	Bird of conservation concern
On Land Season: Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B008	
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i>	Bird of conservation concern
On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0H1	

Blue-winged Warbler <i>Vermivora pinus</i> On Land Season: Breeding	Bird of conservation concern
Canada Warbler <i>Wilsonia canadensis</i> On Land Season: Breeding	Bird of conservation concern
Hudsonian Godwit <i>Limosa haemastica</i> At Sea Season: Migrating	Bird of conservation concern
Least Bittern <i>Ixobrychus exilis</i> On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B092	
Olive-sided Flycatcher <i>Contopus cooperi</i> On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0AN	Bird of conservation concern
Peregrine Falcon <i>Falco peregrinus</i> On Land Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0FU	Bird of conservation concern
Pied-billed Grebe <i>Podilymbus podiceps</i> On Land Season: Breeding	Bird of conservation concern
Prairie Warbler <i>Dendroica discolor</i> On Land Season: Breeding	Bird of conservation concern
Purple Sandpiper <i>Calidris maritima</i> On Land Season: Wintering	Bird of conservation concern
Saltmarsh Sparrow <i>Ammodramus caudacutus</i> On Land Season: Breeding	Bird of conservation concern
Seaside Sparrow <i>Ammodramus maritimus</i> On Land Season: Breeding	Bird of conservation concern
Short-eared Owl <i>Asio flammeus</i> On Land Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0HD	Bird of conservation concern
Snowy Egret <i>Egretta thula</i> On Land Season: Breeding	Bird of conservation concern
Upland Sandpiper <i>Bartramia longicauda</i> On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0HC	Bird of conservation concern
Willow Flycatcher <i>Empidonax traillii</i> On Land Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0F6	Bird of conservation concern
Wood Thrush <i>Hylocichla mustelina</i> On Land Season: Breeding	Bird of conservation concern
Worm Eating Warbler <i>Helmitheros vermivorum</i> On Land Season: Breeding	Bird of conservation concern

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

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

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

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.

There are no wetlands in this location



APPENDIX D:
LABORATORY REPORTS



ANALYTICAL REPORT

Lab Number:	L1623371
Client:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140
ATTN:	John Erikson
Phone:	(617) 868-1420
Project Name:	EMMANUEL COLLEGE
Project Number:	5980.9.01
Report Date:	08/01/16

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), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

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



Project Name: EMMANUEL COLLEGE
Project Number: 5980.9.01

Lab Number: L1623371
Report Date: 08/01/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1623371-01	B-4 (OW) S-1	WATER	BOSTON, MA	07/27/16 12:00	07/27/16

Project Name: EMMANUEL COLLEGE

Lab Number: L1623371

Project Number: 5980.9.01

Report Date: 08/01/16

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES
A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: EMMANUEL COLLEGE
Project Number: 5980.9.01

Lab Number: L1623371
Report Date: 08/01/16

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: EMMANUEL COLLEGE
Project Number: 5980.9.01

Lab Number: L1623371
Report Date: 08/01/16

Case Narrative (continued)

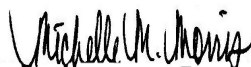
MCP Related Narratives

Report Submission

All MCP required questions were answered with affirmative responses; therefore, there are no relevant protocol-specific QC and/or performance standard non-conformances to report.

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: 08/01/16

ORGANICS

PETROLEUM HYDROCARBONS

Project Name: EMMANUEL COLLEGE
Project Number: 5980.9.01

Lab Number: L1623371
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1623371-01
 Client ID: B-4 (OW) S-1
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8015C(M)
 Analytical Date: 07/31/16 21:23
 Analyst: DG

Date Collected: 07/27/16 12:00
 Date Received: 07/27/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 07/30/16 15:22

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

Petroleum Hydrocarbon Quantitation - Westborough Lab						
--	--	--	--	--	--	--

TPH	ND		ug/l	200	--	1
-----	----	--	------	-----	----	---

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	75		40-140

Project Name: EMMANUEL COLLEGE

Lab Number: L1623371

Project Number: 5980.9.01

Report Date: 08/01/16

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8015C(M)
 Analytical Date: 07/31/16 20:18
 Analyst: DG

Extraction Method: EPA 3510C
 Extraction Date: 07/30/16 15:22

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbon Quantitation - Westborough Lab for sample(s): 01 Batch: WG918576-1					
TPH	ND		ug/l	200	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	81		40-140

Lab Control Sample Analysis Batch Quality Control

Project Name: EMMANUEL COLLEGE
Project Number: 5980.9.01

Lab Number: L1623371
Report Date: 08/01/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 01 Batch: WG918576-2								
TPH	89		-		40-140	-		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	88				40-140

Lab Duplicate Analysis Batch Quality Control

Project Name: EMMANUEL COLLEGE

Project Number: 5980.9.01

Lab Number: L1623371

Report Date: 08/01/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 01 QC Batch ID: WG918576-3 QC Sample: L1623371-01 Client ID: B-4 (OW) S-1						
TPH	ND	ND	ug/l	NC		40

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	75		78		40-140

Project Name: EMMANUEL COLLEGE**Project Number:** 5980.9.01**Lab Number:** L1623371**Report Date:** 08/01/16**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

Cooler Information Custody Seal**Cooler**

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1623371-01A	Amber 1000ml HCl preserved	A	<2	3.0	Y	Absent	TPH-DRO-D(7)
L1623371-01B	Amber 1000ml HCl preserved	A	<2	3.0	Y	Absent	TPH-DRO-D(7)

*Values in parentheses indicate holding time in days

Project Name: EMMANUEL COLLEGE
Project Number: 5980.9.01

Lab Number: L1623371
Report Date: 08/01/16

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

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

Report Format: Data Usability Report



Project Name: EMMANUEL COLLEGE
Project Number: 5980.9.01

Lab Number: L1623371
Report Date: 08/01/16

Data Qualifiers

- reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
 - D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
 - E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
 - G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
 - H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
 - I** - The lower value for the two columns has been reported due to obvious interference.
 - M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
 - NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
 - P** - The RPD between the results for the two columns exceeds the method-specified criteria.
 - Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
 - R** - Analytical results are from sample re-analysis.
 - RE** - Analytical results are from sample re-extraction.
 - S** - Analytical results are from modified screening analysis.
 - J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
 - ND** - Not detected at the reporting limit (RL) for the sample.

Project Name: EMMANUEL COLLEGE
Project Number: 5980.9.01

Lab Number: L1623371
Report Date: 08/01/16

REFERENCES

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

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 524.2: 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, m/p-xylene, o-xylene
EPA 624: 2-Butanone (MEK), 1,4-Dioxane, tert-Amylmethyl Ether, tert-Butyl Alcohol, m/p-xylene, o-xylene
EPA 625: Aniline, Benzoic Acid, Benzyl Alcohol, 4-Chloroaniline, 3-Methylphenol, 4-Methylphenol.
EPA 1010A: NPW: Ignitability
EPA 6010C: NPW: Strontium; SCM: Strontium
EPA 8151A: NPW: 2,4-DB, Dicamba, Dichloroprop, MCPA, MCPP; SCM: 2,4-DB, Dichloroprop, MCPA, MCPP
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene, Isopropanol; SCM: Iodomethane (methyl iodide), Methyl methacrylate (soil); 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene, 1,4-Diphenylhydrazine.
EPA 9010: NPW: Amenable Cyanide Distillation, Total Cyanide Distillation
EPA 9038: NPW: Sulfate
EPA 9050A: NPW: Specific Conductance
EPA 9056: NPW: Chloride, Nitrate, Sulfate
EPA 9065: NPW: Phenols
EPA 9251: NPW: Chloride
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
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, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: **8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:** Lead; **8270D:** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water

EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7:** Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water

EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N, **SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, 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, SM9222D-MF.**

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



CHAIN OF CUSTODY

PAGE 1 OF 1

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Date Rec'd in Lab: 7/27/16

ALPHA Job #: L1623371

Client Information
Client: McPHAIL ASSOCIATES, LLC
Address: 2209 MASS AVE
CAMBRIDGE, MA
Phone: 617 868 1420
Email: jerikson@mcphailgo.com

Project Information
Project Name: EMMANUEL COLLEGE
Project Location: BOSTON, MA
Project #: 5980.9.01
Project Manager: J. ERIKSON
ALPHA Quote #: -

Report Information - Data Deliverables
 ADEx EMAIL
Billing Information
 Same as Client info PO #:

Turn-Around Time
 Standard RUSH (only confirmed if pre-approved!)
Date Due: STANDARD TAT

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

Additional Project Information:

ANALYSIS	VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 524.2
	SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH
	METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> MCP 15
	METALS: <input type="checkbox"/> RCRA5 <input type="checkbox"/> RCRA8 <input type="checkbox"/> PP13
	EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only
	VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only
	PCB <input type="checkbox"/> PEST
	TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint
	<u>TPH</u>
	SAMPLE INFO
	Filtration
	<input type="checkbox"/> Field
	<input type="checkbox"/> Lab to do
	Preservation
	<input type="checkbox"/> Lab to do
	Sample Comments
	TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials	ANALYSIS	TPH	SAMPLE INFO	TOTAL # BOTTLES
		Date	Time						
<u>2337/10</u>	<u>B-4(OW) S-1</u>	<u>7/27</u>	<u>12:00</u>	<u>W</u>	<u>NDH</u>		<input checked="" type="checkbox"/>		<u>2</u>

- Container Type**
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle
- Preservative**
A= None
B= HCl
C= HNO₃
D= H₂SO₄
E= NaOH
F= MeOH
G= NaHSO₄
H= Na₂S₂O₃
I= Ascorbic Acid
J= NH₄Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
<u>JAE</u> <u>Rob Mauro AAL</u>	<u>7/27 3:00</u> <u>7/27/16 1820</u>	<u>Rob Mauro AAL</u> <u>[Signature]</u>	<u>7/27/16 16:45</u> <u>7/27/16 1820</u>

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
FORM NO. 01-01 (rev. 12-Mar-2012)



ANALYTICAL REPORT

Lab Number:	L1625934
Client:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140
ATTN:	Ambrose Donovan
Phone:	(617) 868-1420
Project Name:	EMMANUEL
Project Number:	5980.9.01
Report Date:	08/24/16

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), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

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



Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1625934-01	OW S-1	WATER	BOSTON, MA	08/18/16 10:00	08/18/16

Project Name: EMMANUEL

Lab Number: L1625934

Project Number: 5980.9.01

Report Date: 08/24/16

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES
A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

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: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

Case Narrative (continued)

MCP Related Narratives

Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per the Chain of Custody.

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

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 08/24/16

METALS

Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

SAMPLE RESULTS

Lab ID: L1625934-01
Client ID: OW S-1
Sample Location: BOSTON, MA
Matrix: Water

Date Collected: 08/18/16 10:00
Date Received: 08/18/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.050	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Arsenic, Total	ND		mg/l	0.005	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Cadmium, Total	ND		mg/l	0.004	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Chromium, Total	ND		mg/l	0.01	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Copper, Total	ND		mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Iron, Total	3.1		mg/l	0.05	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Lead, Total	ND		mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Mercury, Total	ND		mg/l	0.0002	--	1	08/19/16 09:16	08/22/16 17:45	EPA 7470A	97,7470A	EA
Nickel, Total	ND		mg/l	0.025	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Selenium, Total	ND		mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Silver, Total	ND		mg/l	0.007	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
Zinc, Total	ND		mg/l	0.050	--	1	08/19/16 08:45	08/19/16 13:17	EPA 3005A	97,6010C	PS
MCP Dissolved Metals - Mansfield Lab											
Antimony, Dissolved	ND		mg/l	0.050	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Arsenic, Dissolved	ND		mg/l	0.005	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Cadmium, Dissolved	ND		mg/l	0.004	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Chromium, Dissolved	ND		mg/l	0.01	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Copper, Dissolved	ND		mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Iron, Dissolved	0.10		mg/l	0.05	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Lead, Dissolved	ND		mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Mercury, Dissolved	ND		mg/l	0.0002	--	1	08/19/16 09:16	08/22/16 17:56	EPA 7470A	97,7470A	EA
Nickel, Dissolved	ND		mg/l	0.025	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Selenium, Dissolved	ND		mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Silver, Dissolved	ND		mg/l	0.007	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS
Zinc, Dissolved	ND		mg/l	0.050	--	1	08/19/16 08:45	08/19/16 13:12	EPA 3005A	97,6010C	PS



Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG924163-1									
Antimony, Dissolved	ND	mg/l	0.050	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Arsenic, Dissolved	ND	mg/l	0.005	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Cadmium, Dissolved	ND	mg/l	0.004	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Chromium, Dissolved	ND	mg/l	0.01	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Copper, Dissolved	ND	mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Iron, Dissolved	ND	mg/l	0.05	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Lead, Dissolved	ND	mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Nickel, Dissolved	ND	mg/l	0.025	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Selenium, Dissolved	ND	mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Silver, Dissolved	ND	mg/l	0.007	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Zinc, Dissolved	ND	mg/l	0.050	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01 Batch: WG924164-1									
Antimony, Total	ND	mg/l	0.050	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Arsenic, Total	ND	mg/l	0.005	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Cadmium, Total	ND	mg/l	0.004	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Chromium, Total	ND	mg/l	0.01	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Copper, Total	ND	mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Iron, Total	ND	mg/l	0.05	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Lead, Total	ND	mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Nickel, Total	ND	mg/l	0.025	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Selenium, Total	ND	mg/l	0.010	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Silver, Total	ND	mg/l	0.007	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS
Zinc, Total	ND	mg/l	0.050	--	1	08/19/16 08:45	08/19/16 13:00	97,6010C	PS

Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01 Batch: WG924169-1									
Mercury, Total	ND	mg/l	0.0002	--	1	08/19/16 09:16	08/22/16 17:39	97,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG924170-1									
Mercury, Dissolved	ND	mg/l	0.0002	--	1	08/19/16 09:16	08/22/16 17:50	97,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: EMMANUEL

Project Number: 5980.9.01

Lab Number: L1625934

Report Date: 08/24/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG924163-2 WG924163-3								
Antimony, Dissolved	98		100		80-120	2		20
Arsenic, Dissolved	109		113		80-120	4		20
Cadmium, Dissolved	111		110		80-120	1		20
Chromium, Dissolved	95		95		80-120	0		20
Copper, Dissolved	100		100		80-120	0		20
Iron, Dissolved	93		94		80-120	1		20
Lead, Dissolved	106		107		80-120	1		20
Nickel, Dissolved	100		100		80-120	0		20
Selenium, Dissolved	112		113		80-120	1		20
Silver, Dissolved	103		103		80-120	0		20
Zinc, Dissolved	101		101		80-120	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG924164-2 WG924164-3					
Antimony, Total	98	100	80-120	2	20
Arsenic, Total	109	113	80-120	4	20
Cadmium, Total	111	110	80-120	1	20
Chromium, Total	95	95	80-120	0	20
Copper, Total	100	100	80-120	0	20
Iron, Total	93	94	80-120	1	20
Lead, Total	106	107	80-120	1	20
Nickel, Total	100	100	80-120	0	20
Selenium, Total	112	113	80-120	1	20
Silver, Total	103	103	80-120	0	20
Zinc, Total	101	101	80-120	0	20
MCP Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG924169-2 WG924169-3					
Mercury, Total	88	83	80-120	6	20
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG924170-2 WG924170-3					
Mercury, Dissolved	88	86	80-120	2	20

INORGANICS & MISCELLANEOUS

Project Name: EMMANUEL

Lab Number: L1625934

Project Number: 5980.9.01

Report Date: 08/24/16

SAMPLE RESULTS

Lab ID: L1625934-01

Date Collected: 08/18/16 10:00

Client ID: OW S-1

Date Received: 08/18/16

Sample Location: BOSTON, MA

Field Prep: Not Specified

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	10.		mg/l	5.0	NA	1	-	08/23/16 16:50	121,2540D	SG
pH (H)	6.2		SU	-	NA	1	-	08/19/16 00:39	1,9040C	MC



Project Name: EMMANUEL

Lab Number: L1625934

Project Number: 5980.9.01

Report Date: 08/24/16

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: WG925209-1									
Solids, Total Suspended	ND	mg/l	5.0	NA	1	-	08/23/16 16:50	121,2540D	SG

Lab Control Sample Analysis

Batch Quality Control

Project Name: EMMANUEL

Project Number: 5980.9.01

Lab Number: L1625934

Report Date: 08/24/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG924075-1								
pH	100		-		99-101	-		5

Lab Duplicate Analysis
Batch Quality Control

Project Name: EMMANUEL

Project Number: 5980.9.01

Lab Number: L1625934

Report Date: 08/24/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG924075-2 QC Sample: L1625934-01 Client ID: OW S-1						
pH (H)	6.2	6.2	SU	0		5

Project Name: EMMANUEL

Lab Number: L1625934

Project Number: 5980.9.01

Report Date: 08/24/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1625934-01A	Plastic 250ml HNO3 preserved	A	<2	3.5	Y	Absent	MCP-CR-6010T-10(180),MCP-7470T-10(28),MCP-AS-6010T-10(180),MCP-CD-6010T-10(180),MCP-AG-6010T-10(180),MCP-CU-6010T-10(180),MCP-SB-6010T-10(180),MCP-ZN-6010T-10(180),MCP-ZN-6010T-10(180),MCP-SE-6010T-10(180),MCP-NI-6010T-10(180),MCP-PB-6010T-10(180)
L1625934-01B	Plastic 250ml unpreserved	A	7	3.5	Y	Absent	-
L1625934-01C	Plastic 500ml unpreserved	A	7	3.5	Y	Absent	PH-9040(1)
L1625934-01D	Plastic 950ml unpreserved	A	7	3.5	Y	Absent	TSS-2540(7)
L1625934-01X	Plastic 120ml HNO3 preserved Fil	A	<2	3.5	Y	Absent	MCP-CD-6010S-10(180),MCP-FE-6010S-10(180),MCP-7470S-10(28),MCP-AG-6010S-10(180),MCP-ZN-6010S-10(180),MCP-AS-6010S-10(180),MCP-CR-6010S-10(180),MCP-SB-6010S-10(180),MCP-PB-6010S-10(180),MCP-CU-6010S-10(180),MCP-NI-6010S-10(180),MCP-SE-6010S-10(180)

*Values in parentheses indicate holding time in days

Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

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

Report Format: Data Usability Report



Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

Data Qualifiers

- reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
 - D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
 - E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
 - G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
 - H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
 - I** - The lower value for the two columns has been reported due to obvious interference.
 - M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
 - NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
 - P** - The RPD between the results for the two columns exceeds the method-specified criteria.
 - Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
 - R** - Analytical results are from sample re-analysis.
 - RE** - Analytical results are from sample re-extraction.
 - S** - Analytical results are from modified screening analysis.
 - J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
 - ND** - Not detected at the reporting limit (RL) for the sample.

Project Name: EMMANUEL
Project Number: 5980.9.01

Lab Number: L1625934
Report Date: 08/24/16

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

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

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



Certification Information

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

Westborough Facility

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

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

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

EPA 300: DW: Bromide

EPA 6860: NPW and SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

EPA 9012B: NPW: Total Cyanide

EPA 9050A: NPW: Specific Conductance

SM3500: NPW: Ferrous Iron

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

SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS

EPA 3005A NPW

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

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: **EPA 3050B**

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

Westborough Facility:

Drinking Water

EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, 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, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF.**

Mansfield Facility:

Drinking Water

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

Non-Potable Water

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

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

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



CHAIN OF CUSTODY

PAGE 1 OF 1

8 Walkup Drive Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd Mansfield, MA 02048
Tel: 508-822-9300

Date Rec'd in Lab: 8/18/16 ALPHA Job #: L/625934

Client Information
 Client: McPHAIL ASSOCIATES
 Address: 2269 MASS AVE
CAMBRIDGE, MA 02140
 Phone: 617 868 1420
 Email: jerikson@mcphailgeo.com

Project Information
 Project Name: EMMANUEL
 Project Location: BOSTON, MA
 Project #: 5980.9.01
 Project Manager: J. ERIKSON
 ALPHA Quote #:
Turn-Around Time
 Standard RUSH (only confirmed if pre-approved!)
 Date Due:

Report Information - Data Deliverables
 ADEX EMAIL Same as Client info PO #:

Regulatory Requirements & Project Information Requirements
 Yes No MA MCP Analytical Methods Yes No CT RCP Analytical Methods
 Yes No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
 Yes No GW1 Standards (Info Required for Metals & EPH with Targets)
 Yes No NPDES RGP
 Other State /Fed Program MCP Criteria GW-2/gw-3

Additional Project Information:

Metal list: Sb,As,Cd,Cr, Cu, Pb, HG, Ni, SE,Ag,Zn, Fe

ANALYSIS
 VOC: 8260 624 524.2
 SVOC: ABN PAH
 METALS: MCP 13 MCP 14 RCP 15
 METALS: RCRA5 RCRA8 PP13
 EPH: Ranges & Targets Ranges Only
 VPH: Ranges & Targets Ranges Only
 PCB PEST
 TPH: Quant Only Fingerprint
TOTAL METALS
DISSOLVED METALS
T.S.S.
PH

SAMPLE INFO
 Filtration
 Field
 Lab to do
 Preservation
 Lab to do

TOTAL # BOTTLES
 Sample Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials	ANALYSIS							TOTAL # BOTTLES				
		Date	Time			VOC	SVOC	METALS	METALS	EPH	VPH	PCB		TPH			
<u>25934.10</u>	<u>OW S-1</u>	<u>8/18</u>	<u>10⁰⁰</u>	<u>W</u>	<u>NDK</u>												<u>4</u>

Container Type P= Plastic A= Amber glass V= Vial G= Glass B= Bacteria cup C= Cube O= Other E= Encore D= BOD Bottle	Preservative A= None B= HCl C= HNO ₃ D= H ₂ SO ₄ E= NaOH F= MeOH G= NaHSO ₄ H= Na ₂ S ₂ O ₃ I= Ascorbic Acid J= NH ₄ Cl K= Zn Acetate O= Other	Container Type <u>C A A A</u>	Preservative <u>P P P P</u>	Relinquished By: <u>J. ERIKSON</u>	Date/Time <u>8/18/16 14⁰⁰</u>	Received By: <u>[Signature]</u>	Date/Time <u>8/18/16 16:32</u>	All samples submitted are subject to Alpha's Terms and Conditions. See reverse side. FORM NO 01-01 (rev 12-Mar-2012)
				<u>[Signature]</u>	<u>8/18/16 12:08</u>	<u>[Signature]</u>	<u>8/18/16 1808</u>	



CHAIN OF CUSTODY

PAGE 1 OF 1

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Date Rec'd in Lab: 8/18/16

ALPHA Job #: L/625934

Project Information

Project Name: EMMANUEL

Project Location: BOSTON, MA

Project #: 5980.9.01

Project Manager: J. ERIKSON

ALPHA Quote #:

Report Information - Data Deliverables

ADEX EMAIL

Billing Information

Same as Client info PO #:

Client Information

Client: McPHAIL ASSOCIATES

Address: 2269 MASS AVE

CAMBRIDGE, MA 02140

Phone: 617 868 1420

Email: jerikson@mcphailgeo.com

Additional Project Information:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)

Date Due:

Regulatory Requirements & Project Information Requirements

Yes No MA MCP Analytical Methods Yes No CT RCP Analytical Methods
 Yes No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
 Yes No GW1 Standards (Info Required for Metals & EPH with Targets)
 Yes No NPDES RGP
 Other State /Fed Program MCP Criteria GW-2/gw-3

ANALYSIS

VOC: 8260 624 524.2

SVOC: ABN PAH

METALS: MCP 13 MCP 14 RCP 15

METALS: RCRA5 RCRA8

EPH: Ranges & Targets Ranges Only

VPH: Ranges & Targets Ranges Only

PCB PEST

TPH: Quant Only Fingerprint

TOTAL METALS
DISOLVED METALS
T.S.S.
PH

SAMPLE INFO

Filtration
 Field
 Lab to do

Preservation
 Lab to do

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials	ANALYSIS		PRESERVATIVE		Sample Comments	TOTAL # BOTTLES	
		Date	Time			VOC	SVOC	METALS	METALS			EPH
<u>25934.10</u>	<u>OW S-1</u>	<u>8/18</u>	<u>10⁰⁰</u>	<u>W</u>	<u>NDK</u>							<u>4</u>

Container Type	Preservative
P= Plastic A= Amber glass V= Vial G= Glass B= Bacteria cup C= Cube O= Other E= Encore D= BOD Bottle	A= None B= HCl C= HNO ₃ D= H ₂ SO ₄ E= NaOH F= MeOH G= NaHSO ₄ H= Na ₂ S ₂ O ₃ I= Ascorbic Acid J= NH ₄ Cl K= Zn Acetate O= Other

Container Type	<u>C A A A</u>
Preservative	<u>P P P P</u>

Relinquished By:	Date/Time	Received By:	Date/Time
<u>J. ERIKSON</u>	<u>8/18/16 14⁰⁰</u>	<u>[Signature]</u>	<u>8/18/16 16:32</u>
<u>[Signature]</u>	<u>8/18/16 12:08</u>	<u>[Signature]</u>	<u>8/18/16 1808</u>

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
FORM NO 01-01 (rev 12-Mar-2012)



ANALYTICAL REPORT

Lab Number:	L1622774
Client:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140
ATTN:	John Erikson
Phone:	(617) 868-1420
Project Name:	5980 EMMANUEL
Project Number:	5980.9.00
Report Date:	08/01/16

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), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

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



Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1622774-01	B-4 (OW)	WATER	BOSTON, MA	07/21/16 11:00	07/21/16

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

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: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

Case Narrative (continued)

Sample Receipt

The samples were received in inappropriate containers for the Microextractables analysis.

Semivolatile Organics

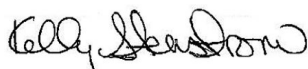
The WG916408-2/-3 LCS/LCSD recoveries, associated with L1622774-01, are below the acceptance criteria for benzidine (7%/0%) and pyridine (LCSD 7%); however, they have been identified as "difficult" analytes. The results of the associated sample are reported.

Metals

The WG916585-4 MS recovery for iron (419%), performed on L1622774-01, does not apply because the sample concentration is greater than four times the spike amount added.

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

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 08/01/16

ORGANICS

VOLATILES

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
 Client ID: B-4 (OW)
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/28/16 08:28
 Analyst: MM

Date Collected: 07/21/16 11:00
 Date Received: 07/21/16
 Field Prep: Not Specified

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

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01

Date Collected: 07/21/16 11:00

Client ID: B-4 (OW)

Date Received: 07/21/16

Sample Location: BOSTON, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
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
Dibromomethane	ND		ug/l	5.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	5.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	5.0	--	1
Acetone	5.2		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	5.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.5	--	1
Tetrahydrofuran	ND		ug/l	5.0	--	1
2,2-Dichloropropane	ND		ug/l	2.5	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.5	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	2.5	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	2.5	--	1
o-Chlorotoluene	ND		ug/l	2.5	--	1
p-Chlorotoluene	ND		ug/l	2.5	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	2.5	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
Client ID: B-4 (OW)
Sample Location: BOSTON, MA

Date Collected: 07/21/16 11:00
Date Received: 07/21/16
Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	83		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	89		70-130

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
 Client ID: B-4 (OW)
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C-SIM(M)
 Analytical Date: 07/28/16 08:28
 Analyst: MM

Date Collected: 07/21/16 11:00
 Date Received: 07/21/16
 Field Prep: Not Specified

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

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
 Client ID: B-4 (OW)
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 14,504.1
 Analytical Date: 07/24/16 12:19
 Analyst: NS

Date Collected: 07/21/16 11:00
 Date Received: 07/21/16
 Field Prep: Not Specified
 Extraction Method: EPA 8011
 Extraction Date: 07/24/16 10:28

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: 5980 EMMANUEL**Lab Number:** L1622774**Project Number:** 5980.9.00**Report Date:** 08/01/16**Method Blank Analysis
Batch Quality Control****Analytical Method:** 14,504.1
Analytical Date: 07/24/16 11:20
Analyst: NS**Extraction Method:** EPA 8011
Extraction Date: 07/24/16 10:28

Parameter	Result	Qualifier	Units	RL	MDL
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG916470-1					
1,2-Dibromoethane	ND		ug/l	0.010	-- A

Project Name: 5980 EMMANUEL**Lab Number:** L1622774**Project Number:** 5980.9.00**Report Date:** 08/01/16**Method Blank Analysis
Batch Quality Control**

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

Analytical Date: 07/28/16 06:47

Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG917924-3					
1,4-Dioxane	ND		ug/l	3.0	--

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/28/16 06:47
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG917925-3					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.8	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	2.5	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	2.5	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.5	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/28/16 06:47
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG917925-3					
1,2-Dichloroethene, Total	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	--
Dibromomethane	ND		ug/l	5.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	5.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	5.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	5.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.5	--
Tetrahydrofuran	ND		ug/l	5.0	--
2,2-Dichloropropane	ND		ug/l	2.5	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.5	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/28/16 06:47
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG917925-3					
Bromobenzene	ND		ug/l	2.5	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	2.5	--
o-Chlorotoluene	ND		ug/l	2.5	--
p-Chlorotoluene	ND		ug/l	2.5	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	2.5	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--
1,2,4-Trichlorobenzene	ND		ug/l	2.5	--
1,3,5-Trimethylbenzene	ND		ug/l	2.5	--
1,3,5-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.5	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	2.5	--
Methyl Acetate	ND		ug/l	10	--
Ethyl Acetate	ND		ug/l	10	--
Isopropyl Ether	ND		ug/l	2.0	--
Cyclohexane	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	10	--
Methyl cyclohexane	ND		ug/l	10	--
p-Diethylbenzene	ND		ug/l	2.0	--

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/28/16 06:47
 Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG917925-3					
4-Ethyltoluene	ND		ug/l	2.0	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	82		70-130
Toluene-d8	83		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	87		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Project Number: 5980.9.00

Lab Number: L1622774

Report Date: 08/01/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01 Batch: WG916470-2 WG916470-3									
1,2-Dibromoethane	95		100		70-130	5		20	A
1,2-Dibromo-3-chloropropane	93		95		70-130	2		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG917924-1 WG917924-2								
1,4-Dioxane	88		84		70-130	5		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

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: WG917925-1 WG917925-2								
Methylene chloride	90		91		70-130	1		20
1,1-Dichloroethane	88		87		70-130	1		20
Chloroform	87		88		70-130	1		20
Carbon tetrachloride	87		84		63-132	4		20
1,2-Dichloropropane	91		89		70-130	2		20
Dibromochloromethane	88		82		63-130	7		20
1,1,2-Trichloroethane	85		85		70-130	0		20
2-Chloroethylvinyl ether	90		90		70-130	0		20
Tetrachloroethene	82		79		70-130	4		20
Chlorobenzene	87		86		75-130	1		25
Trichlorofluoromethane	96		93		62-150	3		20
1,2-Dichloroethane	88		88		70-130	0		20
1,1,1-Trichloroethane	87		87		67-130	0		20
Bromodichloromethane	90		87		67-130	3		20
trans-1,3-Dichloropropene	84		83		70-130	1		20
cis-1,3-Dichloropropene	90		88		70-130	2		20
1,1-Dichloropropene	86		85		70-130	1		20
Bromoform	80		79		54-136	1		20
1,1,2,2-Tetrachloroethane	101		100		67-130	1		20
Benzene	88		88		70-130	0		25
Toluene	83		82		70-130	1		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG917925-1 WG917925-2								
Ethylbenzene	88		88		70-130	0		20
Chloromethane	87		84		64-130	4		20
Bromomethane	102		103		39-139	1		20
Vinyl chloride	93		92		55-140	1		20
Chloroethane	73		72		55-138	1		20
1,1-Dichloroethene	86		86		61-145	0		25
trans-1,2-Dichloroethene	87		85		70-130	2		20
Trichloroethene	86		84		70-130	2		25
1,2-Dichlorobenzene	88		88		70-130	0		20
1,3-Dichlorobenzene	90		88		70-130	2		20
1,4-Dichlorobenzene	82		86		70-130	5		20
Methyl tert butyl ether	89		88		63-130	1		20
p/m-Xylene	80		80		70-130	0		20
o-Xylene	83		82		70-130	1		20
cis-1,2-Dichloroethene	88		86		70-130	2		20
Dibromomethane	84		83		70-130	1		20
1,4-Dichlorobutane	97		94		70-130	3		20
1,2,3-Trichloropropane	116		112		64-130	4		20
Styrene	84		83		70-130	1		20
Dichlorodifluoromethane	92		89		36-147	3		20
Acetone	97		90		58-148	7		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

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: WG917925-1 WG917925-2								
Carbon disulfide	96		94		51-130	2		20
2-Butanone	88		81		63-138	8		20
Vinyl acetate	88		88		70-130	0		20
4-Methyl-2-pentanone	90		94		59-130	4		20
2-Hexanone	88		87		57-130	1		20
Ethyl methacrylate	85		83		70-130	2		20
Acrylonitrile	88		91		70-130	3		20
Bromochloromethane	86		85		70-130	1		20
Tetrahydrofuran	88		87		58-130	1		20
2,2-Dichloropropane	89		86		63-133	3		20
1,2-Dibromoethane	87		83		70-130	5		20
1,3-Dichloropropane	86		86		70-130	0		20
1,1,1,2-Tetrachloroethane	92		91		64-130	1		20
Bromobenzene	95		93		70-130	2		20
n-Butylbenzene	78		79		53-136	1		20
sec-Butylbenzene	82		80		70-130	2		20
tert-Butylbenzene	80		78		70-130	3		20
o-Chlorotoluene	108		100		70-130	8		20
p-Chlorotoluene	88		86		70-130	2		20
1,2-Dibromo-3-chloropropane	92		90		41-144	2		20
Hexachlorobutadiene	86		82		63-130	5		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

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: WG917925-1 WG917925-2								
Isopropylbenzene	88		85		70-130	3		20
p-Isopropyltoluene	80		78		70-130	3		20
Naphthalene	82		90		70-130	9		20
n-Propylbenzene	91		88		69-130	3		20
1,2,3-Trichlorobenzene	81		86		70-130	6		20
1,2,4-Trichlorobenzene	81		87		70-130	7		20
1,3,5-Trimethylbenzene	82		84		64-130	2		20
1,3,5-Trichlorobenzene	81		86		70-130	6		20
1,2,4-Trimethylbenzene	80		85		70-130	6		20
trans-1,4-Dichloro-2-butene	104		94		70-130	10		20
Ethyl ether	87		88		59-134	1		20
Methyl Acetate	95		98		70-130	3		20
Ethyl Acetate	87		88		70-130	1		20
Isopropyl Ether	88		85		70-130	3		20
Cyclohexane	90		87		70-130	3		20
Tert-Butyl Alcohol	86		88		70-130	2		20
Ethyl-Tert-Butyl-Ether	89		88		70-130	1		20
Tertiary-Amyl Methyl Ether	87		85		66-130	2		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	92		92		70-130	0		20
Methyl cyclohexane	84		83		70-130	1		20
p-Diethylbenzene	78		81		70-130	4		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

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: WG917925-1 WG917925-2								
4-Ethyltoluene	86		86		70-130	0		20
1,2,4,5-Tetramethylbenzene	97		98		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	85		86		70-130
Toluene-d8	85		86		70-130
4-Bromofluorobenzene	90		88		70-130
Dibromofluoromethane	90		88		70-130

SEMIVOLATILES

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
 Client ID: B-4 (OW)
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 07/31/16 03:37
 Analyst: MW

Date Collected: 07/21/16 11:00
 Date Received: 07/21/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 07/23/16 18:26

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

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
Client ID: B-4 (OW)
Sample Location: BOSTON, MA

Date Collected: 07/21/16 11:00
Date Received: 07/21/16
Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		21-120
Phenol-d6	37		10-120
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	85		15-120
2,4,6-Tribromophenol	81		10-120
4-Terphenyl-d14	97		41-149

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
Client ID: B-4 (OW)
Sample Location: BOSTON, MA
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 07/27/16 16:46
Analyst: KV

Date Collected: 07/21/16 11:00
Date Received: 07/21/16
Field Prep: Not Specified
Extraction Method: EPA 3510C
Extraction Date: 07/23/16 18:28

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

Project Name: 5980 EMMANUEL**Lab Number:** L1622774**Project Number:** 5980.9.00**Report Date:** 08/01/16**SAMPLE RESULTS**

Lab ID: L1622774-01

Date Collected: 07/21/16 11:00

Client ID: B-4 (OW)

Date Received: 07/21/16

Sample Location: BOSTON, MA

Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	39		21-120
Phenol-d6	28		10-120
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	89		15-120
2,4,6-Tribromophenol	97		10-120
4-Terphenyl-d14	96		41-149

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/27/16 01:55
Analyst: MW

Extraction Method: EPA 3510C
Extraction Date: 07/23/16 18:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG916408-1					
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Isophorone	ND		ug/l	5.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
2-Nitroaniline	ND		ug/l	5.0	--

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/27/16 01:55
Analyst: MW

Extraction Method: EPA 3510C
Extraction Date: 07/23/16 18:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG916408-1					
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	5.0	--

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
 Analytical Date: 07/27/16 01:55
 Analyst: MW

Extraction Method: EPA 3510C
 Extraction Date: 07/23/16 18:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG916408-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	53		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	87		15-120
2,4,6-Tribromophenol	85		10-120
4-Terphenyl-d14	97		41-149

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/24/16 11:00
Analyst: KV

Extraction Method: EPA 3510C
Extraction Date: 07/23/16 18:28

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG916409-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.20	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.20	--
Benzo(a)anthracene	ND		ug/l	0.20	--
Benzo(a)pyrene	ND		ug/l	0.20	--
Benzo(b)fluoranthene	ND		ug/l	0.20	--
Benzo(k)fluoranthene	ND		ug/l	0.20	--
Chrysene	ND		ug/l	0.20	--
Acenaphthylene	ND		ug/l	0.20	--
Anthracene	ND		ug/l	0.20	--
Benzo(ghi)perylene	ND		ug/l	0.20	--
Fluorene	ND		ug/l	0.20	--
Phenanthrene	ND		ug/l	0.20	--
Dibenzo(a,h)anthracene	ND		ug/l	0.20	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.20	--
Pyrene	ND		ug/l	0.20	--
1-Methylnaphthalene	ND		ug/l	0.20	--
2-Methylnaphthalene	ND		ug/l	0.20	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM

Extraction Method: EPA 3510C

Analytical Date: 07/24/16 11:00

Extraction Date: 07/23/16 18:28

Analyst: KV

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG916409-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		21-120
Phenol-d6	30		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	84		15-120
2,4,6-Tribromophenol	87		10-120
4-Terphenyl-d14	75		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

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: WG916408-2 WG916408-3								
Benzidine	7	Q	0	Q	10-75	NC		30
1,2,4-Trichlorobenzene	62		70		39-98	12		30
Bis(2-chloroethyl)ether	68		78		40-140	14		30
1,2-Dichlorobenzene	56		64		40-140	13		30
1,3-Dichlorobenzene	52		61		40-140	16		30
1,4-Dichlorobenzene	52		62		36-97	18		30
3,3'-Dichlorobenzidine	102		84		40-140	19		30
2,4-Dinitrotoluene	118	Q	119	Q	24-96	1		30
2,6-Dinitrotoluene	108		106		40-140	2		30
Azobenzene	94		91		40-140	3		30
4-Chlorophenyl phenyl ether	91		88		40-140	3		30
4-Bromophenyl phenyl ether	96		91		40-140	5		30
Bis(2-chloroisopropyl)ether	70		81		40-140	15		30
Bis(2-chloroethoxy)methane	81		85		40-140	5		30
Hexachlorocyclopentadiene	51		58		40-140	13		30
Isophorone	85		88		40-140	3		30
Nitrobenzene	78		90		40-140	14		30
NDPA/DPA	95		90		40-140	5		30
n-Nitrosodi-n-propylamine	81		86		29-132	6		30
Bis(2-ethylhexyl)phthalate	107		97		40-140	10		30
Butyl benzyl phthalate	109		99		40-140	10		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

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: WG916408-2 WG916408-3								
Di-n-butylphthalate	106		98		40-140	8		30
Di-n-octylphthalate	104		96		40-140	8		30
Diethyl phthalate	100		94		40-140	6		30
Dimethyl phthalate	100		95		40-140	5		30
Biphenyl	82		83		40-140	1		30
Aniline	31	Q	22	Q	40-140	34	Q	30
4-Chloroaniline	64		62		40-140	3		30
2-Nitroaniline	102		105		52-143	3		30
3-Nitroaniline	91		86		25-145	6		30
4-Nitroaniline	98		94		51-143	4		30
Dibenzofuran	86		84		40-140	2		30
1,2,4,5-Tetrachlorobenzene	74		77		2-134	4		30
Acetophenone	83		91		39-129	9		30
n-Nitrosodimethylamine	40		49		22-74	20		30
2,4,6-Trichlorophenol	102		101		30-130	1		30
p-Chloro-m-cresol	95		92		23-97	3		30
2-Chlorophenol	70		80		27-123	13		30
2,4-Dichlorophenol	88		92		30-130	4		30
2,4-Dimethylphenol	75		66		30-130	13		30
2-Nitrophenol	87		102		30-130	16		30
4-Nitrophenol	68		70		10-80	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Project Number: 5980.9.00

Lab Number: L1622774

Report Date: 08/01/16

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: WG916408-2 WG916408-3								
2,4-Dinitrophenol	125		129		20-130	3		30
4,6-Dinitro-o-cresol	125		125		20-164	0		30
Phenol	37		40		12-110	8		30
2-Methylphenol	66		71		30-130	7		30
3-Methylphenol/4-Methylphenol	69		72		30-130	4		30
2,4,5-Trichlorophenol	100		99		30-130	1		30
Benzoic Acid	53		55		10-164	4		30
Benzyl Alcohol	71		77		26-116	8		30
Carbazole	97		90		55-144	7		30
Pyridine	14		7	Q	10-66	67	Q	30
Parathion, ethyl	155	Q	151	Q	40-140	3		30
Atrazine	127		117		40-140	8		30
Benzaldehyde	65		73		40-140	12		30
Caprolactam	33		32		10-130	3		30
2,3,4,6-Tetrachlorophenol	104		100		40-140	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG916408-2 WG916408-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	45		54		21-120
Phenol-d6	38		42		10-120
Nitrobenzene-d5	85		99		23-120
2-Fluorobiphenyl	86		88		15-120
2,4,6-Tribromophenol	101		97		10-120
4-Terphenyl-d14	104		95		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

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: WG916409-2 WG916409-3								
Acenaphthene	84		86		37-111	2		40
2-Chloronaphthalene	89		92		40-140	3		40
Fluoranthene	97		101		40-140	4		40
Hexachlorobutadiene	102		105		40-140	3		40
Naphthalene	73		76		40-140	4		40
Benzo(a)anthracene	97		102		40-140	5		40
Benzo(a)pyrene	98		103		40-140	5		40
Benzo(b)fluoranthene	106		110		40-140	4		40
Benzo(k)fluoranthene	95		98		40-140	3		40
Chrysene	90		95		40-140	5		40
Acenaphthylene	92		95		40-140	3		40
Anthracene	84		88		40-140	5		40
Benzo(ghi)perylene	102		107		40-140	5		40
Fluorene	90		92		40-140	2		40
Phenanthrene	84		88		40-140	5		40
Dibenzo(a,h)anthracene	104		109		40-140	5		40
Indeno(1,2,3-cd)pyrene	105		110		40-140	5		40
Pyrene	88		92		26-127	4		40
1-Methylnaphthalene	83		86		40-140	4		40
2-Methylnaphthalene	85		88		40-140	3		40
Pentachlorophenol	103		107	Q	9-103	4		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

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: WG916409-2 WG916409-3								
Hexachlorobenzene	98		102		40-140	4		40
Hexachloroethane	68		71		40-140	4		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	45		48		21-120
Phenol-d6	34		37		10-120
Nitrobenzene-d5	95		100		23-120
2-Fluorobiphenyl	92		95		15-120
2,4,6-Tribromophenol	99		103		10-120
4-Terphenyl-d14	84		87		41-149

PCBS

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
 Client ID: B-4 (OW)
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 5,608
 Analytical Date: 07/28/16 23:44
 Analyst: JW

Date Collected: 07/21/16 11:00
 Date Received: 07/21/16
 Field Prep: Not Specified
 Extraction Method: EPA 608
 Extraction Date: 07/24/16 11:39
 Cleanup Method: EPA 3665A
 Cleanup Date: 07/25/16
 Cleanup Method: EPA 3660B
 Cleanup Date: 07/25/16

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	66		30-150	A
Decachlorobiphenyl	66		30-150	A

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 5,608
 Analytical Date: 07/29/16 00:28
 Analyst: JW

Extraction Method: EPA 608
 Extraction Date: 07/24/16 11:39
 Cleanup Method: EPA 3665A
 Cleanup Date: 07/25/16
 Cleanup Method: EPA 3660B
 Cleanup Date: 07/25/16

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG916480-1						
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	61		30-150	A
Decachlorobiphenyl	64		30-150	A

Matrix Spike Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>	<i>Column</i>
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG916480-3 QC Sample: L1622466-01 Client ID: MS Sample													
Aroclor 1016	ND	1	0.903	90		-	-		40-140	-		50	A
Aroclor 1260	ND	1	0.911	91		-	-		40-140	-		50	A

<i>Surrogate</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>	<i>Column</i>
2,4,5,6-Tetrachloro-m-xylene	66				30-150	A
Decachlorobiphenyl	77				30-150	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG916480-2									
Aroclor 1016	91		-		40-140	-		50	A
Aroclor 1260	94		-		40-140	-		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60				30-150	A
Decachlorobiphenyl	86				30-150	A

Lab Duplicate Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Project Number: 5980.9.00

Lab Number: L1622774

Report Date: 08/01/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG916480-4 QC Sample: L1622774-01 Client ID: B-4 (OW)						
Aroclor 1016	ND	ND	ug/l	NC		50 A
Aroclor 1221	ND	ND	ug/l	NC		50 A
Aroclor 1232	ND	ND	ug/l	NC		50 A
Aroclor 1242	ND	ND	ug/l	NC		50 A
Aroclor 1248	ND	ND	ug/l	NC		50 A
Aroclor 1254	ND	ND	ug/l	NC		50 A
Aroclor 1260	ND	ND	ug/l	NC		50 A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		77		30-150	A
Decachlorobiphenyl	66		81		30-150	A

METALS

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
Client ID: B-4 (OW)
Sample Location: BOSTON, MA
Matrix: Water

Date Collected: 07/21/16 11:00
Date Received: 07/21/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.0020	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Arsenic, Total	0.0044		mg/l	0.0005	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.0002	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Chromium, Total	0.0111		mg/l	0.0010	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Copper, Total	0.0278		mg/l	0.0010	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Iron, Total	8.51		mg/l	0.050	--	1	07/25/16 09:20	07/27/16 04:08	EPA 3005A	19,200.7	MC
Lead, Total	0.0175		mg/l	0.0005	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	--	1	07/25/16 14:48	07/26/16 18:53	EPA 245.1	3,245.1	EA
Nickel, Total	0.0088		mg/l	0.0020	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.005	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.0004	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM
Zinc, Total	0.0489		mg/l	0.0100	--	1	07/25/16 09:20	07/26/16 14:40	EPA 3005A	1,6020A	AM



Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

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: WG916585-1									
Iron, Total	ND	mg/l	0.050	--	1	07/25/16 09:20	07/27/16 03:35	19,200.7	MC

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: WG916765-1									
Mercury, Total	ND	mg/l	0.0002	--	1	07/25/16 14:48	07/26/16 18:48	3,245.1	EA

Prep Information

Digestion Method: EPA 245.1

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG916953-1									
Antimony, Total	ND	mg/l	0.0020	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Arsenic, Total	ND	mg/l	0.0005	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Cadmium, Total	ND	mg/l	0.0002	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Chromium, Total	ND	mg/l	0.0010	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Copper, Total	ND	mg/l	0.0010	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Lead, Total	ND	mg/l	0.0005	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Nickel, Total	ND	mg/l	0.0020	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Selenium, Total	ND	mg/l	0.005	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Silver, Total	ND	mg/l	0.0004	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM
Zinc, Total	ND	mg/l	0.0100	--	1	07/25/16 09:20	07/26/16 14:31	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG916585-2								
Iron, Total	97		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG916765-2								
Mercury, Total	97		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG916953-2								
Antimony, Total	94		-		80-120	-		
Arsenic, Total	105		-		80-120	-		
Cadmium, Total	107		-		80-120	-		
Chromium, Total	104		-		80-120	-		
Copper, Total	99		-		80-120	-		
Lead, Total	106		-		80-120	-		
Nickel, Total	100		-		80-120	-		
Selenium, Total	102		-		80-120	-		
Silver, Total	101		-		80-120	-		
Zinc, Total	99		-		80-120	-		

Matrix Spike Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG916585-4 QC Sample: L1622774-01 Client ID: B-4 (OW)												
Iron, Total	8.51	1	12.7	419	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG916765-4 QC Sample: L1622774-01 Client ID: B-4 (OW)												
Mercury, Total	ND	0.005	0.0046	93		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG916953-4 QC Sample: L1622774-01 Client ID: B-4 (OW)												
Antimony, Total	ND	0.5	0.4125	82		-	-		75-125	-		20
Arsenic, Total	0.0044	0.12	0.1224	98		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.0509	100		-	-		75-125	-		20
Chromium, Total	0.0111	0.2	0.2004	95		-	-		75-125	-		20
Copper, Total	0.0278	0.25	0.2780	100		-	-		75-125	-		20
Lead, Total	0.0175	0.51	0.5143	97		-	-		75-125	-		20
Nickel, Total	0.0088	0.5	0.4679	92		-	-		75-125	-		20
Selenium, Total	ND	0.12	0.114	95		-	-		75-125	-		20
Silver, Total	ND	0.05	0.0449	90		-	-		75-125	-		20
Zinc, Total	0.0489	0.5	0.5291	96		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Project Number: 5980.9.00

Lab Number: L1622774

Report Date: 08/01/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG916585-3 QC Sample: L1622774-01 Client ID: B-4 (OW)						
Iron, Total	8.51	8.75	mg/l	3		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG916765-3 QC Sample: L1622774-01 Client ID: B-4 (OW)						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG916953-3 QC Sample: L1622774-01 Client ID: B-4 (OW)						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	0.0044	0.0048	mg/l	8		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.0111	0.0115	mg/l	4		20
Copper, Total	0.0278	0.0276	mg/l	1		20
Lead, Total	0.0175	0.0171	mg/l	2		20
Nickel, Total	0.0088	0.0090	mg/l	3		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	0.0489	0.0494	mg/l	1		20

INORGANICS & MISCELLANEOUS

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

SAMPLE RESULTS

Lab ID: L1622774-01
Client ID: B-4 (OW)
Sample Location: BOSTON, MA
Matrix: Water

Date Collected: 07/21/16 11:00
Date Received: 07/21/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	130		mg/l	10	NA	2	-	07/24/16 15:50	121,2540D	SG
Cyanide, Total	ND		mg/l	0.005	--	1	07/22/16 15:30	07/25/16 13:03	121,4500CN-CE	JO
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	07/22/16 01:08	121,4500CL-D	AS
pH (H)	6.3		SU	-	NA	1	-	07/22/16 02:50	121,4500H+-B	VM
Phenolics, Total	0.091		mg/l	0.030	--	1	07/22/16 11:15	07/22/16 14:26	4,420.1	TE
Chromium, Hexavalent	ND		mg/l	0.010	--	1	07/22/16 01:55	07/22/16 02:17	121,3500CR-B	VM
Anions by Ion Chromatography - Westborough Lab										
Chloride	670.		mg/l	25.0	--	50	-	07/26/16 07:53	44,300.0	AU



Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

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: WG915964-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	07/22/16 01:55	07/22/16 02:16	121,3500CR-B	VM
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG915965-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	07/22/16 01:08	121,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG916116-1										
Phenolics, Total	ND		mg/l	0.030	--	1	07/22/16 11:15	07/22/16 14:20	4,420.1	TE
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG916219-1										
Cyanide, Total	ND		mg/l	0.005	--	1	07/22/16 15:30	07/25/16 12:48	121,4500CN-CE	JO
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG916471-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	07/24/16 15:50	121,2540D	SG
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG917224-1										
Chloride	ND		mg/l	0.500	--	1	-	07/25/16 18:41	44,300.0	AU

Lab Control Sample Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG915964-2								
Chromium, Hexavalent	98		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG915965-2								
Chlorine, Total Residual	101		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG915966-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG916116-2								
Phenolics, Total	106		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG916219-2								
Cyanide, Total	102		-		90-110	-		
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG917224-2								
Chloride	99		-		90-110	-		

Matrix Spike Analysis Batch Quality Control

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG915964-4 QC Sample: L1622774-01 Client ID: B-4 (OW)												
Chromium, Hexavalent	ND	0.1	0.090	90	-	-	-	-	85-115	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG916116-4 QC Sample: L1600007-72 Client ID: MS Sample												
Phenolics, Total	ND	0.4	0.44	111	-	-	-	-	70-130	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG916219-4 QC Sample: L1622698-02 Client ID: MS Sample												
Cyanide, Total	ND	0.2	0.205	102	-	-	-	-	90-110	-	-	30
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG917224-3 QC Sample: L1622456-01 Client ID: MS Sample												
Chloride	18.0	4	21.4	85	-	-	-	-	40-151	-	-	18

Lab Duplicate Analysis

Batch Quality Control

Project Name: 5980 EMMANUEL

Project Number: 5980.9.00

Lab Number: L1622774

Report Date: 08/01/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG915964-3 QC Sample: L1622774-01 Client ID: B-4 (OW)						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG915965-3 QC Sample: L1622774-01 Client ID: B-4 (OW)						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG915966-2 QC Sample: L1622749-01 Client ID: DUP Sample						
pH	6.0	6.0	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG916116-3 QC Sample: L1600007-72 Client ID: DUP Sample						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG916219-3 QC Sample: L1622698-01 Client ID: DUP Sample						
Cyanide, Total	ND	ND	mg/l	NC		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG916471-2 QC Sample: L1622878-01 Client ID: DUP Sample						
Solids, Total Suspended	760	760	mg/l	0		29
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG917224-4 QC Sample: L1622456-01 Client ID: DUP Sample						
Chloride	18.0	18.0	mg/l	0		18

Project Name: 5980 EMMANUEL

Lab Number: L1622774

Project Number: 5980.9.00

Report Date: 08/01/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1622774-01A	Vial HCl preserved	A	N/A	3.3	Y	Absent	8260-SIM(14),8260(14)
L1622774-01B	Vial HCl preserved	A	N/A	3.3	Y	Absent	8260-SIM(14),8260(14)
L1622774-01C	Vial HCl preserved	A	N/A	3.3	Y	Absent	504(14)
L1622774-01C1	Vial HCl preserved	A	N/A	3.3	Y	Absent	504(14)
L1622774-01F	Plastic 500ml HNO3 preserved	A	<2	3.3	Y	Absent	SE-6020T(180),CR-6020T(180),NI-6020T(180),CU-6020T(180),ZN-6020T(180),FE-UI(180),PB-6020T(180),HG-U(28),AS-6020T(180),SB-6020T(180),AG-6020T(180),CD-6020T(180)
L1622774-01G	Plastic 250ml NaOH preserved	A	>12	3.3	Y	Absent	TCN-4500(14)
L1622774-01H	Plastic 950ml unpreserved	A	7	3.3	Y	Absent	CL-300(28),HEXCR-3500(1),TRC-4500(1),PH-4500(.01)
L1622774-01I	Plastic 950ml unpreserved	A	7	3.3	Y	Absent	TSS-2540(7)
L1622774-01J	Amber 1000ml H2SO4 preserved	A	<2	3.3	Y	Absent	TPHENOL-420(28)
L1622774-01J1	Amber 1000ml H2SO4 preserved	A	<2	3.3	Y	Absent	TPHENOL-420(28)
L1622774-01K	Amber 1000ml unpreserved	A	7	3.3	Y	Absent	8270TCL(7),8270TCL-SIM(7)
L1622774-01L	Amber 1000ml unpreserved	A	7	3.3	Y	Absent	8270TCL(7),8270TCL-SIM(7)
L1622774-01M	Amber 1000ml Na2S2O3	A	7	3.3	Y	Absent	PCB-608(7)
L1622774-01M1	Amber 1000ml Na2S2O3	A	7	3.3	Y	Absent	PCB-608(7)
L1622774-01N	Amber 1000ml Na2S2O3	A	7	3.3	Y	Absent	PCB-608(7)
L1622774-01N1	Amber 1000ml Na2S2O3	A	7	3.3	Y	Absent	PCB-608(7)
L1622774-01R	Plastic 500ml unpreserved	A	7	3.3	Y	Absent	HEXCR-3500(1)
L1622774-01S	Plastic 250ml unpreserved	A	7	3.3	Y	Absent	PH-4500(.01)
L1622774-01T	Plastic 500ml unpreserved	A	7	3.3	Y	Absent	TRC-4500(1)

*Values in parentheses indicate holding time in days



Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

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

Report Format: Data Usability Report



Project Name: 5980 EMMANUEL**Lab Number:** L1622774**Project Number:** 5980.9.00**Report Date:** 08/01/16**Data Qualifiers**

- reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
 - D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
 - E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
 - G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
 - H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
 - I** - The lower value for the two columns has been reported due to obvious interference.
 - M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
 - NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
 - P** - The RPD between the results for the two columns exceeds the method-specified criteria.
 - Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
 - R** - Analytical results are from sample re-analysis.
 - RE** - Analytical results are from sample re-extraction.
 - S** - Analytical results are from modified screening analysis.
 - J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
 - ND** - Not detected at the reporting limit (RL) for the sample.

Project Name: 5980 EMMANUEL
Project Number: 5980.9.00

Lab Number: L1622774
Report Date: 08/01/16

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.
- 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 524.2: 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, m/p-xylene, o-xylene
EPA 624: 2-Butanone (MEK), 1,4-Dioxane, tert-Amylmethyl Ether, tert-Butyl Alcohol, m/p-xylene, o-xylene
EPA 625: Aniline, Benzoic Acid, Benzyl Alcohol, 4-Chloroaniline, 3-Methylphenol, 4-Methylphenol.
EPA 1010A: NPW: Ignitability
EPA 6010C: NPW: Strontium; SCM: Strontium
EPA 8151A: NPW: 2,4-DB, Dicamba, Dichloroprop, MCPA, MCPP; SCM: 2,4-DB, Dichloroprop, MCPA, MCPP
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene, Isopropanol; SCM: Iodomethane (methyl iodide), Methyl methacrylate (soil); 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene, 1,4-Diphenylhydrazine.
EPA 9010: NPW: Amenable Cyanide Distillation, Total Cyanide Distillation
EPA 9038: NPW: Sulfate
EPA 9050A: NPW: Specific Conductance
EPA 9056: NPW: Chloride, Nitrate, Sulfate
EPA 9065: NPW: Phenols
EPA 9251: NPW: Chloride
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
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, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: **8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:** Lead; **8270D:** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water

EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7:** Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water

EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N, **SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, 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, SM9222D-MF.**

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



CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 7/21/16

ALPHA Job #: L1622774

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Project Information

Project Name: 5980 EMANUEL

Project Location: BOSTON, MA

Project #: 5980.9.00

Project Manager: J. ERIKSON

ALPHA Quote #: —

Report Information - Data Deliverables

ADEx EMAIL

Billing Information

Same as Client info PO #:

Client Information

Client: McPHAIL ASSOCIATES

Address: 2269 MASS AVE
CAMBRIDGE, MA 02140

Phone: 617 868 1420

Email: jerikson@mcphailgeo.com

Additional Project Information:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)

Date Due:

Regulatory Requirements & Project Information Requirements

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

ANALYSIS	SAMPLE INFO
VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 524.2	Filtration
SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	<input type="checkbox"/> Field
METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	<input type="checkbox"/> Lab to do
METALS: <input type="checkbox"/> RCRA5 <input type="checkbox"/> RCRA8 <input type="checkbox"/> PPI3	Preservation
EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	<input type="checkbox"/> Lab to do
VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
PCB <input type="checkbox"/> PEST	
TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	
<u>RGP PERMIT APPLICATION</u>	
<u>PH</u>	
<u>PHENOL</u>	
<u>HEX CHROM</u>	
TOTAL # BOTTLES	<u>19</u>

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials
		Date	Time		
<u>227740</u>	<u>B-4 (OW)</u>	<u>7/21</u>	<u>11:00</u>	<u>W</u>	<u>NDH</u>

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

Preservative
A= None
B= HCl
C= HNO3
D= H2SO4
E= NaOH
F= MeOH
G= NaHSO4
H= Na2S2O3
I= Ascorbic Acid
J= NH4Cl
K= Zn Acetate
O= Other

Container Type	<u>P</u>
Preservative	<u>A</u>

Relinquished By:	Date/Time	Received By:	Date/Time
<u>J. Erikson</u>	<u>7/21/16 3:00</u>	<u>John S...</u>	<u>7/21/16 16:30</u>
<u>John S...</u>	<u>7/21/16 18:20</u>	<u>Ch...</u>	<u>7/21/16 18:20</u>

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
FORM NO: 01-01 (rev. 12-Mar-2012)