NOTICE OF INTENT FOR DISCHARGE PURSUANT TO MASSACHUSETTS REMEDIATION GENERAL PERMIT MAG9100000

582 BROADWAY

LAWRENCE, MASSACHUSETTS

APRIL 30, 2018

Prepared For:

U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square – Suite 100
Mail Code OEP06-01
Boston, MA 02109-3912

On Behalf Of:

Masterson Construction Corporation
&
Trinity Van Brodie Nine Limited Partnership and
Trinity Van Brodie Four Limited Partnership

PROJECT NO. 6008

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

April 30, 2018

U.S. Environmental Protection Agency
Dewatering GP Processing
Industrial Permit Unit (OEP 06-4)
5 Post Office Square – Suite 100
Mail Code OEP06-01
Boston, MA 02109-3912

Attention: To Whom It May Concern

Reference: 582 Broadway, Lawrence, Massachusetts
Notice of Intent for Construction Dewatering Discharge Under
Massachusetts Remediation General Permit MAG910000

Ladies and Gentlemen:

On behalf of Masterson Construction Corporation, McPhail Associates, LLC (McPhail) has prepared the attached Notice of Intent (NOI) for coverage under the Massachusetts Remediation General Permit (RGP) MAG910000 for the discharge of construction dewatering effluent into the Spicket River via the City of Lawrence storm drainage system. The temporary construction dewatering discharge will occur during subsurface utility work at the property located at 582 Broadway, along with its adjacent parcels located at 576, 590, and 600 Broadway in Lawrence, 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 the authorization of Trinity Van Brodie Nine Limited Partnership and Trinity Van Brodie Four Limited Partnership. These services are subject to the limitations contained in **Appendix A**.

The required Notice of Intent Form contained in the RGP permit is included in **Appendix B** and supporting information is included in **Appendix C**. This project is considered Activity Category III-G as defined in the RGP. Category III-G is defined as Contaminated Site Dewatering from Sites with Known Contamination. Based on historical and current soil and groundwater analysis completed at the site, constituents of concern (COCs) detected under subcategory A (Inorganics), B (Non-Halogenated Volatile Organic Compounds), C (Non-Halogenated Semi-Volatile Organics), and D (Non-Halogenated Volatile Organic Compounds) apply.

Thus, Technology Based Effluent Limitations (TBELs) for Type A, B, C and D contamination apply. Water Quality Based Effluent Limitations (WQBELs) were calculated in accordance with Appendix V of the RGP for the parameters detected.

GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERS
2269 Massachusetts Avenue
Cambridge, Massachusetts 02140
(617) 868-1420

Applicant / Operator

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

Masterson Construction Corporation
46 Prince Street
Danvers, MA 01923

Attention: William Peach

Office: 978-774-8782
Email: wpeach@jmasterson.com

Site Location and Existing Conditions

The subject site consists of four contiguous parcels of land which occupy the southeastern portion of the former textile mill complex known as Malden Mills. Bounded to the south and west by Steven's Pond, the remainder of the subject site is bordered by parcels of land which are occupied by mill buildings that are currently used for textile manufacturing and those that have since been renovated for residential use.

Occupying a total area of approximately 2 acres, a majority of the subject site is covered by three buildings which are situated along the northern banks of Stevens Pond. The remaining portions of the subject site are generally covered by asphalt pavement, concrete slabs and overgrown vegetation. Currently, the subject site is an active construction site, the perimeter of which is fenced. Of the three buildings which occupy the subject site, only one building is actively in use. The limits of the subject site are depicted on **Figure 2**.

Proposed Scope of Site Development

We understand that redevelopment of the subject site will include renovating the existing buildings into residential space, with the exception of one building that will remain utilized as a pump house. The scope of the construction will also include the abandonment, demolition and replacement of the existing sewer and water services which are located beneath and adjacent to the former Van Brodie building.

Site History

In summary, the subject site was part of a larger textile mill from 1895 to approximately 2006. Textile manufacturing operations were performed at the 582 Broadway parcel within the former Van Brodie mill building and a building which had formerly occupied the 566 Broadway parcel. Historical operations that were conducted within these buildings included textile processing and dyeing as well as carpentry and spray painting. Since at least 1949, the pump house has facilitated the transfer of water from Stevens Pond into the mill

complex. In addition, historical information indicates that the 570 Broadway building was formerly utilized as an incinerator. The complex of mill buildings located adjacent to the subject site was also utilized for textile manufacturing. Two of these mill buildings continue to be operated for the manufacturing of textiles.

MCP Regulatory Status

As a result of the historical textile manufacturing operations, releases of oil and hazardous material at the Malden Mills complex have been documented in soil and groundwater that were reported to the DEP. In particular, two releases to which the DEP has assigned Release Tracking Number (RTNs) 3-11604 and 3-29853 have affected a portion of the subject site which is occupied by the 566 Broadway parcel. According to the MCP reports prepared by others for these release sites, Reportable Concentrations of petroleum constituents and metals were detected in soil at the 566 Broadway parcel and Van Brodie parcel. Remediation activities, which include the excavation and off-site removal of contaminated soil, were completed in March 2011 and overseen by others for RTN 3-26835. According to Tighe & Bond's report entitled "RAO Statement," dated November 11, 2007, the residual concentrations of petroleum constituents and metals remaining at the 566 Broadway parcel were considered to be No Significant Risk to human health and the environment and as a result Permanent Closure in September 2007 and February 2008 under the MCP was achieved for the RTNs 3-11604 and 3-26835.

More recently during March 2016, an environmental due diligence assessment was completed at the subject site which included soil and groundwater testing. In summary, the results of the laboratory analysis identified Reportable Concentrations of chlorinated volatile organic compounds (CVOCs) within a localized area of soil and groundwater that extends beneath the southeastern portion of the former Van Brodie building and onto the abutting northwestern portion of pump house parcel. In addition to the release of CVOCs, a Reportable Concentration of naphthalene was detected in shallow soil located adjacent to the northern side of the former Van Brodie building.

Based on the results of the soil and groundwater testing, a Release Notification Form (RNF) was submitted to the DEP by the previous site owner in 2016, to which the DEP assigned RTN 3-33667 to the release. Subsequently, on June 14, 2017, Weston & Sampson prepared a Phase I Initial Site Investigation Report and Tier Classification for RTN 3-33667 which classified the release as a Tier II site, and attributed the CVOC and naphthalene release to historical textile operations that were performed within the former Van Brodie building.

During November 2017, Trinity Van Brodie Nine Limited Partnership and Trinity Van Brodie Four Limited Partnership (current owner), acquired the subject site. On January 18, 2018, a Modified Release Abatement Measure (RAM) Plan for proposed response actions to address the release of CVOCs and naphthalene that have been identified at the subject site was submitted. As part of the RAM plan, a combined in-situ remediation program, which involved chemical oxidation and enhanced reductive dechlorination (ERD), was implemented within the area of the subject site affected by the release of CVOCs.

Site Environmental Setting, and Surrounding Historical Places

Based on an on-line edition of the Massachusetts Geographic Information Systems MassDEP Phase I Site Assessment Map, 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. According to the Phase I Site Assessment Map, there are no public or private drinking water supply wells, no Areas of Critical Environmental Concern, no habitats of Species of Special Concern or Threatened or Endangered Species within specified distances of the subject site.

The Phase I Map indicates that Protected Open Space is located approximately 700 feet to the east of the subject site. The closest body of water is Stevens Pond, which is located adjacent to the southwest side of the subject site.

There are no areas designated as solid waste sites (landfill) noted as being located within 3,000 feet of the subject site. A copy of the Phase I Map is included in **Appendix C**.

A review of information provided by the U.S. Fish and Wildlife Service in an Information for Planning and Conservation (IPaC) Trust Resource Report for the subject site did not identify the presence of endangered species at or in the vicinity of the discharge location and/or discharge outfall. Further, the Trust Resource Report did not identify the presence of a critical habitat in the vicinity of the discharge location and/or discharge outfall. Based upon the above, the site is considered a criterion A pursuant to Appendix IV of the RGP. A copy of the IPaC Trust Resource Report and correspondence are included in **Appendix C**.

A review of the online Massachusetts Cultural Resource Information System and the National Register of Historical Places for Essex County identified that the Arlington Mills Historic District, located in Lawrence, Massachusetts on Broadway between Manchester, Stafford, and Chase Streets, was listed on the National Register on January 1, 1958. Dewatering activities are not anticipated to adversely affect the historical properties because they are temporary and will be contained within the subject site and storm drainage system. Based upon the above, the site is considered a criterion B pursuant to Appendix III of the RGP.

Temporary Construction dewatering

The scope of the renovations which utilize temporary construction dewatering, include the abandonment, demolition and replacement of the existing sewer and water services which are located beneath and adjacent to the former Van Brodie building. Groundwater levels at the subject site vary from approximately Elevation +54.5 (located beneath the former Van Brodie building basement) to Elevation +48.1 (located to the east of the former Van Brodie building). Because the excavation activities related to the construction of the planned utilities will extend below the surface of the groundwater, it is anticipated that dewatering by means of strategically located sumps and trenches should suffice to manage the

groundwater which may become trapped within the excavation areas. The average design flow rate for the proposed dewatering is 35 gallons per minute (GPM) and the maximum design flow rate is 100 GPM.

A review of available subgrade utility plans provided by the City of Lawrence Water and Sewer Department indicates the presence of dedicated catch basins/proposed discharge locations on the subject site located on the north side of the former Van Brodie building in the parking area. These two proposed discharge locations flow southeast and eventually discharge into the Spicket River. Another catch basin/proposed discharge location is located northwest of the neighboring building and flows northeast through the mill complex to Broadway where it eventually discharges into the Spicket River. The location of the relevant proposed drainage and discharge locations in relation to the subject site are indicated on **Figure 2**. The flow path of the discharge is shown on a plan provided by the City of Lawrence Water and Sewer Department which is included in **Figure 3**.

Summary of Groundwater Analysis

Five (5) rounds of groundwater samples were obtained from the monitoring wells installed at the subject site on December 11, 2015, January 22, 2016, February 24, 2016, December 27, 2017, and March 1, 2018. As part of these sampling events, nineteen (19) groundwater samples were submitted for laboratory analysis for the presence of Volatile Petroleum Hydrocarbons (VPH), VOCs, Priority Pollutant (PP)-13 metals, and/or Extractable Petroleum Hydrocarbons (EPH). In addition to historical analytical data from GP-204(OW), a groundwater sample was collected on April 3, 2018, and analyzed for RGP Inorganics. The analytical results utilized to characterize groundwater subject to the NOI are summarized in **Table 1** and verified by laboratory data analysis located in **Appendix D**. The results of historical groundwater testing are summarized in **Table 2**.

In summary, the contamination type pollutants identified in groundwater at the subject site include Inorganics and specific Halogenated Volatile Organic Compounds (VOCs). With the exception of CVOCs, the results of groundwater testing conducted prior to April 2018 did not indicate concentrations of the tested compounds in excess of the applicable Method 1 GW-2 and GW-3 risk characterization standards. Groundwater testing conducted during April 2018, indicated concentrations of iron which exceed the EPA human chronic clean water criteria.

Of the nineteen (19) samples that were analyzed for the presence of CVOCs, five (5) groundwater samples that were obtained from GP-1(OW), GP-101(OW), GP-103(OW), GP-203(OW), and GP-204(OW) exhibited concentrations of tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2,-dichloroethene (cis-1,2-DCE) and vinyl chloride which exceed the applicable Method 1 GW-2 risk characterization standards. These monitoring wells are located beneath and adjacent to the southeastern portion of the former Van Brodie building and at the abutting northwestern portion of the pump house parcel. The groundwater sample obtained from GP-203(OW) exhibited the highest concentrations of TCE, PCE and cis-1,2-DCE at 470 micrograms per liter (ug/l), 4,000 ug/l and 1,300 ug/l, respectively. The highest concentration of vinyl chloride was detected in GP-203(OW) at 240 ug/l.

Concentrations of the remaining VOCs were either below the applicable Method 1 GW-2 risk standards or below the laboratory method detection limits. Groundwater samples obtained from the remaining monitoring wells did not exhibit concentrations of CVOCs in excess of the applicable Method 1 GW-2 and/or GW-3 risk characterization standards.

Dewatering activities are not anticipated to occur within the area at which elevated CVOC concentrations were detected.

In accordance with the provisions of the MCP, a receiving water body sample was obtained from the Spicket River as indicated on **Figure 3** and analyzed for Arsenic, Copper, Iron, Lead, Nickel, pH, Hardness and Ammonia. The results of the surface water sample was tabulated and assessed using Appendix V of the 2017 NPDES RGP and summarized in **Table 3,** as verified by laboratory data analysis in **Appendix E.** According to these results, TBELs apply to this specific discharge.

It is noted that a WQBEL is listed for total residual chlorine (TRC), however, groundwater at the subject site does not have chlorinated additives. Thus, the WQBEL for TRC does not apply to this specific discharge.

Groundwater Treatment

Based upon the anticipated rates of construction dewatering in conjunction with the results of the above referenced groundwater analyses, it is our opinion that one 5,000-gallon capacity settling tank and bag filters in series will be necessary to settle out suspended solids in the effluent and thus lower levels of metals and CVOCs. However, if discharge testing indicates that levels of CVOCs or PAHs remain present in the effluent which exceed the applicable RGP discharge limits or in excess of the MCP GW-2 risk standards, a granular activated carbon (GAC) filter will be incorporated into treatment system to meet the limits established by the US EPA prior to the discharge of the effluent. A schematic of the treatment system is shown on **Figure 4**.

A Best Management Practices Plan (BMPP) has been prepared as **Appendix F** to the RGP and will be posted at the site during the time period that temporary construction dewatering is occurring at the site.

Summary and Conclusions

The purpose of this report is to assess site environmental conditions and groundwater data to support an application for a Massachusetts Remediation General Permit for off-site discharge of dewatered groundwater which will be encountered during the proposed development of 582 Broadway property and adjacent parcels in Lawrence, Massachusetts.

Based on the results of the above referenced groundwater analyses, treatment of construction dewatering will be necessary to meet allowable TBELs for Inorganics, Non-Halogenated Volatile Organic Compounds, Non-Halogenated Semi-Volatile Organics and Non-Halogenated Volatile Organic Compounds apply. However, should the effluent monitoring results indicate levels halogenated VOCs in excess of the applicable TBELs and/or WQBEL established in the Massachusetts RGP, additional mitigative measures in the form of GAC Filtration 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.

Sincerely,

McPHAIL ASSOCIATES, LLC

Kate Hanrahan

William J. Burns, L.S.P.

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KEH/wjb

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 582 Broadway and adjacent parcels in Lawrence, 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 Remediation General Permit MAG910000.

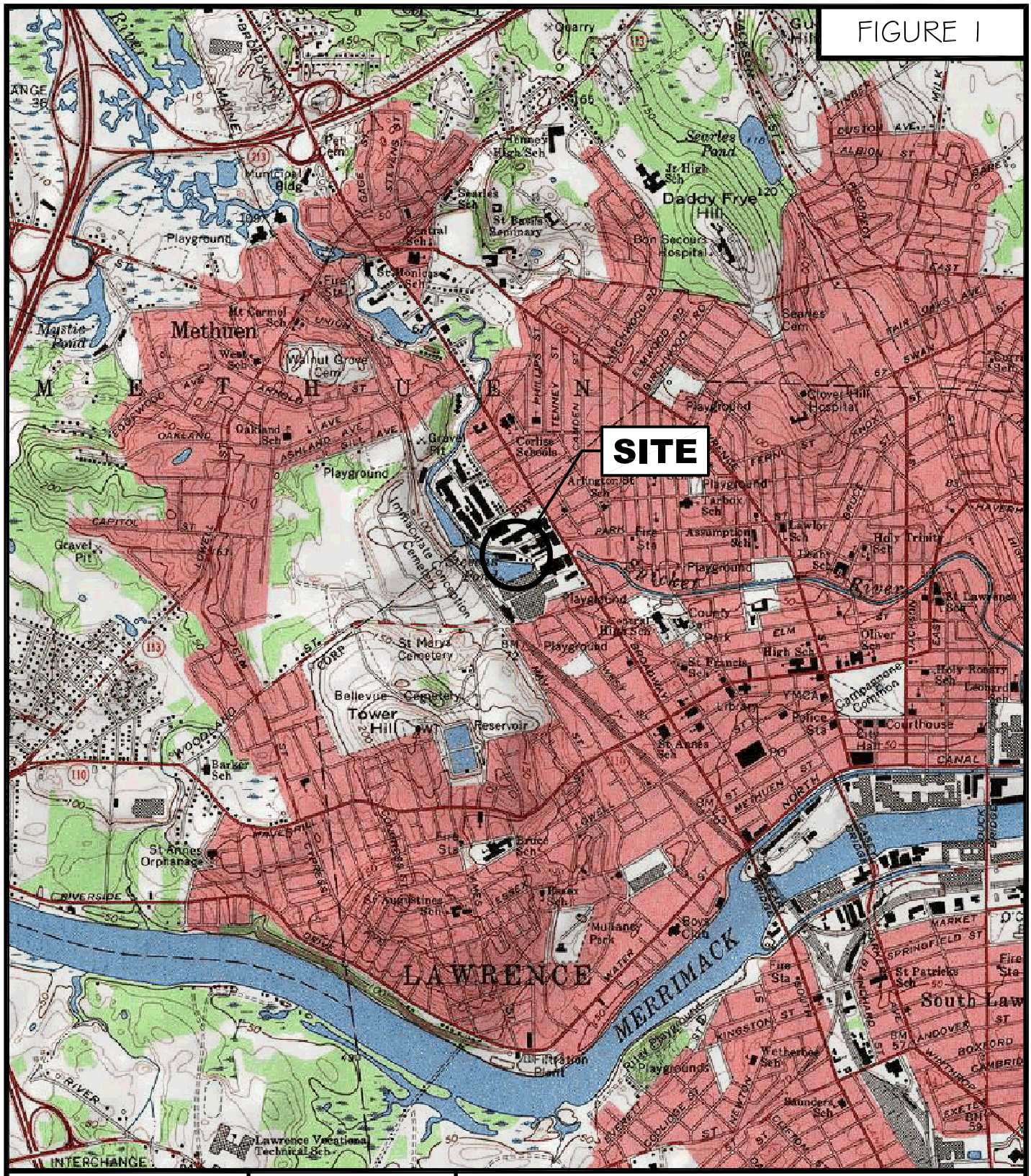
The observations were made under the conditions stated in this report. The conclusions presented above were based on these observations. If variations in the nature and extent of subsurface conditions between the spaced subsurface explorations become evident in the future, it will be necessary to re-evaluate 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 Masterson Construction Corporation, Trinity Van Brodie Nine Limited Partnership and Trinity Van Brodie Four Limited Partnership. 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.

FIGURE 1



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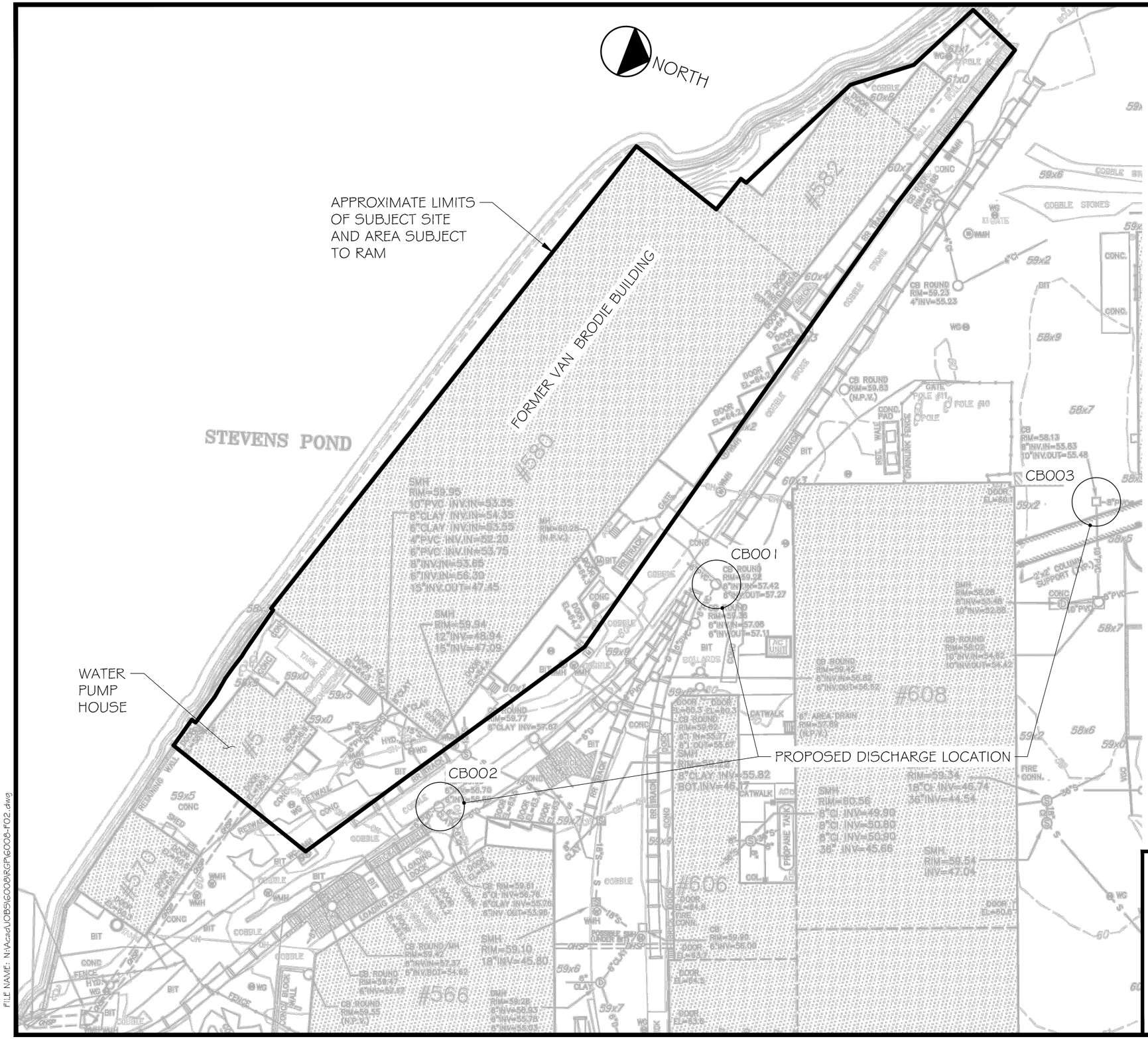
SCALE 1:25,000

PROJECT LOCATION PLAN

FORMER VAN BRODIE BUILDING

LAWRENCE MASSACHUSETTS

FIGURE 2



REFERENCE: THIS PLAN WAS PREPARED FROM A 40-SCALE DRAWING ENTITLED "EXISTING CONDITIONS PLAN" DATED JUNE 23, 2008 BY GLM ENGINEERING CONSULTANTS, INC.

GRAPHIC SCALE

50 0 50 100

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FORMER VAN BRODIE BUILDING
LAWRENCE MASSACHUSETTS

SITE PLAN

FOR

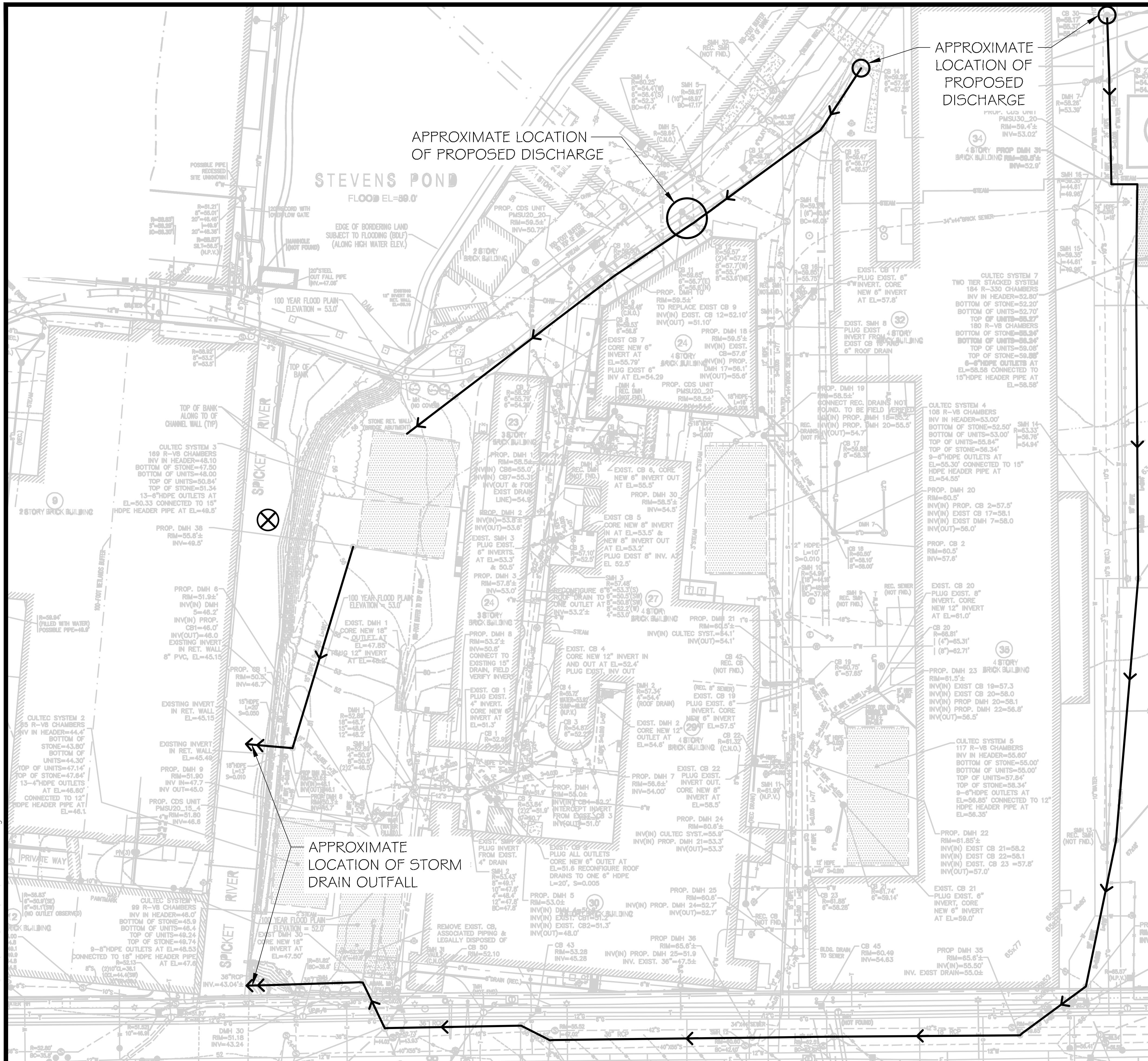
ABERTHAW CONSTRUCTION CO. INC.

BY

McPHAIL ASSOCIATES, LLC

Date: APRIL 2018	Dwn: F.G.P.	Chkd: K.E.H.	Scale: 1" = 50'
Project No: 6008			

FILE NAME: N:\Acad\JOBS\6008\RGF\6008-FIG2.dwg



LEGEND

↗ — INDICATES DIRECTION OF FLOW

⊗ — RECEIVING WATER BODY SURFACE WATER GRAB SAMPLE

REFERENCE: THIS PLAN WAS PREPARED FROM A 40-SCALE DRAWING ENTITLED "DRAINAGE SITE PLAN" DATED OCTOBER 27, 2007 BY LEVEL DESIGN GROUP.

GRAPHIC SCALE

80 0 80 160

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FORMER VAN BRODIE BUILDING

LAWRENCE MASSACHUSETTS

STORM DRAIN DISCHARGE FLOW PLAN

FOR

ABERTHAW CONSTRUCTION CO. INC.

BY

McPHAIL ASSOCIATES, LLC

Date: APRIL 2018	Dwn: F.G.P.	Chkd: K.E.H.	Scale: 1" = 80'
Project No: 6008			

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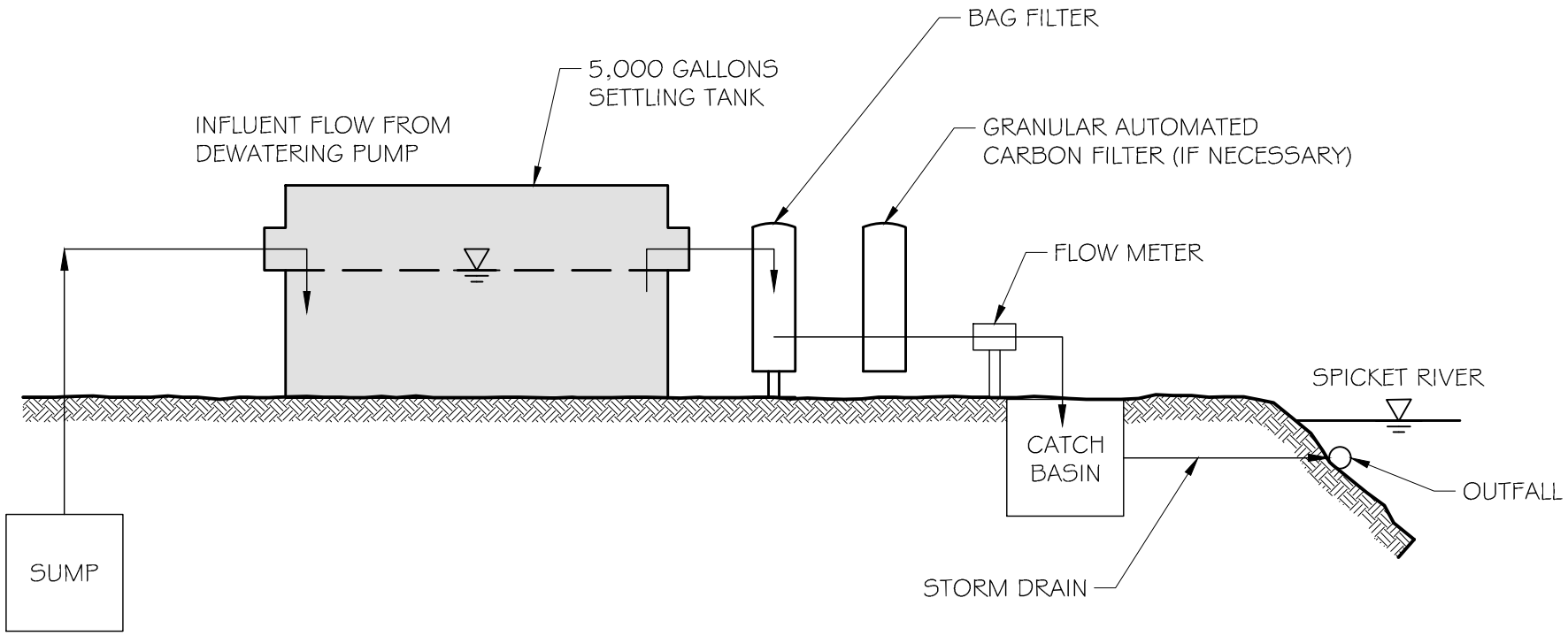
FIGURE 4



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FORMER VAN BRODIE BUILDING

LAWRENCE MASSACHUSETTS

SCHEMATIC OF WATER FLOW

FOR

ABERTHAW CONSTRUCTION CO. INC.

BY

McPHAIL ASSOCIATES, LLC

CONSULTING GEOTECHNICAL ENGINEERS

Date: APRIL 2018	Dwn: F.G.P.	Chkd: K.E.H.	Scale: N.T.S.
Project No: 6008			

TABLE 1
Laboratory Analytical Results - Groundwater

582 Broadway
Lawrence Massachusetts
Project No. 6008

LOCATION	EPA-Aquatic and Human Clean Water Criteria	GP-204 (OW)	GP-204 (OW)
SAMPLING DATE		**4/3/2018**	**3/1/2018**
LAB SAMPLE ID		**L1811479-01**	**L1807276-04**
General Chemistry			
Total Suspended Solids (µg/L)	30000	280000	--
Total Cyanide (µg/L)	5.2	ND(5)	--
Total Residual Chlorine (µg/l)		ND(20)	--
Chloride (µg/L)	230000	180000	--
pH (H) (SU)		7	--
Nitrogen, Ammonia (µg/L)		3150	--
Chromium, Hexavalent (µg/L)	11	ND (10)	--
Total Hardness			
Hardness			
Total Metals (µg/L)			
Antimony, Total	640	ND(4)	--
Total Arsenic	150	15.5	--
Total Cadmium	0.72	ND(0.2)	--
Total Chromium		ND(7.96)	--
Total Copper		2.68	--
Total Iron	1000	34300	--
Total Lead	2.5	1.66	--
Mercury, Total	0.77	ND(0.2)	--
Nickel, Total	52	4.2	--
Selenium, Total	4200	ND(5)	--
Silver, Total	3.2	ND(0.4)	--
Total Zinc	120	ND(10)	--
MCP Volatile Organics (µg/L)			
cis-1,2-Dichloroethene		--	700
1,2-Dichloroethene (total)		--	700

ND - Not detected in excess of the detection limit
(#) - Detection Limit
EPA-ALFCMC - National Recommended Water Quality Criteria - Freshwater Human and Aquatic CMC (chronic)

TABLE 2
Laboratory Analytical Results - Historical Groundwater

582 Broadway
Lawrence, MA
Project No. 6008

LOCATION	Method 1 GW-2	Method 1 GW-3	GP1 (OW)	GP2 (OW)	GP-2 (OW)	GP3 (OW)	GP-3 (OW)	GP4 (OW)	GP-4 (OW)	GP-101	GP-101	GP-102
SAMPLING DATE			12/11/2015	12/11/2015	12/28/2017	12/11/2015	2/24/2016	12/11/2015	2/24/2016	1/22/2016	12/28/2017	1/22/2016
LAB SAMPLE ID			L1532808-04	L1532808-02	L1747843-02	L1532808-03	L1605059-02	L1532808-01	L1605059-01	L1602006-01	L1747843-01	L1602006-02
MCP Dissolved Metals (ug/l)												
Antimony, Dissolved		8000	-	-	-	-	-	-	65	-	-	-
Arsenic, Dissolved		900	-	-	-	-	-	-	ND(5)	-	-	-
Beryllium, Dissolved		200	-	-	-	-	-	-	ND(5)	-	-	-
Cadmium, Dissolved		4	-	-	-	-	-	-	**ND(4)**	-	-	-
Chromium, Dissolved		300	-	-	-	-	-	-	ND(10)	-	-	-
Copper, Dissolved			-	-	-	-	-	-	ND(10)	-	-	-
Lead, Dissolved		10	-	-	-	-	-	-	**ND(10)**	-	-	-
Mercury, Dissolved		20	-	-	-	-	-	-	ND(0.2)	-	-	-
Nickel, Dissolved		200	-	-	-	-	-	-	ND(25)	-	-	-
Selenium, Dissolved		100	-	-	-	-	-	-	ND(10)	-	-	-
Silver, Dissolved		7	-	-	-	-	-	-	**ND(7)**	-	-	-
Thallium, Dissolved		3000	-	-	-	-	-	-	ND(20)	-	-	-
Zinc, Dissolved		900	-	-	-	-	-	-	ND(50)	-	-	-
Extractable Petroleum Hydrocarbons (ug/l)												
C9-C18 Aliphatics	5000	50000	-	-	-	-	ND(100)	-	-	-	-	-
C19-C36 Aliphatics		50000	-	-	-	-	ND(100)	-	-	-	-	-
C11-C22 Aromatics, Adjusted	50000	5000	-	-	-	-	ND(100)	-	-	-	-	-
Naphthalene	700	20000	-	-	-	-	ND(10)	-	-	-	-	-
2-Methylnaphthalene	2000	20000	-	-	-	-	ND(10)	-	-	-	-	-
Acenaphthylene	10000	40	-	-	-	-	ND(10)	-	-	-	-	-
Acenaphthene		10000	-	-	-	-	ND(10)	-	-	-	-	-
Fluorene		40	-	-	-	-	ND(10)	-	-	-	-	-
Phenanthrene		10000	-	-	-	-	ND(10)	-	-	-	-	-
Anthracene		30	-	-	-	-	ND(10)	-	-	-	-	-
Fluoranthene		200	-	-	-	-	ND(10)	-	-	-	-	-
Pyrene		20	-	-	-	-	ND(10)	-	-	-	-	-
Benzo(a)anthracene		1000	-	-	-	-	ND(10)	-	-	-	-	-
Chrysene		70	-	-	-	-	ND(10)	-	-	-	-	-
Benzo(b)fluoranthene		400	-	-	-	-	ND(10)	-	-	-	-	-
Benzo(k)fluoranthene		100	-	-	-	-	ND(10)	-	-	-	-	-
Benzo(a)pyrene		500	-	-	-	-	ND(10)	-	-	-	-	-
Indeno(1,2,3-cd)Pyrene		100	-	-	-	-	ND(10)	-	-	-	-	-
Dibenzo(a,h)anthracene		40	-	-	-	-	ND(10)	-	-	-	-	-
Benzo(ghi)perylene		20	-	-	-	-	ND(10)	-	-	-	-	-
MCP Volatile Organics (ug/l)												
Methylene chloride	2000	50000	ND(2)	ND(2)	-	ND(2)	-	ND(2)	-	ND(2)	-	ND(2)
1,1-Dichloroethane	2000	20000	ND(1)	ND(1)	-	3.4	-	ND(1)	-	ND(1)	-	ND(1)
Tetrachloroethene	50	30000	ND(1)	ND(1)	-	7.2	-	ND(1)	-	1.1	-	2.3
1,1,1-Trichloroethane	4000	20000	ND(1)	ND(1)	-	3	-	ND(1)	-	ND(1)	-	ND(1)
1,1,2,2-Tetrachloroethane	9	50000	ND(1)	ND(1)	-	ND(1)	-	ND(1)	-	ND(1)	-	ND(1)
Benzene	1000	10000	ND(0.5)	ND(0.5)	-	1.4	-	ND(0.5)	-	ND(0.5)	-	ND(0.5)
Vinyl chloride	2	50000	**2.1**	ND(1)	-	1.3	-	ND(1)	-	**140**	-	ND(1)
Chloroethane			ND(2)	ND(2)	-	ND(2)	-	ND(2)	-	ND(2)	-	ND(2)
1,1-Dichloroethene	80	30000	ND(1)	ND(1)	-	ND(1)	-	ND(1)	-	ND(1)	-	ND(1)
trans-1,2-Dichloroethene	80	50000	ND(1)	ND(1)	-	ND(1)	-	ND(1)	-	ND(1)	-	ND(1)
Trichloroethene	5	5000	**24**	ND(1)	-	1.5	-	ND(1)	-	ND(1)	-	3.3
cis-1,2-Dichloroethene	20	50000	**25**	ND(1)	-	3.1	-	ND(1)	-	**53**	-	5.1
1,2-Dichloroethene (total)			25	ND(1)	-	3.1	-	ND(1)	-	53	-	5.1
Naphthalene	700	20000	ND(2)	ND(2)	-	36	-	ND(2)	-	ND(2)	-	ND(2)
SUM			51.1	ND	-	56.9	-	ND	-	194.1	-	10.7
Volatile Petroleum Hydrocarbons (ug/l)												
C9-C10 Aromatics	4000	50000	-	-	ND(50)	-	-	-	-	-	ND(50)	-
C5-C8 Aliphatics, Adjusted	3000	50000	-	-	ND(50)	-	-	-	-	-	ND(50)	-
C9-C12 Aliphatics, Adjusted	5000	50000	-	-	ND(50)	-	-	-	-	-	ND(50)	-
Benzene	1000	10000	-	-	ND(2)	-	-	-	-	-	ND(2)	-
Toluene	50000	40000	-	-	ND(2)	-	-	-	-	-	ND(2)	-
Ethylbenzene	20000	5000	-	-	ND(2)	-	-	-	-	-	ND(2)	-
p/m-Xylene	3000	5000	-	-	ND(2)	-	-	-	-	-	ND(2)	-
o-Xylene	3000	5000	-	-	ND(2)	-	-	-	-	-	ND(2)	-
Methyl tert butyl ether	50000	50000	-	-	ND(3)	-	-	-	-	-	ND(3)	-
Naphthalene	700	20000	-	-	ND(4)	-	-	-	-	-	ND(4)	-

ND-not detected in excess of the laboratory reporting limits in ()
Bold - exceeds GW-2 standard
Tested compounds not shown do not exceed laboratory reporting limits

TABLE 2
Laboratory Analytical Results - Historical Groundwater

582 Broadway
Lawrence, MA
Project No. 6008

LOCATION	Method 1 GW-2	Method 1 GW-3	GP-103	GP-104	GP-105	GP-105 (OW)	GP-107	GP-109 (OW)	GP-201	GP-202	GP-203	GP-204	GP-205	GP-206
SAMPLING DATE			1/22/2016	1/22/2016	1/22/2016	2/24/2016	1/22/2016	2/24/2016	3/1/2018	3/1/2018	3/1/2018	3/1/2018	3/1/2018	3/1/2018
LAB SAMPLE ID			L1602006-03	L1602006-04	L1602006-05	L1605059-03	L1602006-06	L1605059-04	L1807276-01	L1807276-02	L1807276-03	L1807276-04	L1807276-05	L1807276-06
MCP Dissolved Metals (ug/l)														
Antimony, Dissolved		8000	-	-	-	ND(50)	-	ND(50)	-	-	-	-	-	-
Arsenic, Dissolved		900	-	-	-	ND(5)	-	ND(5)	-	-	-	-	-	-
Beryllium, Dissolved		200	-	-	-	ND(5)	-	ND(5)	-	-	-	-	-	-
Cadmium, Dissolved		4	-	-	-	**ND(4)**	-	**ND(4)**	-	-	-	-	-	-
Chromium, Dissolved		300	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Copper, Dissolved			-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Lead, Dissolved		10	-	-	-	**ND(10)**	-	**ND(10)**	-	-	-	-	-	-
Mercury, Dissolved		20	-	-	-	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Nickel, Dissolved		200	-	-	-	ND(25)	-	ND(25)	-	-	-	-	-	-
Selenium, Dissolved		100	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Silver, Dissolved		7	-	-	-	**ND(7)**	-	**ND(7)**	-	-	-	-	-	-
Thallium, Dissolved		3000	-	-	-	ND(20)	-	ND(20)	-	-	-	-	-	-
Zinc, Dissolved		900	-	-	-	ND(50)	-	ND(50)	-	-	-	-	-	-
Extractable Petroleum Hydrocarbons (ug/l)														
C9-C18 Aliphatics	5000	50000	-	-	-	ND(100)	-	ND(100)	-	-	-	-	-	-
C19-C36 Aliphatics		50000	-	-	-	ND(100)	-	ND(100)	-	-	-	-	-	-
C11-C22 Aromatics, Adjusted	50000	5000	-	-	-	ND(100)	-	ND(100)	-	-	-	-	-	-
Naphthalene	700	20000	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
2-Methylnaphthalene	2000	20000	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Acenaphthylene	10000	40	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Acenaphthene		10000	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Fluorene		40	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Phenanthrene		10000	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Anthracene		30	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Fluoranthene		200	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Pyrene		20	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Benzo(a)anthracene		1000	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Chrysene		70	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Benzo(b)fluoranthene		400	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Benzo(k)fluoranthene		100	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Benzo(a)pyrene		500	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Indeno(1,2,3-cd)Pyrene		100	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Dibenzo(a,h)anthracene		40	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
Benzo(ghi)perylene		20	-	-	-	ND(10)	-	ND(10)	-	-	-	-	-	-
MCP Volatile Organics (ug/l)														
Methylene chloride	2000	50000	ND(50)	ND(2)	ND(2)	-	ND(2)	ND(2)	ND(2)	ND(2)	ND(100)	ND(4)	ND(2)	ND(2)
1,1-Dichloroethane	2000	20000	ND(25)	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	ND(1)	ND(50)	ND(2)	ND(1)	ND(1)
Tetrachloroethene	50	30000	**3000**	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	ND(1)	**4000**	**210**	ND(1)	ND(1)
1,1,1-Trichloroethane	4000	20000	ND(25)	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	ND(1)	ND(50)	ND(2)	ND(1)	ND(1)
1,1,2,2-Tetrachloroethane	9	50000	**ND(25)**	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	ND(1)	**ND(50)**	ND(2)	ND(1)	ND(1)
Benzene	1000	10000	ND(12)	ND(0.5)	ND(0.5)	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(25)	ND(1)	ND(0.5)	ND(0.5)
Vinyl chloride	2	50000	**46**	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	1.1	**240**	**120**	1	ND(1)
Chloroethane			ND(50)	ND(2)	ND(2)	-	ND(2)	ND(2)	ND(2)	ND(2)	ND(100)	ND(4)	ND(2)	ND(2)
1,1-Dichloroethene	80	30000	ND(25)	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	ND(1)	ND(50)	2.5	ND(1)	ND(1)
trans-1,2-Dichloroethene	80	50000	ND(25)	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	ND(1)	ND(50)	2.6	ND(1)	ND(1)
Trichloroethene	5	5000	**470**	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	ND(1)	**470**	**160**	1.4	ND(1)
cis-1,2-Dichloroethene	20	50000	**540**	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	2.8	**1300**	**700**	2.2	ND(1)
1,2-Dichloroethene (total)			540	ND(1)	ND(1)	-	ND(1)	ND(1)	ND(1)	2.8	1300	700	2.2	ND(1)
Naphthalene	700	20000	ND(50)	ND(2)	ND(2)	-	ND(2)	ND(2)	ND(2)	ND(2)	ND(100)	ND(4)	ND(2)	ND(2)
SUM			4056	ND	ND	-	ND	ND	ND	3.9	6010	1145.1	4.6	ND
Volatile Petroleum Hydrocarbons (ug/l)														
C9-C10 Aromatics	4000	50000	-	-	-	-	-	-	-	-	-	-	-	-
C5-C8 Aliphatics, Adjusted	3000	50000	-	-	-	-	-	-	-	-	-	-	-	-
C9-C12 Aliphatics, Adjusted	5000	50000	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	1000	10000	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	50000	40000	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	20000	5000	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	3000	5000	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	3000	5000	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	50000	50000	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	700	20000	-	-	-	-	-	-	-	-	-	-	-	-

ND-not detected in excess of the laboratory reporting limits in ()
Bold - exceeds GW-2 standard
Tested compounds not shown do not exceed laboratory reporting limits

Table 3
Labratory Analytical Results - Surface Water

582 Broadway
Lawrence, MA
Project No. 6008

LOCATION	SPICKET RIVER
SAMPLING DATE	**4/10/2018**
LAB SAMPLE ID	**L1807276**
General Chemistry (µg/L)	
Nitrogen, Ammonia	ND (75)
Total Hardness (mg/L)	
Hardness	59.4
Total Metals (µg/L)	
Arsenic, Total	ND (5)
Copper, Total	ND (10)
Iron, Total	336
Lead, Total	ND (10)
Nickel, Total	ND (25)

ND - Not detected in excess of the laboratory method detection limit
Blank - Not analyzed

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 582 Broadway and adjacent parcels in Lawrence, 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 Remediation General Permit MAG910000.

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 Masterson Construction Corporation, Trinity Van Brodie Nine Limited Partnership and Trinity Van Brodie Four Limited Partnership. 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 REMEDIATION GENERAL PERMIT

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

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:
Former Van Brodie Building</td><td colspan="3">Site address: 576, 582, 590 and 600 Broadway
Street:</td></tr>
<tr><td>City: Lawrence</td><td>State: MA</td><td>Zip: 01841</td></tr>
<tr><td rowspan="4">2. Site owner
Trinity Van Brodie Nine Limited Partnership and Trinity Van Brodie Four Limited Partnership

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Lawrence Sparrow</td></tr>
<tr><td colspan="2">Telephone: 617-398-2526</td><td>Email: lsparrow@trinityfinancial.com</td></tr>
<tr><td colspan="3">Mailing address: 75 Federal Street; 4th Floor
Street:</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02110</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
Masterson Construction</td><td colspan="3">Contact Person: William Peach</td></tr>
<tr><td colspan="2">Telephone: 978-774-8782</td><td>Email: wpeach@jmasterson.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 46 Prince Street</td></tr>
<tr><td>City: Danvers</td><td>State: MA</td><td>Zip: 01923</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:

NPDES permit is (check all that apply: ■ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
■ MA Chapter 21e; list RTN(s): 3-33667
☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:
☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Spicket River	MA84A-10	B

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

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

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

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP.

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	1.54
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	13.8

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ■ Yes ☐ No
If yes, indicate date confirmation received: 4/17/18

7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No

C. Source water information:

1. Source water(s) is (check any that apply):

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

2. Source water contaminants: Inorganics and Halogenated Volatile Organic Compounds	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): ☐ Yes ■ No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII.	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): ☐ Yes ☐ No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): ☐ Yes ■ No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ☐ Existing discharge ■ New discharge ☐ New source	
Outfall(s): Catch Basin 001 Catch Basin 001 is considered to be the primary outfall location, however as construction progresses it may be necessary to move the treatment system for discharge into outfall locations catch basin 002 or 003	Outfall location(s): (Latitude, Longitude) 42.715149, -71.179447
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Discharge outfall indirect into Spicket River ☐ A private storm sewer system ■ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ■ No, if so, explain, with an estimated timeframe for obtaining permission: Submission of documentation to and approval from City of Lawrence in tandem with this NOI Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ■ Yes ☐ No	
Provide the expected start and end dates of discharge(s) (month/year): May 1, 2018 - May 1, 2019 Indicate if the discharge is expected to occur over a duration of: ■ less than 12 months ☐ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="5">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
■ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

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

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

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia		✔	1	121,4500N	75	3150	3150	Report mg/L	---
Chloride		✔	1	300.0	2500	180000	180000	Report µg/l	---
Total Residual Chlorine	✔		1	121,4500C	20	<DL	<DL	0.2 mg/L	
Total Suspended Solids		✔	1	121,2540D	10000	280000	280000	30 mg/L	
Antimony	✔		1	200.8	4	<DL	<DL	206 µg/L	
Arsenic		✔	1	200.8	1	15000	15000	104 µg/L	
Cadmium	✔		1	200.8	0.2	<DL	<DL	10.2 µg/L	
Chromium III		✔	1	200.8	10	7.96	7.96	323 µg/L	
Chromium VI	✔		1	1,7196A	10	<DL	<DL	323 µg/L	
Copper		✔	1	200.8	1	13.03	13.03	242 µg/L	
Iron		✔	1	200.7	50	34300	34300	5,000 µg/L	
Lead		✔	1	200.8	0.5	1.66	1.66	160 µg/L	
Mercury	✔		1	EPA 245.1	0.2	<DL	<DL	0.739 µg/L	
Nickel		✔	1	200.8	2	4.2	4.2	1,450 µg/L	
Selenium	✔		1	200.8	5	<DL	<DL	235.8 µg/L	
Silver	✔		1	200.8	0.4	<DL	<DL	35.1 µg/L	
Zinc	✔		1	200.8	10	<DL	<DL	420 µg/L	
Cyanide	✔		1	121,4500C	5	<DL	<DL	178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX		✔						100 µg/L	---
Benzene		✔	17	97, 8260C	1.0	1.4	2.26	5.0 µg/L	---
1,4 Dioxane	✔		1	97, 8260C	500	<DL	<DL	200 µg/L	---
Acetone	✔		1	97, 8260C	10	<DL	<DL	7.97 mg/L	---
Phenol	✔		0					1,080 µg/L	

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✔		1	97, 8260C	2.0	<DL	<DL	4.4 µg/L	
1,2 Dichlorobenzene	✔		1	97, 8260C	2.0	<DL	<DL	600 µg/L	---
1,3 Dichlorobenzene	✔		1	97, 8260C	2.0	<DL	<DL	320 µg/L	---
1,4 Dichlorobenzene	✔		1	97, 8260C	2.0	<DL	<DL	5.0 µg/L	---
Total dichlorobenzene	✔		1	97, 8260C	2.0	<DL	<DL	763 µg/L in NH	---
1,1 Dichloroethane		✔	17	97, 8260C	1.0	3.4	4.72	70 µg/L	---
1,2 Dichloroethane	✔		1	97, 8260C	2.0	<DL	<DL	5.0 µg/L	---
1,1 Dichloroethylene		✔	1	97, 8260C	2.0	2.5	2.5	3.2 µg/L	---
Ethylene Dibromide	✔		0					0.05 µg/L	---
Methylene Chloride	✔		1	97, 8260C	4.0	<DL	<DL	4.6 µg/L	---
1,1,1 Trichloroethane		✔	17	97, 8260C	2.0	3	4.59	200 µg/L	---
1,1,2 Trichloroethane	✔		1	97, 8260C	2.0	<DL	<DL	5.0 µg/L	---
Trichloroethylene		✔	17	97, 8260C	2.0	470	66.48	5.0 µg/L	---
Tetrachloroethylene		✔	1	97, 8260C	2.0	4000	424.7	5.0 µg/L	
cis-1,2 Dichloroethylene		✔	17	97, 8260C	2.0	1300	154.78	70 µg/L	---
Vinyl Chloride		✔	17	97, 8260C	2.0	240	32.44	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		0					190 µg/L	
Diethylhexyl phthalate	✔		0					101 µg/L	
Total Group I PAHs		✔						1.0 µg/L	---
Benzo(a)anthracene		✔	0					As Total PAHs	
Benzo(a)pyrene		✔	0						
Benzo(b)fluoranthene		✔	0						
Benzo(k)fluoranthene		✔	0						
Chrysene		✔	0						
Dibenzo(a,h)anthracene		✔	0						
Indeno(1,2,3-cd)pyrene		✔	0						

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs		✔						100 µg/L	---
Naphthalene		✔	17	97, 8260C	2.0	36	12.7	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs			0					0.000064 µg/L	---
Pentachlorophenol			0					1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		✔						5.0 mg/L	---
Ethanol	✔		0					Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	97, 8260C	4.0	<DL	<DL	70 µg/L	
tert-Butyl Alcohol	✔		0					120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether			1	97, 8260C	4.0	<DL	<DL	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
pH - Influent		✔	1	1214500H		7.0	7.0		

E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)

☐ Adsorption/Absorption ☐ Advanced Oxidation Processes ☐ Air Stripping ■ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption
☐ Ion Exchange ☐ Precipitation/Coagulation/Flocculation ☐ Separation/Filtration ☐ Other; if so, specify:

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.
Settling tank, bag filters, GAC filter (if necessary)

Identify each major treatment component (check any that apply):
■ Fractionation tanks☐ Equalization tank ☐ Oil/water separator ☐ Mechanical filter ☐ Media filter
☐ Chemical feed tank ☐ Air stripping unit ■ Bag filter ■ Other; if so, specify: GAC filter (if necessary)

Indicate if either of the following will occur (check any that apply):
☐ Chlorination ☐ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Frac Tank Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	100
Provide the proposed maximum effluent flow in gpm.	100
Provide the average effluent flow in gpm.	35
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	

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

F. Chemical and additive information

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

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

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

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

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

G. Endangered Species Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

■ **FWS Criterion A**: No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".

☐ **FWS Criterion B**: Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): ☐ Yes ☐ No; if no, is consultation underway? (check one): ☐ Yes ☐ No

☐ **FWS Criterion C**: Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) ☐ the operator ☐ EPA ☐ Other; if so, specify:

☐ **NMFS Criterion**: A determination made by EPA is affirmed by the operator that the discharges and related activities will have "no effect" or are "not likely to adversely affect" any federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and will not result in any take of listed species. Has the operator previously completed consultation with NMFS? (check one): ☐ Yes ☐ No

2. Has the operator attached supporting documentation of ESA eligibility in accordance with the instructions in Appendix I, and G, above? (check one): ☐ Yes ☐ No

Does the supporting documentation include any written concurrence or finding provided by the Services? (check one): ☐ Yes ☐ No; if yes, attach.

H. National Historic Preservation Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

☐ **Criterion A**: No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.

■ **Criterion B**: Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.

☐ **Criterion C**: Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

2. Has the operator attached supporting documentation of NHPA eligibility in accordance with the instructions in H, above? (check one): ☐ Yes ■ No

Does the supporting documentation include any written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the operator will carry out to mitigate or prevent any adverse effects on historic properties? (check one): ☐ Yes ■ No

I. Supplemental information

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

n/a

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

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

J. Certification requirement

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

BMPP certification statement: A BMPP meeting the requirements of this general permit will be developed and implemented prior to the initiation of discharge.	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☐ No ■ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ■ No ☐ NA ☐
Signature: William Peach	Date: 4/30/18
Print Name and Title: William Peach, Vice President	

APPENDIX C:

DEP PRIORITY RESOURCES MAP

USGS STREAMFLOW STATISTICS REPORT

DILUTION FACTOR AND WQBEL CALCULATIONS

ADDITIONAL NOI SUPPORT INFORMATION

MassDEP - Bureau of Waste Site Cleanup

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

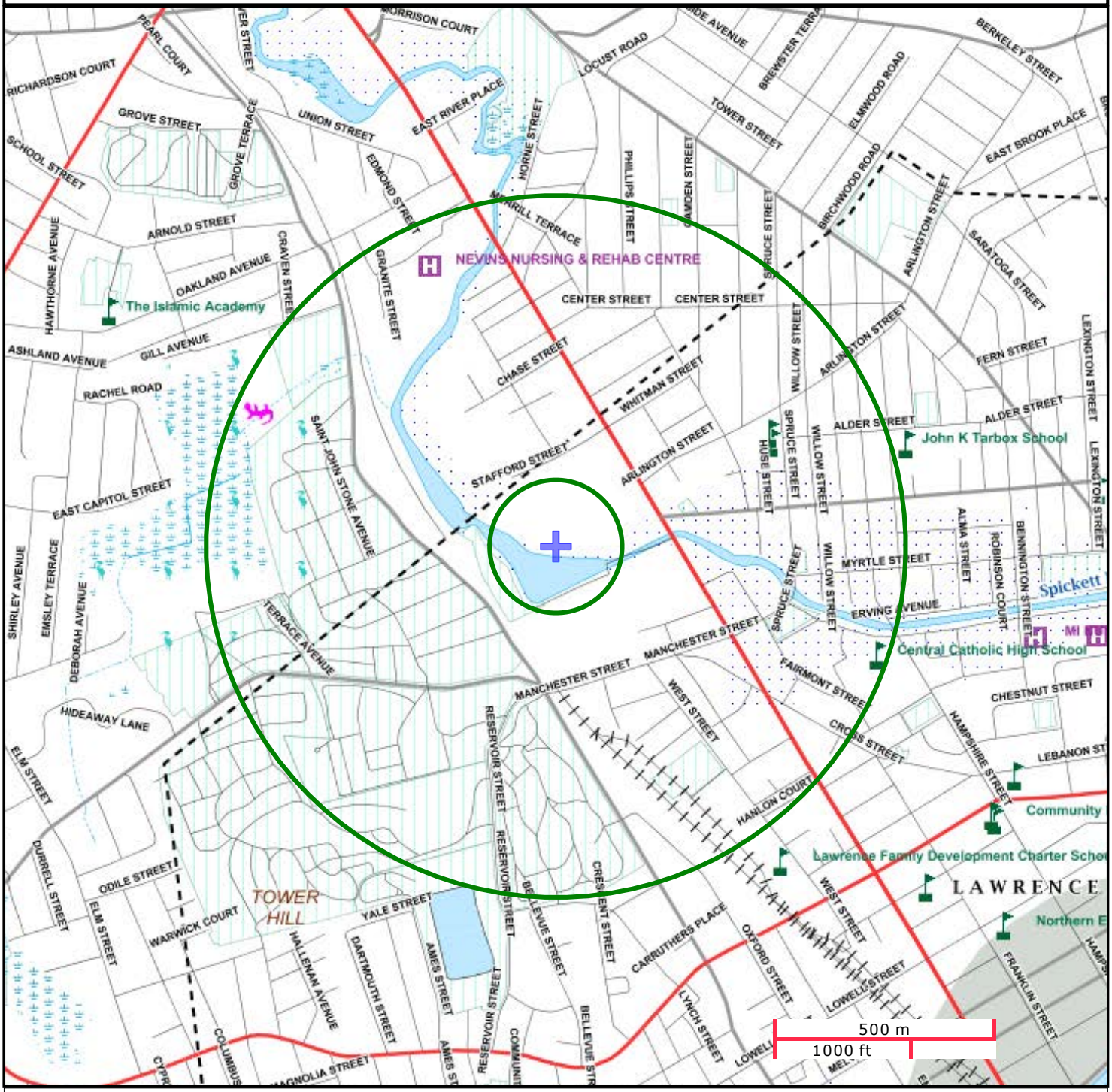
Site Information:

580 BROADWAY LAWRENCE, MA

NAD83 UTM Meters:
4731488mN , 321485mE (Zone: 19)
February 8, 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: http://www.mass.gov/mgis/.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



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

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

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

Aquifers: Medium Yield, High Yield, EPA Sole Source

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

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

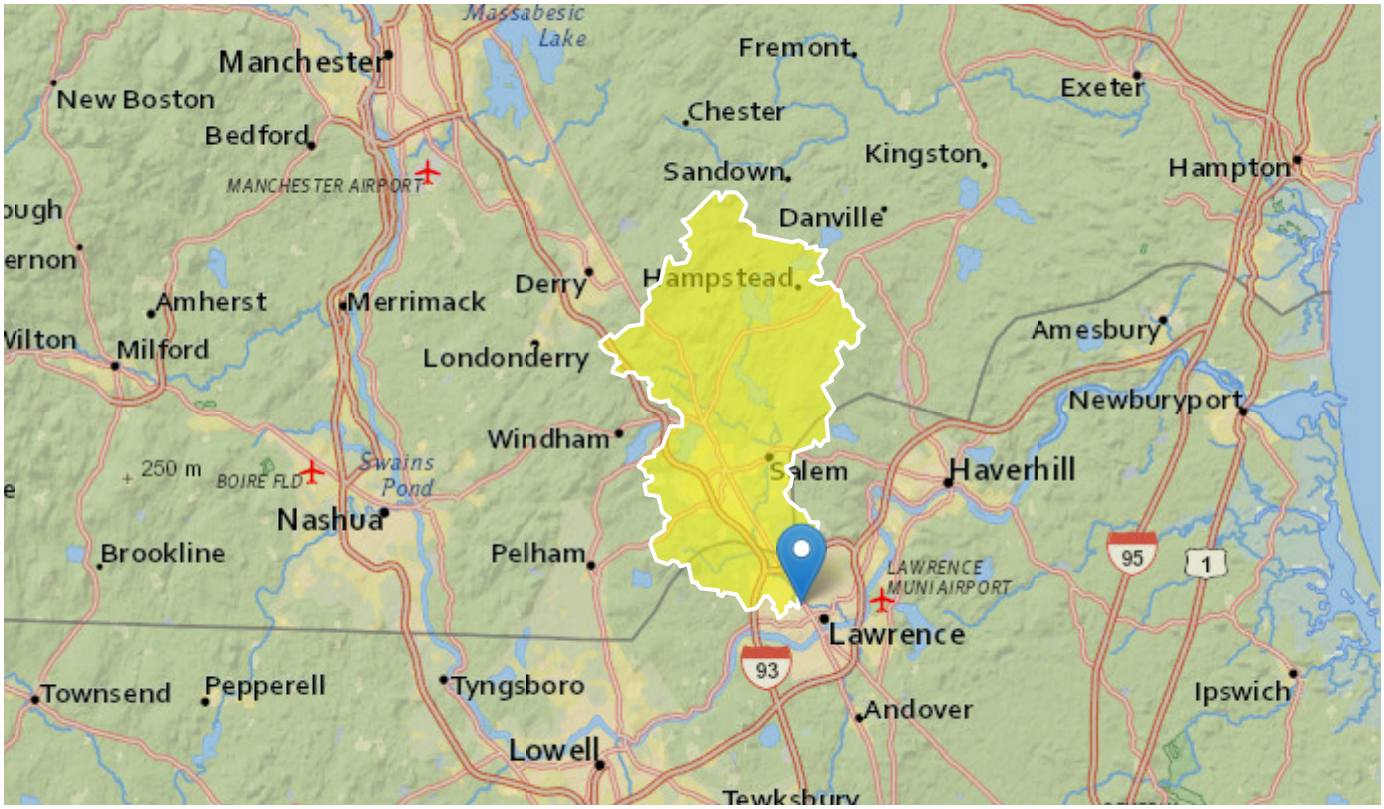
FEMA 100yr Floodplain; Protected Open Space; ACEC

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

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

StreamStats Report

Region ID: MA
Workspace ID: MA20180411200320126000
Clicked Point (Latitude, Longitude): 42.71472, -71.17892
Time: 2018-04-11 16:03:38 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	74.6	square miles
ELEV	Mean Basin Elevation	230	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	13.45	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.1	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.333	percent

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	5.915	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	13.73	percent
FOREST	Percentage of area covered by forest	52.2	percent

Peak-Flow Statistics Parameters [100 Percent (74.6 square miles) Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	74.6	square miles	0.16	512
ELEV	Mean Basin Elevation	230	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	13.45	percent	0	32.3

Peak-Flow Statistics Flow Report [100 Percent (74.6 square miles) Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	1050	ft^3/s	537	2040	42.3
5 Year Peak Flood	1660	ft^3/s	843	3290	43.4
10 Year Peak Flood	2140	ft^3/s	1060	4320	44.7
25 Year Peak Flood	2810	ft^3/s	1350	5870	47.1
50 Year Peak Flood	3360	ft^3/s	1560	7240	49.4
100 Year Peak Flood	3930	ft^3/s	1770	8740	51.8
200 Year Peak Flood	4560	ft^3/s	1990	10400	54.1
500 Year Peak Flood	5430	ft^3/s	2290	12900	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

Flow-Duration Statistics Parameters [100 Percent (74.6 square miles) Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	74.6	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.1	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	2.333	percent	0.32	24.6

Flow-Duration Statistics Flow Report [100 Percent (74.6 square miles) Statewide Low Flow WRIR00 4135]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIl	PIu	SE	SEp
50 Percent Duration	77.7	ft^3/s	39.9	150	17.6	17.6
60 Percent Duration	57.9	ft^3/s	28.5	117	19.8	19.8
70 Percent Duration	34.5	ft^3/s	12.6	93.7	23.5	23.5
75 Percent Duration	26.7	ft^3/s	9.64	73.4	25.8	25.8
80 Percent Duration	18.9	ft^3/s	6.31	55.7	28.4	28.4
85 Percent Duration	14.4	ft^3/s	4.82	42	31.9	31.9
90 Percent Duration	9.93	ft^3/s	3.17	30.4	36.6	36.6
95 Percent Duration	6.31	ft^3/s	1.8	21.5	45.6	45.6
98 Percent Duration	4.1	ft^3/s	1.02	15.6	60.3	60.3
99 Percent Duration	3.23	ft^3/s	0.754	13	65.1	65.1

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Low-Flow Statistics Parameters [100 Percent (74.6 square miles) Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	74.6	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.333	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.1	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Flow Report [100 Percent (74.6 square miles) Statewide Low Flow WRIR00 4135]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	SEp
7 Day 2 Year Low Flow	7.15	ft^3/s	1.89	26.1	49.5	49.5
7 Day 10 Year Low Flow	2.87	ft^3/s	0.63	12.2	70.8	70.8

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

August Flow-Duration Statistics Parameters [100 Percent (74.6 square miles) Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	74.6	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.333	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.1	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

August Flow-Duration Statistics Flow Report [100 Percent (74.6 square miles) Statewide Low Flow WRIR00 4135]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	SEp

Statistic	Value	Unit	PIl	Plu	SE	SEp
August 50 Percent Duration	15.4	ft^3/s	5.14	45.3	33.2	33.2

August Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Bankfull Statistics Parameters [100 Percent (74.6 square miles) Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	74.6	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	5.915	percent	2.2	23.9

Bankfull Statistics Flow Report [100 Percent (74.6 square miles) Bankfull Statewide SIR2013 5155]

PIl: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
Bankfull Width	79.4	ft	21.3
Bankfull Depth	3.21	ft	19.8
Bankfull Area	255	ft^2	29
Bankfull Streamflow	833	ft^3/s	55

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

Probability Statistics Parameters [100 Percent (74.6 square miles) Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	74.6	square miles	0.01	1.99

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
PCTSNDGRV	Percent Underlain By Sand And Gravel	13.73	percent	0	100
FOREST	Percent Forest	52.2	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Disclaimers [100 Percent (74.6 square miles) Perennial Flow Probability]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Probability Statistics Flow Report [100 Percent (74.6 square miles) Perennial Flow Probability]

Statistic	Value	Unit
Probability Stream Flowing Perennially	0.998	dim

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

Kate Hanrahan

From: Vakalopoulos, Catherine (DEP) <Catherine.Vakalopoulos@MassMail.State.MA.US>
Sent: Tuesday, April 17, 2018 11:31 AM
To: Kate Hanrahan
Subject: RE: Dilution Factor Confirmation

Hi Kate,
Your dilution factor calculation of 13.8 for a discharge (design flow 100 GPM) to the Spickett River in Lawrence is correct. Since the Spickett River (segment ID: MA84A-10) is not an Outstanding Resource Water, for the purposes of completing the RGP NOI, you are all set from MassDEP.
Cathy

Cathy Vakalopoulos, Massachusetts Department of Environmental Protection
1 Winter St., Boston, MA 02108, 617-348-4026

Please consider the environment before printing this e-mail

From: Kate Hanrahan [mailto:KHanrahan@mcphailgeo.com]
Sent: Monday, April 16, 2018 9:57 AM
To: Vakalopoulos, Catherine (DEP)
Subject: Dilution Factor Confirmation

Hi Cathy,

I got your contact information from my colleague, Kirk Seaman. I am working through an RGP for a project site and am in need of dilution factor confirmation.

The outfall is located at 42.715355, -71.177039 and the 7Q10 stream stats value I got was 2.86 CFS. The dilution factor I got with a 100 GPM system is 13.8 MGD.

Thank you,

Kate Hanrahan

McPhail Associates, LLC
2269 Massachusetts Avenue
Cambridge, MA 02140
Tel: 617-868-1420
Cell: 978-273-6529
www.mcphailgeo.com

Enter number values in green boxes below

Enter values in the units specified

↓

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

Enter a dilution factor, if other than zero

↓

13.8

Enter values in the units specified

↓

0	C_d = Enter influent hardness in **mg/L** $CaCO_3$
59.4	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

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

↓

7.1	pH in **Standard Units**
	Temperature in **°C**
0	Ammonia in **mg/L**
59.4	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
0	Copper in **µg/L**
336	Iron in **µg/L**
0	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
0	Zinc in **µg/L**

Notes:

Freshwater: critical low flow equal to the 7Q10; enter alternate low flow if approved by the State
Saltwater (estuarine and marine): enter critical low flow if approved by the State; enter 0 if no entr
Discharge flow is equal to the design flow or 1 MGD, whichever is less
Optional entry for Q_d; leave 0 if no entry

Saltwater (estuarine and marine): only if approved by the State
Leave 0 if no entry

pH, temperature, and ammonia required for all discharges
Hardness required for freshwater
Salinity required for saltwater (estuarine and marine)
Metals required for all discharges if present and if dilution factor is > 1
Enter 0 if non-detect or testing not required

Enter **influent** concentrations in the units specified

if >1 sample, enter maximum

if >10 samples, may enter 95th percentile

Enter 0 if non-detect or testing not required

↓

0	TRC in **µg/L**
3.15	Ammonia in **mg/L**
0	Antimony in **µg/L**
1500	Arsenic in **µg/L**
0	Cadmium in **µg/L**
7.96	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
13.03	Copper in **µg/L**
34300	Iron in **µg/L**
1.66	Lead in **µg/L**
0	Mercury in **µg/L**
4.2	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
0	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
210	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0	Benzo(a)anthracene in **µg/L**
0	Benzo(a)pyrene in **µg/L**
0	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

I. Dilution Factor Calculation Method

A. 7Q10

Refer to Appendix V for determining critical low flow; must be approved by State before use in calculations.

B. Dilution Factor

Calculated as follows:

$$Df = \frac{Q_R + Q_P}{Q_P}$$

Q_R = 7Q10 in MGD

Q_P = Discharge flow, in MGD

II. Effluent Limitation Calculation Method

A. Calculate Water Quality Criterion:

Step 1. Downstream hardness, calculated as follows:

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

C_r = Downstream hardness in mg/L

Q_d = Discharge flow in MGD

C_d = Discharge hardness in mg/L

Q_s = Upstream flow (7Q10) in MGD

C_s = Upstream (receiving water) hardness in mg/L

Q_r = Downstream receiving water flow in MGD

Step 2. Total recoverable water quality criteria for hardness-dependent metals, calculated as follows:

Total Recoverable Criteria = $\exp\{m_c [\ln(h)] + b_c\}$

m_c = Pollutant-specific coefficient (m_a for silver)

b_c = Pollutant-specific coefficient (b_a for silver)

ln = Natural logarithm

h = Hardness calculated in Step 1

Step 3. Total recoverable water quality criteria for non-hardness-dependent metals, calculated as follows:

$$\text{WQC in } \mu g/L = \frac{\text{dissolved WQC in } \mu g/L}{\text{dissolved to total recoverable factor}}$$

B. Calculate WQBEL:

Step 1. WQBEL calculated as follows for parameter sampled in and detected in the receiving water:

$$C_d = \frac{Q_r C_r - Q_s C_s}{Q_d}$$

C_r = Water quality criterion in µg/L

Q_d = Discharge flow in MGD

C_d = WQBEL in µg/L

Q_s = Upstream flow (7Q10) in MGD

C_s = Ustream (receiving water) concentration in µg/L

Q_r = Downstream receiving water flow in MGD

Step 2. WQBEL calculated as follows for parameter not sampled in or not detected in receiving water:

$$C_d = (Q_r/Q_d) \times C_r$$

C_r = Water quality criterion in µg/L

Q_d = Discharge flow in MGD

Q_r = Downstream receiving water flow in MGD

C. Determine if a WQBEL applies:

Step 1. For parameter sampled in and detected in receiving water, downstream concentrations calculated as follows:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

C_r = Downstream concentration in µg/L

Q_d = Discharge flow in MGD

C_d = Influent concentration in µg/L

Q_s = Upstream flow (7Q10) in MGD

C_s = Upstream (receiving water) concentration in µg/L

Q_r = Downstream receiving water flow in MGD

The WQBEL applies if:

1) the projected downstream concentration calculated in accordance with Step 1, above, and the discharge concentration of a parameter are greater than the WQC calculated for that parameter in accordance with II.A, above

AND

2) the WQBEL determined for that parameter in accordance with II.B, above, is less than the TBEL in Part 2.1.1 of the RGP for that parameter. Otherwise, the TBEL in Part 2.1.1 of the RGP for that parameter applies.

Step 2. For a parameter not sampled in or not detected in receiving water, the WQBEL applies if:

1) the discharge concentration of a parameter is greater than the WQBEL determined for that parameter in accordance with II.A or II.B, above;

AND

2) the WQBEL determined for that parameter in accordance with II.A or II.B, above is less than the TBEL in Part 2.1.1 of the RGP for that parameter. Otherwise, the TBEL in

Part 2.1.1 of the RGP for that parameter applies.

Dilution Factor	13.8					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**152**	µg/L	---	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	8862	µg/L		
Arsenic	**104**	µg/L	138	µg/L		
Cadmium	**10.2**	µg/L	2.4099	µg/L		
Chromium III	**323**	µg/L	732.6	µg/L		
Chromium VI	**323**	µg/L	158.3	µg/L		
Copper	**242**	µg/L	77.6	µg/L		
Iron	**5000**	µg/L	9531	µg/L		
Lead	**160**	µg/L	20.63	µg/L		
Mercury	**0.739**	µg/L	12.54	µg/L		
Nickel	**1450**	µg/L	436.3	µg/L		
Selenium	**235.8**	µg/L	69.2	µg/L		
Silver	**35.1**	µg/L	18.8	µg/L		
Zinc	**420**	µg/L	1001.4	µg/L		
Cyanide	**178**	mg/L	72.0	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	4154	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	22.2	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	45.7	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	190	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	30.5	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.0526	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0526	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0526	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0526	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0526	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0526	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0526	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	277	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

United States Department of the Interior

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

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-1553
Event Code: 05E1NE00-2018-E-03503
Project Name: Former Van Brodie

April 11, 2018

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2018-SLI-1553

Event Code: 05E1NE00-2018-E-03503

Project Name: Former Van Brodie

Project Type: ** OTHER **

Project Description: RGP

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.7151815087135N71.18014460023582W

Counties: Essex, MA

Endangered Species Act Species

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

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

Critical habitats

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

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

IPaC resource list

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

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

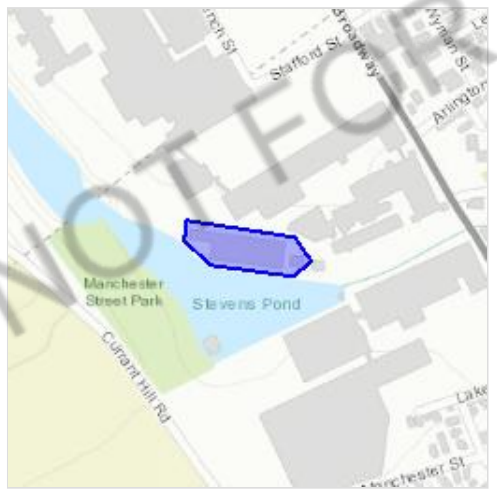
Project information

NAME

Former Van Brodie

LOCATION

Essex County, Massachusetts



DESCRIPTION

RGP

Local office

New England Ecological Services Field Office

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

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

http://www.fws.gov/newengland

Endangered species

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

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

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

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

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

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

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

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

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

Migratory birds

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

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

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

Additional information can be found using the following links:

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

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the E-bird data mapping tool (search for the name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain timeframe) and the E-bird Explore Data Tool (perform a query to see a list of all birds sighted in your county or region and within a certain timeframe). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found below.

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

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

	BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Oystercatcher Haematopus palliatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black Rail Laterallus jamaicensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/7717	Breeds Mar 1 to Sep 15
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Buff-breasted Sandpiper Calidris subruficollis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9488	Breeds elsewhere
Cerulean Warbler Dendroica cerulea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 29 to Jul 20
Clapper Rail Rallus crepitans This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 10 to Oct 31

Eastern Whip-poor-will Antrostomus vociferus — Breeds May 1 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak Coccothraustes vespertinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden-winged Warbler Vermivora chrysoptera — Breeds May 1 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8745

Gull-billed Tern Gelochelidon nilotica — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9501

Hudsonian Godwit Limosa haemastica — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

King Rail Rallus elegans — Breeds May 1 to Sep 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8936

Least Tern Sterna antillarum — Breeds Apr 20 to Sep 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-eared Owl asio otus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3631

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

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

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

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

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

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

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

Seaside Sparrow Ammodramus maritimus — Breeds May 10 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

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

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Willet Tringa semipalmata — Breeds Apr 20 to Aug 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds.

Probability of Presence (■)

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

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

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

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

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

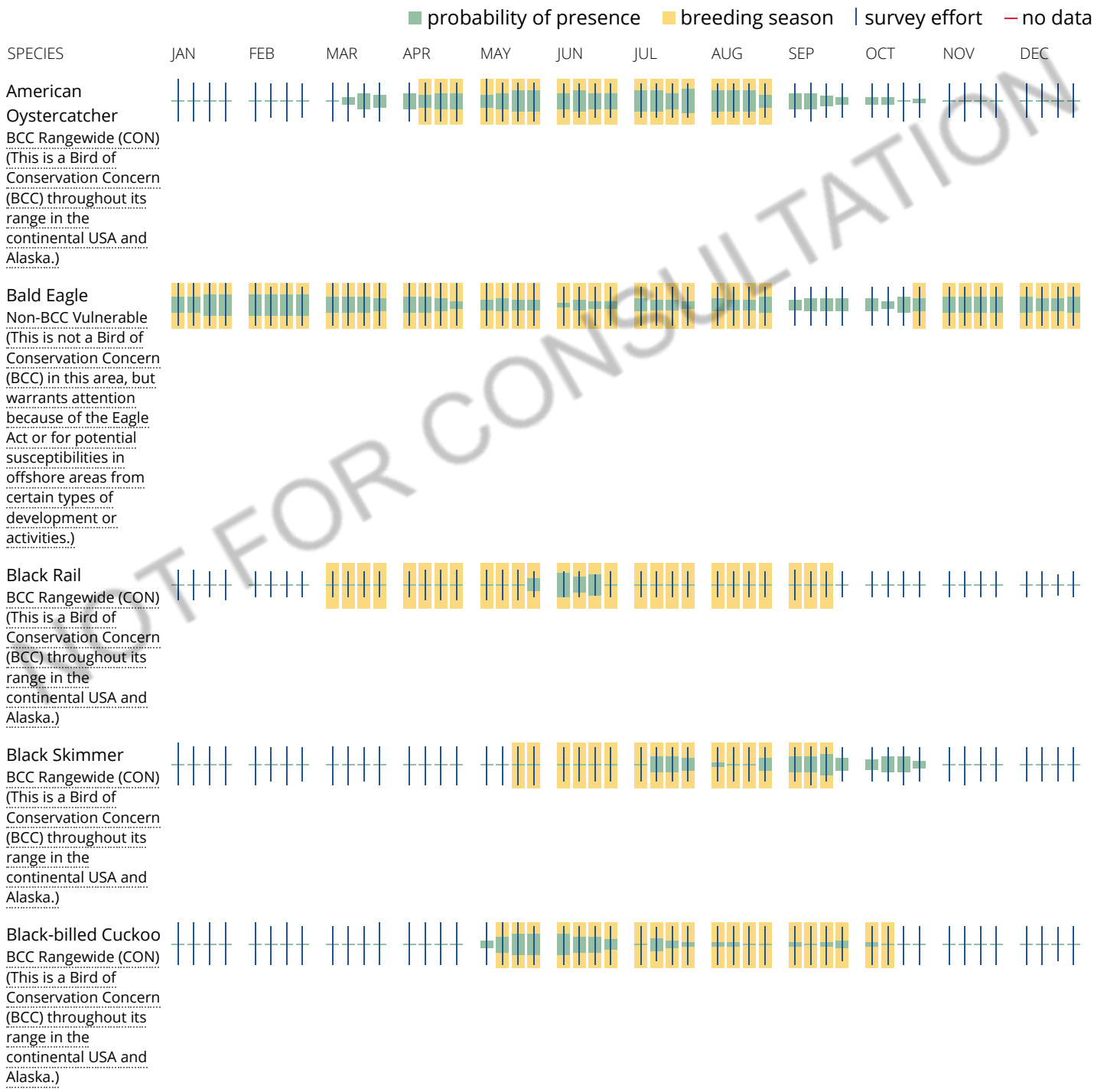
Survey Effort (|)

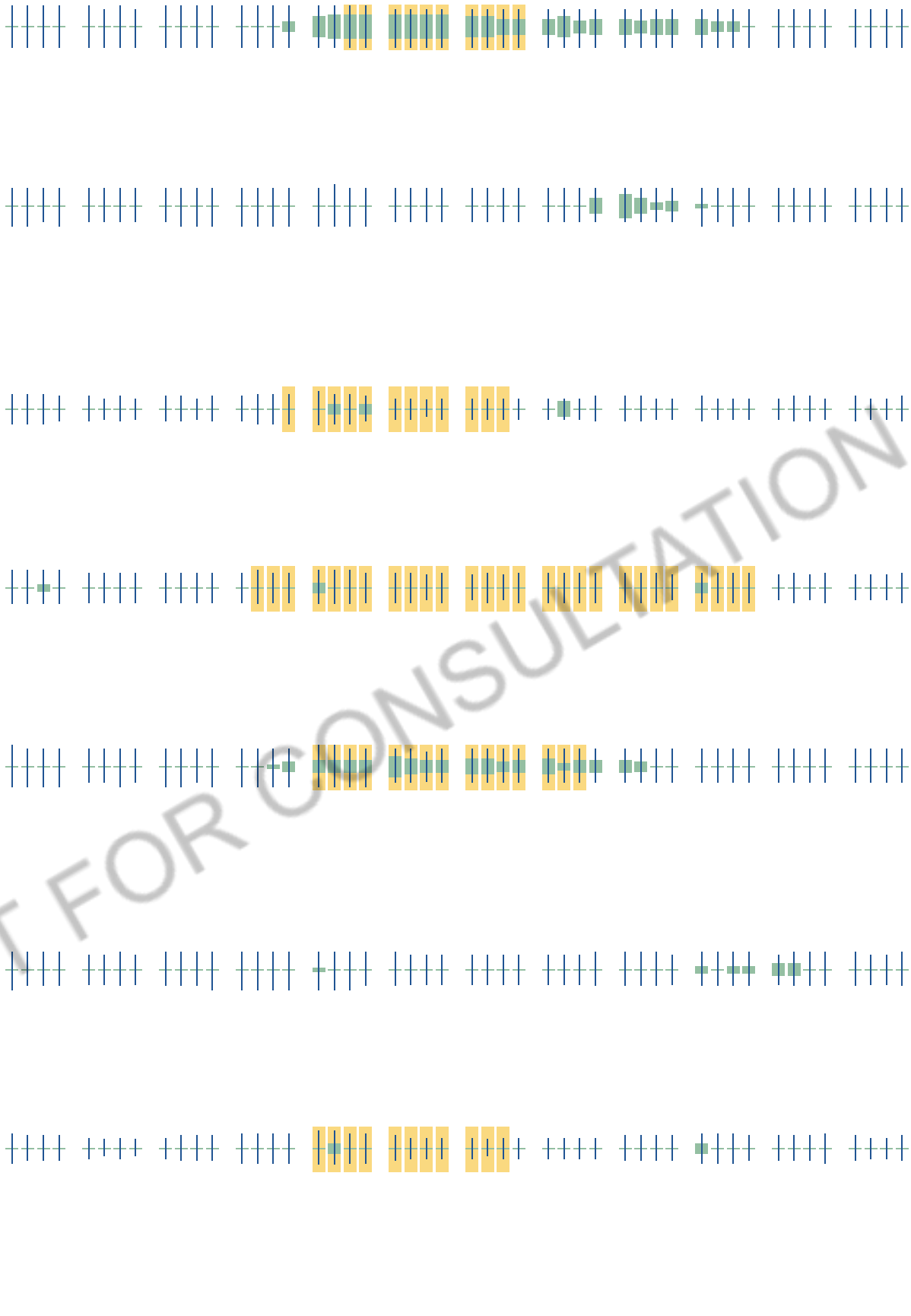
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

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

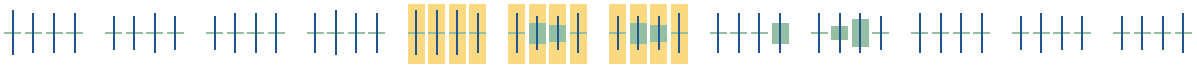
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information.



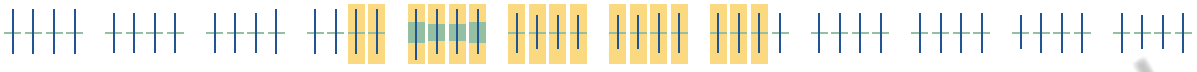


Gull-billed Tern
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

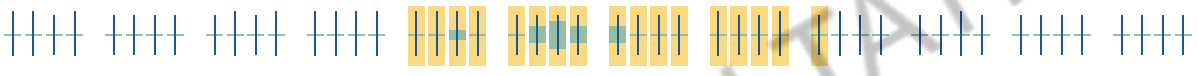


Hudsonian Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

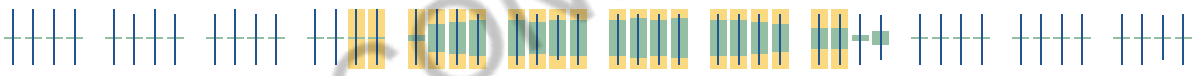
Kentucky Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



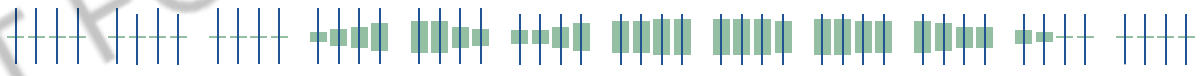
King Rail
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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

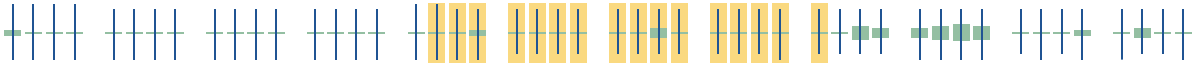


Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



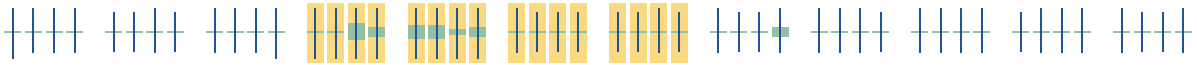
Long-eared Owl
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nelson's Sparrow
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



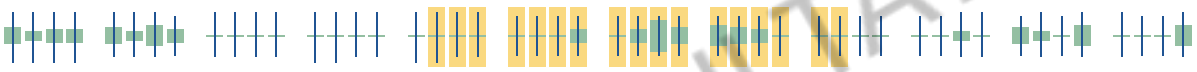
Prairie Warbler
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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



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

Red-headed Woodpecker
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

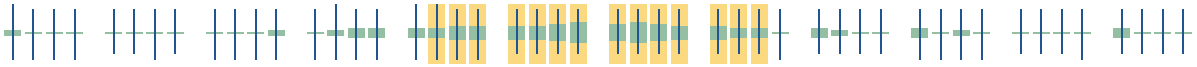


SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

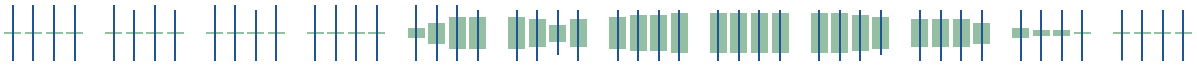
Red-throated Loon
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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

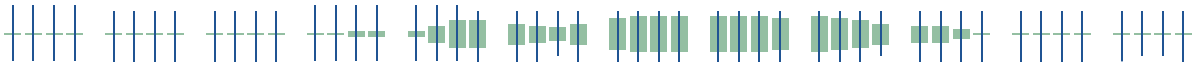
Seaside Sparrow
BCC Rangewide (CON)
(This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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



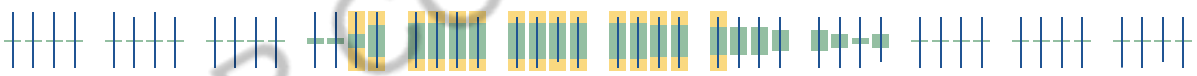
Short-billed Dowitcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

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

What if I have eagles on my list?

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

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

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

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

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND

PUBHh

A full description for each wetland code can be found at the National Wetlands Inventory website: https://ecos.fws.gov/ipac/wetlands/decoder

Data limitations

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

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

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

Data exclusions

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

Data precautions

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

APPENDIX D:

LABORATORY ANALYTIC DATA - GROUNDWATER

ANALYTICAL REPORT

Lab Number:	L1807276
Client:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140
ATTN:	Ambrose Donovan
Phone:	(617) 868-1420
Project Name:	VAN BRODIE BUILDING
Project Number:	6008.9.00
Report Date:	03/07/18

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

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

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1807276
Report Date: 03/07/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1807276-01	GP-201	GROUNDWATER	LAWRENCE, MA	03/01/18 14:00	03/01/18
L1807276-02	GP-202	GROUNDWATER	LAWRENCE, MA	03/01/18 14:00	03/01/18
L1807276-03	GP-203	GROUNDWATER	LAWRENCE, MA	03/01/18 14:00	03/01/18
L1807276-04	GP-204	GROUNDWATER	LAWRENCE, MA	03/01/18 14:00	03/01/18
L1807276-05	GP-205	GROUNDWATER	LAWRENCE, MA	03/01/18 14:00	03/01/18
L1807276-06	GP-206	GROUNDWATER	LAWRENCE, MA	03/01/18 14:00	03/01/18

Project Name:	VAN BRODIE BUILDING	**Lab Number:**	L1807276
Project Number:	6008.9.00	**Report Date:**	03/07/18

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?	NO
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)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
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: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1807276
Report Date: 03/07/18

Case Narrative

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

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

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

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

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

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

Project Name:	VAN BRODIE BUILDING	**Lab Number:**	L1807276
Project Number:	6008.9.00	**Report Date:**	03/07/18

Case Narrative (continued)

MCP Related Narratives

Volatile Organics

In reference to question A:

L1807276-04D2: The analysis was performed utilizing a compromised vial, with the client's authorization.

In reference to question G:

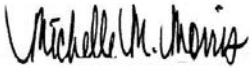
L1807276-03 and -04: One or more of the target analytes did not achieve the requested CAM reporting limits.

In reference to question H:

The initial calibration, associated with L1807276-01 through -06, did not meet the method required minimum response factor on the lowest calibration standard for 1,4-dioxane (0.0014), as well as the average response factor for 1,4-dioxane.

The continuing calibration standard, associated with L1807276-01 through -06, is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this 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: 03/07/18

ORGANICS

VOLATILES

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-01
Client ID: GP-201
Sample Location: LAWRENCE, MA
Sample Depth:
Matrix: Groundwater
Analytical Method: 97,8260C
Analytical Date: 03/05/18 21:32
Analyst: MM

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-01 Date Collected: 03/01/18 14:00

Client ID: GP-201 Date Received: 03/01/18

Sample Location: LAWRENCE, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene (total)	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1

Project Name: VAN BRODIE BUILDING
Lab Number: L1807276
Project Number: 6008.9.00
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-01
Client ID: GP-201
Sample Location: LAWRENCE, MA
Sample Depth:

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	102		70-130

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-02
Client ID: GP-202
Sample Location: LAWRENCE, MA
Sample Depth:
Matrix: Groundwater
Analytical Method: 97,8260C
Analytical Date: 03/05/18 21:57
Analyst: MM

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	1.1		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-02 Date Collected: 03/01/18 14:00

Client ID: GP-202 Date Received: 03/01/18

Sample Location: LAWRENCE, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	2.8		ug/l	1.0	--	1
1,2-Dichloroethene (total)	2.8		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1

Project Name: VAN BRODIE BUILDING
Lab Number: L1807276
Project Number: 6008.9.00
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-02
Client ID: GP-202
Sample Location: LAWRENCE, MA
Sample Depth:

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	101		70-130

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-03 D
Client ID: GP-203
Sample Location: LAWRENCE, MA
Sample Depth:
Matrix: Groundwater
Analytical Method: 97,8260C
Analytical Date: 03/05/18 23:12
Analyst: MM

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	100	--	50
1,1-Dichloroethane	ND		ug/l	50	--	50
Chloroform	ND		ug/l	50	--	50
Carbon tetrachloride	ND		ug/l	50	--	50
1,2-Dichloropropane	ND		ug/l	50	--	50
Dibromochloromethane	ND		ug/l	50	--	50
1,1,2-Trichloroethane	ND		ug/l	50	--	50
Tetrachloroethene	4000		ug/l	50	--	50
Chlorobenzene	ND		ug/l	50	--	50
Trichlorofluoromethane	ND		ug/l	100	--	50
1,2-Dichloroethane	ND		ug/l	50	--	50
1,1,1-Trichloroethane	ND		ug/l	50	--	50
Bromodichloromethane	ND		ug/l	50	--	50
trans-1,3-Dichloropropene	ND		ug/l	20	--	50
cis-1,3-Dichloropropene	ND		ug/l	20	--	50
1,3-Dichloropropene, Total	ND		ug/l	20	--	50
1,1-Dichloropropene	ND		ug/l	100	--	50
Bromoform	ND		ug/l	100	--	50
1,1,2,2-Tetrachloroethane	ND		ug/l	50	--	50
Benzene	ND		ug/l	25	--	50
Toluene	ND		ug/l	50	--	50
Ethylbenzene	ND		ug/l	50	--	50
Chloromethane	ND		ug/l	100	--	50
Bromomethane	ND		ug/l	100	--	50
Vinyl chloride	240		ug/l	50	--	50
Chloroethane	ND		ug/l	100	--	50
1,1-Dichloroethene	ND		ug/l	50	--	50
trans-1,2-Dichloroethene	ND		ug/l	50	--	50
Trichloroethene	470		ug/l	50	--	50

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-03 D
Client ID: GP-203
Sample Location: LAWRENCE, MA
Sample Depth:

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	50	--	50
1,3-Dichlorobenzene	ND		ug/l	50	--	50
1,4-Dichlorobenzene	ND		ug/l	50	--	50
Methyl tert butyl ether	ND		ug/l	100	--	50
p/m-Xylene	ND		ug/l	100	--	50
o-Xylene	ND		ug/l	50	--	50
Xylene (Total)	ND		ug/l	50	--	50
cis-1,2-Dichloroethene	1300		ug/l	50	--	50
1,2-Dichloroethene (total)	1300		ug/l	50	--	50
Dibromomethane	ND		ug/l	100	--	50
1,2,3-Trichloropropane	ND		ug/l	100	--	50
Styrene	ND		ug/l	50	--	50
Dichlorodifluoromethane	ND		ug/l	100	--	50
Acetone	ND		ug/l	250	--	50
Carbon disulfide	ND		ug/l	100	--	50
2-Butanone	ND		ug/l	250	--	50
4-Methyl-2-pentanone	ND		ug/l	250	--	50
2-Hexanone	ND		ug/l	250	--	50
Bromochloromethane	ND		ug/l	100	--	50
Tetrahydrofuran	ND		ug/l	100	--	50
2,2-Dichloropropane	ND		ug/l	100	--	50
1,2-Dibromoethane	ND		ug/l	100	--	50
1,3-Dichloropropane	ND		ug/l	100	--	50
1,1,1,2-Tetrachloroethane	ND		ug/l	50	--	50
Bromobenzene	ND		ug/l	100	--	50
n-Butylbenzene	ND		ug/l	100	--	50
sec-Butylbenzene	ND		ug/l	100	--	50
tert-Butylbenzene	ND		ug/l	100	--	50
o-Chlorotoluene	ND		ug/l	100	--	50
p-Chlorotoluene	ND		ug/l	100	--	50
1,2-Dibromo-3-chloropropane	ND		ug/l	100	--	50
Hexachlorobutadiene	ND		ug/l	30	--	50
Isopropylbenzene	ND		ug/l	100	--	50
p-Isopropyltoluene	ND		ug/l	100	--	50
Naphthalene	ND		ug/l	100	--	50
n-Propylbenzene	ND		ug/l	100	--	50
1,2,3-Trichlorobenzene	ND		ug/l	100	--	50
1,2,4-Trichlorobenzene	ND		ug/l	100	--	50

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-03 D
Client ID: GP-203
Sample Location: LAWRENCE, MA
Sample Depth:

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3,5-Trimethylbenzene	ND		ug/l	100	--	50
1,2,4-Trimethylbenzene	ND		ug/l	100	--	50
Ethyl ether	ND		ug/l	100	--	50
Isopropyl Ether	ND		ug/l	100	--	50
Ethyl-Tert-Butyl-Ether	ND		ug/l	100	--	50
Tertiary-Amyl Methyl Ether	ND		ug/l	100	--	50
1,4-Dioxane	ND		ug/l	12000	--	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	103		70-130

Project Name: VAN BRODIE BUILDING
Lab Number: L1807276
Project Number: 6008.9.00
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-04 D2
Client ID: GP-204
Sample Location: LAWRENCE, MA
Sample Depth:
Matrix: Groundwater
Analytical Method: 97,8260C
Analytical Date: 03/06/18 09:39
Analyst: MM

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
cis-1,2-Dichloroethene	700		ug/l	10	--	10
1,2-Dichloroethene (total)	700		ug/l	2.0	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	101		70-130

Project Name: VAN BRODIE BUILDING
Lab Number: L1807276
Project Number: 6008.9.00
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-04 D
Client ID: GP-204
Sample Location: LAWRENCE, MA
Sample Depth:
Matrix: Groundwater
Analytical Method: 97,8260C
Analytical Date: 03/05/18 23:37
Analyst: MM

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	4.0	--	2
1,1-Dichloroethane	ND		ug/l	2.0	--	2
Chloroform	ND		ug/l	2.0	--	2
Carbon tetrachloride	ND		ug/l	2.0	--	2
1,2-Dichloropropane	ND		ug/l	2.0	--	2
Dibromochloromethane	ND		ug/l	2.0	--	2
1,1,2-Trichloroethane	ND		ug/l	2.0	--	2
Tetrachloroethene	210		ug/l	2.0	--	2
Chlorobenzene	ND		ug/l	2.0	--	2
Trichlorofluoromethane	ND		ug/l	4.0	--	2
1,2-Dichloroethane	ND		ug/l	2.0	--	2
1,1,1-Trichloroethane	ND		ug/l	2.0	--	2
Bromodichloromethane	ND		ug/l	2.0	--	2
trans-1,3-Dichloropropene	ND		ug/l	0.80	--	2
cis-1,3-Dichloropropene	ND		ug/l	0.80	--	2
1,3-Dichloropropene, Total	ND		ug/l	0.80	--	2
1,1-Dichloropropene	ND		ug/l	4.0	--	2
Bromoform	ND		ug/l	4.0	--	2
1,1,2,2-Tetrachloroethane	ND		ug/l	2.0	--	2
Benzene	ND		ug/l	1.0	--	2
Toluene	ND		ug/l	2.0	--	2
Ethylbenzene	ND		ug/l	2.0	--	2
Chloromethane	ND		ug/l	4.0	--	2
Bromomethane	ND		ug/l	4.0	--	2
Vinyl chloride	120		ug/l	2.0	--	2
Chloroethane	ND		ug/l	4.0	--	2
1,1-Dichloroethene	2.5		ug/l	2.0	--	2
trans-1,2-Dichloroethene	2.6		ug/l	2.0	--	2
Trichloroethene	160		ug/l	2.0	--	2

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-04 D
Client ID: GP-204
Sample Location: LAWRENCE, MA
Sample Depth:

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	2.0	--	2
1,3-Dichlorobenzene	ND		ug/l	2.0	--	2
1,4-Dichlorobenzene	ND		ug/l	2.0	--	2
Methyl tert butyl ether	ND		ug/l	4.0	--	2
p/m-Xylene	ND		ug/l	4.0	--	2
o-Xylene	ND		ug/l	2.0	--	2
Xylene (Total)	ND		ug/l	2.0	--	2
cis-1,2-Dichloroethene	650	E	ug/l	2.0	--	2
Dibromomethane	ND		ug/l	4.0	--	2
1,2,3-Trichloropropane	ND		ug/l	4.0	--	2
Styrene	ND		ug/l	2.0	--	2
Dichlorodifluoromethane	ND		ug/l	4.0	--	2
Acetone	ND		ug/l	10	--	2
Carbon disulfide	ND		ug/l	4.0	--	2
2-Butanone	ND		ug/l	10	--	2
4-Methyl-2-pentanone	ND		ug/l	10	--	2
2-Hexanone	ND		ug/l	10	--	2
Bromochloromethane	ND		ug/l	4.0	--	2
Tetrahydrofuran	ND		ug/l	4.0	--	2
2,2-Dichloropropane	ND		ug/l	4.0	--	2
1,2-Dibromoethane	ND		ug/l	4.0	--	2
1,3-Dichloropropane	ND		ug/l	4.0	--	2
1,1,1,2-Tetrachloroethane	ND		ug/l	2.0	--	2
Bromobenzene	ND		ug/l	4.0	--	2
n-Butylbenzene	ND		ug/l	4.0	--	2
sec-Butylbenzene	ND		ug/l	4.0	--	2
tert-Butylbenzene	ND		ug/l	4.0	--	2
o-Chlorotoluene	ND		ug/l	4.0	--	2
p-Chlorotoluene	ND		ug/l	4.0	--	2
1,2-Dibromo-3-chloropropane	ND		ug/l	4.0	--	2
Hexachlorobutadiene	ND		ug/l	1.2	--	2
Isopropylbenzene	ND		ug/l	4.0	--	2
p-Isopropyltoluene	ND		ug/l	4.0	--	2
Naphthalene	ND		ug/l	4.0	--	2
n-Propylbenzene	ND		ug/l	4.0	--	2
1,2,3-Trichlorobenzene	ND		ug/l	4.0	--	2
1,2,4-Trichlorobenzene	ND		ug/l	4.0	--	2
1,3,5-Trimethylbenzene	ND		ug/l	4.0	--	2

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-04 D
Client ID: GP-204
Sample Location: LAWRENCE, MA
Sample Depth:

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,4-Trimethylbenzene	ND		ug/l	4.0	--	2
Ethyl ether	ND		ug/l	4.0	--	2
Isopropyl Ether	ND		ug/l	4.0	--	2
Ethyl-Tert-Butyl-Ether	ND		ug/l	4.0	--	2
Tertiary-Amyl Methyl Ether	ND		ug/l	4.0	--	2
1,4-Dioxane	ND		ug/l	500	--	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	99		70-130

Project Name: VAN BRODIE BUILDING
Lab Number: L1807276
Project Number: 6008.9.00
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-05
Client ID: GP-205
Sample Location: LAWRENCE, MA
Sample Depth:
Matrix: Groundwater
Analytical Method: 97,8260C
Analytical Date: 03/05/18 22:22
Analyst: MM

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	1.0		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	1.4		ug/l	1.0	--	1

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-05 Date Collected: 03/01/18 14:00

Client ID: GP-205 Date Received: 03/01/18

Sample Location: LAWRENCE, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	2.2		ug/l	1.0	--	1
1,2-Dichloroethene (total)	2.2		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1

Project Name: VAN BRODIE BUILDING
Lab Number: L1807276
Project Number: 6008.9.00
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-05
Client ID: GP-205
Sample Location: LAWRENCE, MA
Sample Depth:

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	99		70-130

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-06
Client ID: GP-206
Sample Location: LAWRENCE, MA
Sample Depth:
Matrix: Groundwater
Analytical Method: 97,8260C
Analytical Date: 03/05/18 22:47
Analyst: MM

Date Collected: 03/01/18 14:00
Date Received: 03/01/18
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-06 Date Collected: 03/01/18 14:00

Client ID: GP-206 Date Received: 03/01/18

Sample Location: LAWRENCE, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene (total)	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

SAMPLE RESULTS

Lab ID: L1807276-06 Date Collected: 03/01/18 14:00

Client ID: GP-206 Date Received: 03/01/18

Sample Location: LAWRENCE, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	105		70-130

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 03/06/18 06:17
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 04 Batch: WG1094726-10					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.40	--
cis-1,3-Dichloropropene	ND		ug/l	0.40	--
1,3-Dichloropropene, Total	ND		ug/l	0.40	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 03/06/18 06:17
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 04 Batch: WG1094726-10					
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylene (Total)	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene (total)	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 03/06/18 06:17
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 04 Batch: WG1094726-10					
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	103		70-130

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 03/05/18 18:37
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-06 Batch: WG1094726-5					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.40	--
cis-1,3-Dichloropropene	ND		ug/l	0.40	--
1,3-Dichloropropene, Total	ND		ug/l	0.40	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--

Project Name: VAN BRODIE BUILDING **Lab Number:** L1807276

Project Number: 6008.9.00 **Report Date:** 03/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 03/05/18 18:37
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-06 Batch: WG1094726-5					
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylene (Total)	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene (total)	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1807276
Report Date: 03/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 03/05/18 18:37
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-06 Batch: WG1094726-5					
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	102		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1807276
Report Date: 03/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-06 Batch: WG1094726-3 WG1094726-4								
Methylene chloride	99		100		70-130	1		20
1,1-Dichloroethane	97		100		70-130	3		20
Chloroform	95		100		70-130	5		20
Carbon tetrachloride	96		100		70-130	4		20
1,2-Dichloropropane	93		100		70-130	7		20
Dibromochloromethane	92		100		70-130	8		20
1,1,2-Trichloroethane	96		100		70-130	4		20
Tetrachloroethene	92		93		70-130	1		20
Chlorobenzene	92		96		70-130	4		20
Trichlorofluoromethane	95		100		70-130	5		20
1,2-Dichloroethane	96		100		70-130	4		20
1,1,1-Trichloroethane	93		100		70-130	7		20
Bromodichloromethane	95		100		70-130	5		20
trans-1,3-Dichloropropene	93		100		70-130	7		20
cis-1,3-Dichloropropene	98		110		70-130	12		20
1,1-Dichloropropene	92		100		70-130	8		20
Bromoform	87		95		70-130	9		20
1,1,2,2-Tetrachloroethane	93		100		70-130	7		20
Benzene	93		99		70-130	6		20
Toluene	89		94		70-130	5		20
Ethylbenzene	90		93		70-130	3		20
Chloromethane	110		110		70-130	0		20
Bromomethane	91		88		70-130	3		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1807276
Report Date: 03/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-06 Batch: WG1094726-3 WG1094726-4								
Vinyl chloride	98		100		70-130	2		20
Chloroethane	97		100		70-130	3		20
1,1-Dichloroethene	98		100		70-130	2		20
trans-1,2-Dichloroethene	95		98		70-130	3		20
Trichloroethene	100		110		70-130	10		20
1,2-Dichlorobenzene	88		94		70-130	7		20
1,3-Dichlorobenzene	90		93		70-130	3		20
1,4-Dichlorobenzene	86		93		70-130	8		20
Methyl tert butyl ether	95		110		70-130	15		20
p/m-Xylene	90		95		70-130	5		20
o-Xylene	90		95		70-130	5		20
cis-1,2-Dichloroethene	96		99		70-130	3		20
Dibromomethane	99		100		70-130	1		20
1,2,3-Trichloropropane	96		100		70-130	4		20
Styrene	90		95		70-130	5		20
Dichlorodifluoromethane	95		100		70-130	5		20
Acetone	**140**	Q	130		70-130	7		20
Carbon disulfide	100		100		70-130	0		20
2-Butanone	110		120		70-130	9		20
4-Methyl-2-pentanone	86		100		70-130	15		20
2-Hexanone	93		100		70-130	7		20
Bromochloromethane	100		110		70-130	10		20
Tetrahydrofuran	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: VAN BRODIE BUILDING

Project Number: 6008.9.00

Lab Number: L1807276

Report Date: 03/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-06 Batch: WG1094726-3 WG1094726-4								
2,2-Dichloropropane	99		100		70-130	1		20
1,2-Dibromoethane	95		100		70-130	5		20
1,3-Dichloropropane	94		100		70-130	6		20
1,1,1,2-Tetrachloroethane	95		99		70-130	4		20
Bromobenzene	88		93		70-130	6		20
n-Butylbenzene	88		89		70-130	1		20
sec-Butylbenzene	86		90		70-130	5		20
tert-Butylbenzene	100		88		70-130	13		20
o-Chlorotoluene	89		94		70-130	5		20
p-Chlorotoluene	91		94		70-130	3		20
1,2-Dibromo-3-chloropropane	77		98		70-130	**24**	Q	20
Hexachlorobutadiene	89		87		70-130	2		20
Isopropylbenzene	87		92		70-130	6		20
p-Isopropyltoluene	86		90		70-130	5		20
Naphthalene	86		98		70-130	13		20
n-Propylbenzene	89		92		70-130	3		20
1,2,3-Trichlorobenzene	87		91		70-130	4		20
1,2,4-Trichlorobenzene	86		92		70-130	7		20
1,3,5-Trimethylbenzene	89		91		70-130	2		20
1,2,4-Trimethylbenzene	89		92		70-130	3		20
Ethyl ether	99		100		70-130	1		20
Isopropyl Ether	99		110		70-130	11		20
Ethyl-Tert-Butyl-Ether	97		100		70-130	3		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: VAN BRODIE BUILDING

Project Number: 6008.9.00

Lab Number: L1807276

Report Date: 03/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-06 Batch: WG1094726-3 WG1094726-4								
Tertiary-Amyl Methyl Ether	95		100		70-130	5		20
1,4-Dioxane	96		118		70-130	**21**	Q	20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		104		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	101		100		70-130
Dibromofluoromethane	98		101		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1807276
Report Date: 03/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 04 Batch: WG1094726-8 WG1094726-9								
Methylene chloride	110		110		70-130	0		20
1,1-Dichloroethane	100		100		70-130	0		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	100		110		70-130	10		20
1,2-Dichloropropane	100		100		70-130	0		20
Dibromochloromethane	100		100		70-130	0		20
1,1,2-Trichloroethane	100		110		70-130	10		20
Tetrachloroethene	91		99		70-130	8		20
Chlorobenzene	95		100		70-130	5		20
Trichlorofluoromethane	100		110		70-130	10		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	100		100		70-130	0		20
Bromodichloromethane	100		110		70-130	10		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	100		110		70-130	10		20
1,1-Dichloropropene	99		100		70-130	1		20
Bromoform	95		97		70-130	2		20
1,1,2,2-Tetrachloroethane	110		110		70-130	0		20
Benzene	100		100		70-130	0		20
Toluene	93		99		70-130	6		20
Ethylbenzene	92		96		70-130	4		20
Chloromethane	100		110		70-130	10		20
Bromomethane	120		120		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: VAN BRODIE BUILDING

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Lab Number: L1807276

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 04 Batch: WG1094726-8 WG1094726-9								
Vinyl chloride	100		110		70-130	10		20
Chloroethane	100		110		70-130	10		20
1,1-Dichloroethene	100		110		70-130	10		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	100		110		70-130	10		20
1,2-Dichlorobenzene	93		96		70-130	3		20
1,3-Dichlorobenzene	98		98		70-130	0		20
1,4-Dichlorobenzene	94		92		70-130	2		20
Methyl tert butyl ether	100		110		70-130	10		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	90		95		70-130	5		20
cis-1,2-Dichloroethene	98		100		70-130	2		20
Dibromomethane	110		110		70-130	0		20
1,2,3-Trichloropropane	110		110		70-130	0		20
Styrene	95		100		70-130	5		20
Dichlorodifluoromethane	100		110		70-130	10		20
Acetone	130		130		70-130	0		20
Carbon disulfide	110		100		70-130	10		20
2-Butanone	120		120		70-130	0		20
4-Methyl-2-pentanone	93		98		70-130	5		20
2-Hexanone	98		100		70-130	2		20
Bromochloromethane	110		110		70-130	0		20
Tetrahydrofuran	120		120		70-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1807276
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 04 Batch: WG1094726-8 WG1094726-9								
2,2-Dichloropropane	100		100		70-130	0		20
1,2-Dibromoethane	100		110		70-130	10		20
1,3-Dichloropropane	100		100		70-130	0		20
1,1,1,2-Tetrachloroethane	97		100		70-130	3		20
Bromobenzene	93		95		70-130	2		20
n-Butylbenzene	93		95		70-130	2		20
sec-Butylbenzene	90		93		70-130	3		20
tert-Butylbenzene	84		89		70-130	6		20
o-Chlorotoluene	94		97		70-130	3		20
p-Chlorotoluene	95		98		70-130	3		20
1,2-Dibromo-3-chloropropane	100		98		70-130	2		20
Hexachlorobutadiene	87		96		70-130	10		20
Isopropylbenzene	90		95		70-130	5		20
p-Isopropyltoluene	90		93		70-130	3		20
Naphthalene	95		98		70-130	3		20
n-Propylbenzene	92		97		70-130	5		20
1,2,3-Trichlorobenzene	95		97		70-130	2		20
1,2,4-Trichlorobenzene	90		95		70-130	5		20
1,3,5-Trimethylbenzene	92		96		70-130	4		20
1,2,4-Trimethylbenzene	93		97		70-130	4		20
Ethyl ether	110		110		70-130	0		20
Isopropyl Ether	110		110		70-130	0		20
Ethyl-Tert-Butyl-Ether	100		110		70-130	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: VAN BRODIE BUILDING

Project Number: 6008.9.00

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 04 Batch: WG1094726-8 WG1094726-9								
Tertiary-Amyl Methyl Ether	100		100		70-130	0		20
1,4-Dioxane	118		122		70-130	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		104		70-130
Toluene-d8	99		101		70-130
4-Bromofluorobenzene	101		101		70-130
Dibromofluoromethane	104		99		70-130

Project Name: VAN BRODIE BUILDING
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Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1807276-01A	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-01B	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-02A	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-02B	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-03A	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-03B	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-04A	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-04B	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-05A	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-05B	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-06A	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)
L1807276-06B	Vial HCl preserved	A	NA		3.2	Y	Absent		MCP-8260-10(14)

*Values in parentheses indicate holding time in days

Project Name:	VAN BRODIE BUILDING	**Lab Number:**	L1807276
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GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

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

Report Format: Data Usability Report

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Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

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

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

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

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

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

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

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

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

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REFERENCES

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.

LIMITATION OF LIABILITIES

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

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

Certification Information

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

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

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

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

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: 3/1/18

ALPHA Job #: L1807276

Client Information

Client: McPhail Associates, LLC
Address: 2269 Massachusetts Avenue
Cambridge, MA 02140
Phone: (617) 868-1420
Email: WB @McPhailgeo.com

Additional Project Information:

☐ Run TCLP (if triggered)

Project Information

Project Name: Van Brodie
Project Location: Lawrence, MA
Project #: 6008.9.00
Project Manager: B. BURNS
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH *(only confirmed if pre-approved!)*
Date Due:

Report Information - Data Deliverables

☒ ADEx ☐ EMAIL

Billing Information

☐ 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 _____ Criteria _____

Sample "Sample ID" Nomenclature: B-100, S-1

ALPHA Lab ID (Lab Use Only)	Sample ID	Sample Depth	Sample Material	Collection Date	Collection Time	Sampler Initials	Soil Assessment Package IV (less VOC)	VOC: ☐ 8260	Total Solids	SVOC: ☐ PAH	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	TOTAL METALS: ☐ RCRA8 ☐ PP13 ☐ MCP 14	DISSOLVED METALS: ☐ RCRA8 ☐ PP13 ☐ MCP 14	METALS: Total Sb,Be,Ni,Tl,V,Zn	☐ PCBs ☐ Pesticides	RGP Section A Inorganics				Sample Comments	TOTAL # BOTTLES
07276-01	GP-201	/	GW	3-1-18	14:00	KEH		X														2
02	GP-202	/	GW	3-1-18	14:00	KEH		X														2
03	GP-203	/	GW	3-1-18	14:00	KEH		X														2
04	GP-204	/	GW	3-1-18	14:00	KEH		X														2
05	GP-205	/	GW	3-1-18	14:00	KEH		X														2
06	GP-206	/	GW	3-1-18	14:00	KEH		X														2
								Container Type	V													
								Preservative	B													

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

Sample Material
F=Fill S=Sand
O=Organics C=Clay
N=Natural T=Till
GM=Glaciomarine
GW=Groundwater

Preservative
A=None
B=HCl
C=HNO_3
D=H_2SO_4
E=NaOH
F=MeOH
G=$NaHSO_4$
H=$Na_2S_2O_3$
I=Ascorbic Acid
J=NH_4Cl
K=Zn Acetate
O=Other

RGP Section A Inorganics:
Ammonia, Chloride, TRC, TSS, CrVI, CrIII, Total Cyanide, Total RGP Metals

Relinquished By:	Date/Time	Received By:	Date/Time
Kate Kincaid	3-1 CB 16:00	AAL	3/1/18 14:55
AAL	3/1/18 19:10	McPhail Associates secure sample storage for laboratory pick-up	
McPhail Associates secure sample storage for laboratory pick-up		Danielle Mott	3/1/18 19:10

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

DOC ID: 25188 Rev 0 (11/28/2017)

Method Blank Summary
Form 4

Client	: McPhail Associates	**Lab Number**	: L1807276
Project Name	: VAN BRODIE BUILDING	**Project Number**	: 6008.9.00
Lab Sample ID	: WG1094726-5	**Lab File ID**	: V16180305N05
Instrument ID	: VOA116		
Matrix	: WATER	**Analysis Date**	: 03/05/18 18:37

Client Sample No.	Lab Sample ID	Analysis Date
WG1094726-3LCS	WG1094726-3	03/05/18 16:56
WG1094726-4LCSD	WG1094726-4	03/05/18 17:21
GP-201	L1807276-01	03/05/18 21:32
GP-202	L1807276-02	03/05/18 21:57
GP-205	L1807276-05	03/05/18 22:22
GP-206	L1807276-06	03/05/18 22:47
GP-203	L1807276-03D	03/05/18 23:12
GP-204	L1807276-04D	03/05/18 23:37

Method Blank Summary
Form 4

Client	: McPhail Associates	**Lab Number**	: L1807276
Project Name	: VAN BRODIE BUILDING	**Project Number**	: 6008.9.00
Lab Sample ID	: WG1094726-10	**Lab File ID**	: V16180306A06
Instrument ID	: VOA116		
Matrix	: WATER	**Analysis Date**	: 03/06/18 06:17

Client Sample No.	Lab Sample ID	Analysis Date
WG1094726-8LCS	WG1094726-8	03/06/18 05:02
WG1094726-9LCSD	WG1094726-9	03/06/18 05:27
GP-204	L1807276-04D2	03/06/18 09:39

Continuing Calibration
Form 7

Client	: McPhail Associates	**Lab Number**	: L1807276		
Project Name	: VAN BRODIE BUILDING	**Project Number**	: 6008.9.00		
Instrument ID	: VOA116	**Calibration Date**	: 03/05/18 16:56		
Lab File ID	: V16180305N01	**Init. Calib. Date(s)**	: 03/01/18	03/01/18	
Sample No	: WG1094726-2	**Init. Calib. Times**	: 17:47	20:42	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	88	0
Dichlorodifluoromethane	0.365	0.346	-	5.2	20	80	0
Chloromethane	0.549	0.587	-	-6.9	20	94	0
Vinyl chloride	0.501	0.493	-	1.6	20	82	0
Bromomethane	0.22	0.201	-	8.6	20	79	0
Chloroethane	0.299	0.291	-	2.7	20	79	0
Trichlorofluoromethane	0.555	0.528	-	4.9	20	80	0
Ethyl ether	0.16	0.158	-	1.3	20	82	0
1,1-Dichloroethene	0.279	0.272	-	2.5	20	85	0
Carbon disulfide	0.85	0.86	-	-1.2	20	88	0
Methylene chloride	0.299	0.297	-	0.7	20	82	0
Acetone	10	13.921	-	-39.2*	20	107	0
trans-1,2-Dichloroethene	0.294	0.28	-	4.8	20	80	0
Methyl tert-butyl ether	0.686	0.654	-	4.7	20	84	0
Diisopropyl ether	1.453	1.442	-	0.8	20	86	0
1,1-Dichloroethane	0.729	0.707	-	3	20	83	0
Ethyl tert-butyl ether	1.104	1.069	-	3.2	20	83	0
cis-1,2-Dichloroethene	0.323	0.309	-	4.3	20	84	0
2,2-Dichloropropane	0.545	0.541	-	0.7	20	86	0
Bromochloromethane	0.122	0.123	-	-0.8	20	78	0
Chloroform	0.595	0.568	-	4.5	20	83	0
Carbon tetrachloride	0.436	0.421	-	3.4	20	81	0
Tetrahydrofuran	10	10.226	-	-2.3	20	84	0
Dibromofluoromethane	0.266	0.261	-	1.9	20	86	0
1,1,1-Trichloroethane	0.524	0.488	-	6.9	20	80	0
2-Butanone	10	10.626	-	-6.3	20	86	0
1,1-Dichloropropene	0.49	0.451	-	8	20	80	0
Benzene	1.331	1.235	-	7.2	20	81	0
tert-Amyl methyl ether	0.806	0.765	-	5.1	20	84	0
1,2-Dichloroethane-d4	0.37	0.362	-	2.2	20	88	0
1,2-Dichloroethane	0.526	0.505	-	4	20	85	0
Trichloroethene	0.323	0.335	-	-3.7	20	87	0
Dibromomethane	0.178	0.176	-	1.1	20	82	0
1,2-Dichloropropane	0.394	0.366	-	7.1	20	82	0
Bromodichloromethane	0.473	0.45	-	4.9	20	80	0
1,4-Dioxane	0.00174	0.00166*	-	4.6	20	81	0
cis-1,3-Dichloropropene	0.531	0.523	-	1.5	20	84	0
Chlorobenzene-d5	1	1	-	0	20	89	0
Toluene-d8	1.309	1.308	-	0.1	20	88	0
Toluene	1.011	0.898	-	11.2	20	78	0
4-Methyl-2-pentanone	10	8.644	-	13.6	20	81	0
Tetrachloroethene	0.355	0.327	-	7.9	20	79	0
trans-1,3-Dichloropropene	10	9.326	-	6.7	20	83	0
1,1,2-Trichloroethane	0.271	0.262	-	3.3	20	83	0
Chlorodibromomethane	0.333	0.305	-	8.4	20	81	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: McPhail Associates		**Lab Number**	: L1807276	
Project Name	: VAN BRODIE BUILDING		**Project Number**	: 6008.9.00	
Instrument ID	: VOA116		**Calibration Date**	: 03/05/18 16:56	
Lab File ID	: V16180305N01		**Init. Calib. Date(s)**	: 03/01/18	03/01/18
Sample No	: WG1094726-2		**Init. Calib. Times**	: 17:47	20:42
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,3-Dichloropropane	0.583	0.547	-	6.2	20	81	0
1,2-Dibromoethane	0.282	0.268	-	5	20	81	0
2-Hexanone	10	9.339	-	6.6	20	88	0
Chlorobenzene	1.013	0.932	-	8	20	82	0
Ethylbenzene	1.973	1.774	-	10.1	20	81	0
1,1,1,2-Tetrachloroethane	0.347	0.33	-	4.9	20	81	0
p/m Xylene	0.703	0.636	-	9.5	20	81	0
o Xylene	0.654	0.584	-	10.7	20	79	0
Styrene	1.089	0.972	-	10.7	20	79	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	90	0
Bromoform	0.4	0.348	-	13	20	79	0
Isopropylbenzene	3.791	3.307	-	12.8	20	78	0
4-Bromofluorobenzene	1.073	1.087	-	-1.3	20	92	0
Bromobenzene	0.764	0.676	-	11.5	20	81	.01
n-Propylbenzene	4.843	4.301	-	11.2	20	80	0
1,1,2,2-Tetrachloroethane	0.745	0.693	-	7	20	80	0
2-Chlorotoluene	3.174	2.838	-	10.6	20	79	0
1,3,5-Trimethylbenzene	3.125	2.781	-	11	20	79	0
1,2,3-Trichloropropane	0.642	0.62	-	3.4	20	82	0
4-Chlorotoluene	2.797	2.538	-	9.3	20	80	0
tert-Butylbenzene	1.968	1.999	-	-1.6	20	95	0
1,2,4-Trimethylbenzene	3.05	2.72	-	10.8	20	79	0
sec-Butylbenzene	3.759	3.252	-	13.5	20	77	0
p-Isopropyltoluene	3.068	2.624	-	14.5	20	77	0
1,3-Dichlorobenzene	1.462	1.324	-	9.4	20	80	0
1,4-Dichlorobenzene	1.497	1.284	-	14.2	20	79	0
n-Butylbenzene	3.188	2.813	-	11.8	20	80	0
1,2-Dichlorobenzene	1.341	1.186	-	11.6	20	80	0
1,2-Dibromo-3-chloropropan	0.086	0.066	-	23.3*	20	68	0
Hexachlorobutadiene	0.258	0.231	-	10.5	20	80	0
1,2,4-Trichlorobenzene	0.788	0.679	-	13.8	20	79	0
Naphthalene	1.872	1.617	-	13.6	20	78	0
1,2,3-Trichlorobenzene	0.69	0.599	-	13.2	20	78	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: McPhail Associates	**Lab Number**	: L1807276		
Project Name	: VAN BRODIE BUILDING	**Project Number**	: 6008.9.00		
Instrument ID	: VOA116	**Calibration Date**	: 03/06/18 05:02		
Lab File ID	: V16180306A03	**Init. Calib. Date(s)**	: 03/01/18	03/01/18	
Sample No	: WG1094726-7	**Init. Calib. Times**	: 17:47	20:42	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	75	0
Dichlorodifluoromethane	0.365	0.377	-	-3.3	20	74	0
Chloromethane	0.549	0.566	-	-3.1	20	77	0
Vinyl chloride	0.501	0.516	-	-3	20	73	0
Bromomethane	0.22	0.26	-	-18.2	20	86	0
Chloroethane	0.299	0.314	-	-5	20	72	0
Trichlorofluoromethane	0.555	0.586	-	-5.6	20	75	0
Ethyl ether	0.16	0.175	-	-9.4	20	77	0
1,1-Dichloroethene	0.279	0.289	-	-3.6	20	77	0
Carbon disulfide	0.85	0.909	-	-6.9	20	79	0
Methylene chloride	0.299	0.317	-	-6	20	74	0
Acetone	10	12.781	-	-27.8*	20	84	0
trans-1,2-Dichloroethene	0.294	0.293	-	0.3	20	71	0
Methyl tert-butyl ether	0.686	0.705	-	-2.8	20	77	0
Diisopropyl ether	1.453	1.566	-	-7.8	20	79	0
1,1-Dichloroethane	0.729	0.758	-	-4	20	75	0
Ethyl tert-butyl ether	1.104	1.16	-	-5.1	20	76	0
cis-1,2-Dichloroethene	0.323	0.316	-	2.2	20	73	0
2,2-Dichloropropane	0.545	0.565	-	-3.7	20	76	0
Bromochloromethane	0.122	0.134	-	-9.8	20	72	0
Chloroform	0.595	0.61	-	-2.5	20	75	0
Carbon tetrachloride	0.436	0.459	-	-5.3	20	75	0
Tetrahydrofuran	10	11.766	-	-17.7	20	82	-.01
Dibromofluoromethane	0.266	0.276	-	-3.8	20	77	0
1,1,1-Trichloroethane	0.524	0.523	-	0.2	20	73	0
2-Butanone	10	12.534	-	-25.3*	20	86	0
1,1-Dichloropropene	0.49	0.485	-	1	20	73	0
Benzene	1.331	1.329	-	0.2	20	74	0
tert-Amyl methyl ether	0.806	0.831	-	-3.1	20	77	0
1,2-Dichloroethane-d4	0.37	0.377	-	-1.9	20	78	0
1,2-Dichloroethane	0.526	0.557	-	-5.9	20	79	0
Trichloroethene	0.323	0.326	-	-0.9	20	72	0
Dibromomethane	0.178	0.194	-	-9	20	76	0
1,2-Dichloropropane	0.394	0.4	-	-1.5	20	76	0
Bromodichloromethane	0.473	0.494	-	-4.4	20	75	0
1,4-Dioxane	0.00174	0.00206*	-	-18.4	20	85	0
cis-1,3-Dichloropropene	0.531	0.559	-	-5.3	20	76	0
Chlorobenzene-d5	1	1	-	0	20	77	0
Toluene-d8	1.309	1.291	-	1.4	20	75	0
Toluene	1.011	0.941	-	6.9	20	71	0
4-Methyl-2-pentanone	10	9.284	-	7.2	20	75	0
Tetrachloroethene	0.355	0.325	-	8.5	20	68	0
trans-1,3-Dichloropropene	10	9.991	-	0.1	20	77	0
1,1,2-Trichloroethane	0.271	0.283	-	-4.4	20	78	0
Chlorodibromomethane	0.333	0.335	-	-0.6	20	77	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: McPhail Associates	**Lab Number**	: L1807276		
Project Name	: VAN BRODIE BUILDING	**Project Number**	: 6008.9.00		
Instrument ID	: VOA116	**Calibration Date**	: 03/06/18 05:02		
Lab File ID	: V16180306A03	**Init. Calib. Date(s)**	: 03/01/18	03/01/18	
Sample No	: WG1094726-7	**Init. Calib. Times**	: 17:47	20:42	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,3-Dichloropropane	0.583	0.601	-	-3.1	20	77	0
1,2-Dibromoethane	0.282	0.288	-	-2.1	20	76	0
2-Hexanone	10	9.819	-	1.8	20	80	0
Chlorobenzene	1.013	0.964	-	4.8	20	73	0
Ethylbenzene	1.973	1.827	-	7.4	20	72	0
1,1,1,2-Tetrachloroethane	0.347	0.338	-	2.6	20	72	0
p/m Xylene	0.703	0.655	-	6.8	20	72	0
o Xylene	0.654	0.597	-	8.7	20	70	0
Styrene	1.089	1.022	-	6.2	20	72	-.01
1,4-Dichlorobenzene-d4	1	1	-	0	20	77	0
Bromoform	0.4	0.381	-	4.8	20	74	0
Isopropylbenzene	3.791	3.423	-	9.7	20	69	0
4-Bromofluorobenzene	1.073	1.087	-	-1.3	20	78	0
Bromobenzene	0.764	0.708	-	7.3	20	73	0
n-Propylbenzene	4.843	4.48	-	7.5	20	71	0
1,1,2,2-Tetrachloroethane	0.745	0.797	-	-7	20	78	0
2-Chlorotoluene	3.174	3	-	5.5	20	71	0
1,3,5-Trimethylbenzene	3.125	2.891	-	7.5	20	70	0
1,2,3-Trichloropropane	0.642	0.701	-	-9.2	20	79	0
4-Chlorotoluene	2.797	2.647	-	5.4	20	72	0
tert-Butylbenzene	1.968	1.653	-	16	20	67	0
1,2,4-Trimethylbenzene	3.05	2.849	-	6.6	20	70	0
sec-Butylbenzene	3.759	3.393	-	9.7	20	69	0
p-Isopropyltoluene	3.068	2.764	-	9.9	20	69	0
1,3-Dichlorobenzene	1.462	1.429	-	2.3	20	74	0
1,4-Dichlorobenzene	1.497	1.402	-	6.3	20	73	0
n-Butylbenzene	3.188	2.966	-	7	20	72	0
1,2-Dichlorobenzene	1.341	1.249	-	6.9	20	72	0
1,2-Dibromo-3-chloropropan	0.086	0.09	-	-4.7	20	80	0
Hexachlorobutadiene	0.258	0.225	-	12.8	20	67	0
1,2,4-Trichlorobenzene	0.788	0.711	-	9.8	20	71	0
Naphthalene	1.872	1.781	-	4.9	20	74	0
1,2,3-Trichlorobenzene	0.69	0.657	-	4.8	20	73	0

* Value outside of QC limits.

ANALYTICAL REPORT

Lab Number:	L1811479
Client:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140
ATTN:	Ambrose Donovan
Phone:	(617) 868-1420
Project Name:	VAN BRODIE
Project Number:	6008.9.C1
Report Date:	04/05/18

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

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

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1811479-01	GP204 (OW)	GROUNDWATER	LAWRENCE, MA	04/03/18 08:30	04/03/18

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Case Narrative

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

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

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

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

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

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

Project Name: VAN BRODIE **Lab Number:** L1811479
Project Number: 6008.9.C1 **Report Date:** 04/05/18

Case Narrative (continued)

Total Metals

The WG1103431-7 MS recovery for iron (130%), performed on L1811479-01, 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: Cristin Walker

Title: Technical Director/Representative Date: 04/05/18

METALS

Project Name: VAN BRODIE
Project Number: 6008.9.C1
Lab Number: L1811479
Report Date: 04/05/18

SAMPLE RESULTS

Lab ID: L1811479-01
Client ID: GP204 (OW)
Sample Location: LAWRENCE, MA
Sample Depth:
Matrix: Groundwater

Date Collected: 04/03/18 08:30
Date Received: 04/03/18
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	0.00400	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Arsenic, Total	0.01550		mg/l	0.00100	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Chromium, Total	0.00796		mg/l	0.00100	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Copper, Total	0.00268		mg/l	0.00100	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Iron, Total	34.3		mg/l	0.050	--	1	04/04/18 13:30	04/04/18 18:41	EPA 3005A	19,200.7	AB
Lead, Total	0.00166		mg/l	0.00050	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	04/04/18 10:54	04/04/18 19:37	EPA 245.1	3,245.1	EA
Nickel, Total	0.00420		mg/l	0.00200	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	04/04/18 13:30	04/05/18 09:59	EPA 3005A	3,200.8	AM
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		04/05/18 09:59	NA	107,-	

Project Name: VAN BRODIE
Project Number: 6008.9.C1
Lab Number: L1811479
Report Date: 04/05/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1103381-1										
Mercury, Total	ND		mg/l	0.00020	--	1	04/04/18 10:54	04/04/18 18:35	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: WG1103430-1										
Antimony, Total	ND		mg/l	0.00400	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Lead, Total	ND		mg/l	0.00050	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	04/04/18 13:30	04/05/18 09:35	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1103431-1										
Iron, Total	ND		mg/l	0.050	--	1	04/04/18 13:30	04/04/18 18:32	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: VAN BRODIE

Project Number: 6008.9.C1

Lab Number: L1811479

Report Date: 04/05/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1103381-2								
Mercury, Total	103		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1103430-2								
Antimony, Total	105		-		85-115	-		
Arsenic, Total	108		-		85-115	-		
Cadmium, Total	107		-		85-115	-		
Chromium, Total	106		-		85-115	-		
Copper, Total	105		-		85-115	-		
Lead, Total	105		-		85-115	-		
Nickel, Total	105		-		85-115	-		
Selenium, Total	106		-		85-115	-		
Silver, Total	98		-		85-115	-		
Zinc, Total	110		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1103431-2								
Iron, Total	104		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103381-3 QC Sample: L1811085-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00223	**45**	Q	-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103381-5 QC Sample: L1811085-02 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00256	**51**	Q	-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103430-3 QC Sample: L1811479-01 Client ID: GP204 (OW)												
Antimony, Total	ND	0.5	0.6157	123		-	-		70-130	-		20
Arsenic, Total	0.01550	0.12	0.1518	114		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05692	112		-	-		70-130	-		20
Chromium, Total	0.00796	0.2	0.2292	111		-	-		70-130	-		20
Copper, Total	0.00268	0.25	0.2732	108		-	-		70-130	-		20
Lead, Total	0.00166	0.51	0.5600	109		-	-		70-130	-		20
Nickel, Total	0.00420	0.5	0.5456	108		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1322	110		-	-		70-130	-		20
Silver, Total	ND	0.05	0.05034	101		-	-		70-130	-		20
Zinc, Total	ND	0.5	0.5618	112		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103431-3 QC Sample: L1811255-02 Client ID: MS Sample												
Iron, Total	0.150	1	1.18	103		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103431-7 QC Sample: L1811479-01 Client ID: GP204 (OW)												
Iron, Total	34.3	1	35.6	**130**	Q	-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103381-4 QC Sample: L1811085-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103381-6 QC Sample: L1811085-02 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103430-4 QC Sample: L1811479-01 Client ID: GP204 (OW)						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	0.01550	0.01603	mg/l	3		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.00796	0.00840	mg/l	5		20
Copper, Total	0.00268	0.00277	mg/l	3		20
Lead, Total	0.00166	0.00177	mg/l	6		20
Nickel, Total	0.00420	0.00467	mg/l	11		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103431-4 QC Sample: L1811255-02 Client ID: DUP Sample						
Iron, Total	0.150	0.144	mg/l	4		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1103431-8 QC Sample: L1811479-01 Client ID: GP204 (OW)						
Iron, Total	34.3	34.1	mg/l	1		20

INORGANICS
&
MISCELLANEOUS

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

SAMPLE RESULTS

Lab ID: L1811479-01
Client ID: GP204 (OW)
Sample Location: LAWRENCE, MA

Date Collected: 04/03/18 08:30
Date Received: 04/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Groundwater

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	280		mg/l	10	NA	10	-	04/05/18 06:15	121,2540D	JT
Cyanide, Total	ND		mg/l	0.005	--	1	04/04/18 07:33	04/04/18 13:32	121,4500CN-CE	LH
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	04/03/18 23:49	121,4500CL-D	AS
Nitrogen, Ammonia	3.15		mg/l	0.075	--	1	04/04/18 03:00	04/04/18 18:20	121,4500NH3-BH	ML
Chromium, Hexavalent	ND		mg/l	0.010	--	1	04/04/18 02:08	04/04/18 02:25	1,7196A	MA
Anions by Ion Chromatography - Westborough Lab										
Chloride	180.		mg/l	2.50	--	5	-	04/05/18 01:06	44,300.0	JR

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1103225-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	04/03/18 23:49	121,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1103241-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	04/04/18 02:08	04/04/18 02:23	1,7196A	MA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1103269-1										
Cyanide, Total	ND		mg/l	0.005	--	1	04/04/18 07:33	04/04/18 13:28	121,4500CN-CE	LH
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1103274-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	04/04/18 03:00	04/04/18 18:17	121,4500NH3-BH	ML
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1103625-1										
Chloride	ND		mg/l	0.500	--	1	-	04/04/18 20:06	44,300.0	JR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1103684-1										
Solids, Total Suspended	ND		mg/l	1.0	NA	1	-	04/05/18 06:15	121,2540D	JT

Lab Control Sample Analysis

Batch Quality Control

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1103225-2								
Chlorine, Total Residual	93		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1103241-2								
Chromium, Hexavalent	98		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1103269-2								
Cyanide, Total	92		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1103274-2								
Nitrogen, Ammonia	90		-		80-120	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1103625-2								
Chloride	96		-		90-110	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103225-4 QC Sample: L1811481-01 Client ID: MS Sample												
Chlorine, Total Residual	ND	0.248	0.20	81		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103241-4 QC Sample: L1811479-01 Client ID: GP204 (OW)												
Chromium, Hexavalent	ND	0.1	0.095	95		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103269-4 QC Sample: L1811481-01 Client ID: MS Sample												
Cyanide, Total	ND	0.2	0.196	98		-	-		90-110	-		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103274-4 QC Sample: L1811479-01 Client ID: GP204 (OW)												
Nitrogen, Ammonia	3.15	4	7.24	102		-	-		80-120	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103625-3 QC Sample: L1811085-02 Client ID: MS Sample												
Chloride	1820	200	2080	**130**	Q	-	-		90-110	-		18

Lab Duplicate Analysis
Batch Quality Control

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103225-3 QC Sample: L1811479-01 Client ID: GP204 (OW)						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103241-3 QC Sample: L1811479-01 Client ID: GP204 (OW)						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103269-3 QC Sample: L1811481-01 Client ID: DUP Sample						
Cyanide, Total	ND	ND	mg/l	NC		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103274-3 QC Sample: L1811479-01 Client ID: GP204 (OW)						
Nitrogen, Ammonia	3.15	3.31	mg/l	5		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103625-4 QC Sample: L1811085-02 Client ID: DUP Sample						
Chloride	1820	1820	mg/l	0		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1103684-2 QC Sample: L1811677-01 Client ID: DUP Sample						
Solids, Total Suspended	83	100	mg/l	19		29

Project Name: VAN BRODIE
Project Number: 6008.9.C1

Lab Number: L1811479
Report Date: 04/05/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1811479-01A	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L1811479-01B	Plastic 950ml unpreserved	A	7	7	4.1	Y	Absent		TSS-2540-LOW(7),CL-300(28),HEXCR-7196(1),TRC-4500(1)
L1811479-01C	Amber 1000ml H2SO4 preserved	A	<2	<2	4.1	Y	Absent		NH3-4500(28)
L1811479-01D	Plastic 250ml NaOH preserved	A	>12	>12	4.1	Y	Absent		TCN-4500(14)

*Values in parentheses indicate holding time in days

Project Name:	VAN BRODIE	**Lab Number:**	L1811479
Project Number:	6008.9.C1	**Report Date:**	04/05/18

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

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

Report Format: Data Usability Report

Project Name:	VAN BRODIE	**Lab Number:**	L1811479
Project Number:	6008.9.C1	**Report Date:**	04/05/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

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

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

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

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

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

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

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

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name:	VAN BRODIE	**Lab Number:**	L1811479
Project Number:	6008.9.C1	**Report Date:**	04/05/18

REFERENCES

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

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

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.

107 Alpha Analytical - In-house calculation method.

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

LIMITATION OF LIABILITIES

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

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

Certification Information

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

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

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

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

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: 4/3/18

ALPHA Job #: L1811479

Client Information

Client: McPhail Associates, LLC
Address: 2269 Massachusetts Avenue
Cambridge, MA 02140
Phone: (617) 868-1420
Email: WB @McPhailgeo.com

Project Information

Project Name: VAN PRUDIE
Project Location: LAWRENCE, MA
Project #: L1CC9.91
Project Manager: W. BURNS
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH *(only confirmed if pre-approved!)*
Date Due: 04-05-18

Report Information - Data Deliverables

☐ ADEx ☐ EMAIL

Billing Information

☐ 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 _____ Criteria _____

Additional Project Information:

☐ Run TCLP (if triggered)

Sample "Sample ID" Nomenclature: B-100, S-1

ALPHA Lab ID (Lab Use Only)	Sample ID	Sample Depth	Sample Material	Collection Date	Collection Time	Sampler Initials	Soil Assessment Package IV (less VOC)	VOC: ☐ 8260	Total Solids	SVOC: ☐ PAH	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	TOTAL METALS: ☐ RCRA8 ☐ PP13 ☐ MCP 14	DISSOLVED METALS: ☐ RCRA8 ☐ PP13 ☐ MCP 14	METALS: Total Sb,Be,Ni,Tl,V,Zn	☐ PCBs ☐ Pesticides	RGP Section A Inorganics				SAMPLE INFO *Filtration* ☐ Field ☐ Lab to do *Preservation* ☐ Lab to do Sample Comments	TOTAL # BOTTLES
11479-01	GP 204 (0-6)	—	GW	4-3-18	8:30	KEH									X		X					4

Container Type	Preservative
A=Amber glass	A=None
B=Bacteria cup	B=HCl
C=Cube	C=HNO_3
D=BOD bottle	D=H_2SO_4
E=Encore	E=NaOH
G=Glass	F=MeOH
O=Other	G=$NaHSO_4$
P=Plastic	H=$Na_2S_2O_3$
V=Vial	I=Ascorbix Acid
	J=NH_4Cl
Sample Material	K=Zn Acetate
F=Fill S=Sand	O=Other
O=Organics C=Clay	
N=Natural T=Till	
GM=Glaciomarine	
GW=Groundwater	

RGP Section A Inorganics: *Ammonia, Chloride, TRC, TSS, CrVI, CrIII, Total Cyanide, Total RGP Metals*

Container Type	P/A
Preservative	E, H, O

Relinquished By:	Date/Time	Received By:	Date/Time
Vicki Hanniker	4-3-18	McPhail Associates secure sample storage for laboratory pick-up AAL 4/3/18	16:20
McPhail Associates secure sample storage for laboratory pick-up AAL 4/3/18	18:30		4-3-18 1830

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

DOC ID: 25188 Rev 0 (11/28/2017)

APPENDIX E:

LABORATORY ANALYTICAL DATA – SURFACE WATER

ANALYTICAL REPORT

Lab Number:	L1812382
Client:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140
ATTN:	Ambrose Donovan
Phone:	(617) 868-1420
Project Name:	VAN BRODIE BUILDING
Project Number:	6008.9.00
Report Date:	04/12/18

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

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

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1812382
Report Date: 04/12/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1812382-01	SPICKET RIVER	WATER	LAWRENCE, MA	04/10/18 10:30	04/10/18

Project Name: VAN BRODIE BUILDING **Lab Number:** L1812382

Project Number: 6008.9.00 **Report Date:** 04/12/18

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: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1812382
Report Date: 04/12/18

Case Narrative

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

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

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

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

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

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

Project Name:	VAN BRODIE BUILDING	**Lab Number:**	L1812382
Project Number:	6008.9.00	**Report Date:**	04/12/18

Case Narrative (continued)

Sample Receipt

L1812382-01: The sample was received above the appropriate pH for the Ammonia analysis. The laboratory added additional H2SO4 to a pH <2.

MCP Related Narratives

Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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: 04/12/18

METALS

Project Name: VAN BRODIE BUILDING
Lab Number: L1812382
Project Number: 6008.9.00
Report Date: 04/12/18

SAMPLE RESULTS

Lab ID: L1812382-01
Client ID: SPICKET RIVER
Sample Location: LAWRENCE, MA
Date Collected: 04/10/18 10:30
Date Received: 04/10/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	59.4		mg/l	0.660	NA	1	04/11/18 10:35	04/11/18 17:18	EPA 3005A	1,6010C	AB
MCP Total Metals - Mansfield Lab											
Arsenic, Total	ND		mg/l	0.0050	--	1	04/11/18 10:35	04/11/18 17:18	EPA 3005A	97,6010C	AB
Copper, Total	ND		mg/l	0.010	--	1	04/11/18 10:35	04/11/18 17:18	EPA 3005A	97,6010C	AB
Iron, Total	0.336		mg/l	0.050	--	1	04/11/18 10:35	04/11/18 17:18	EPA 3005A	97,6010C	AB
Lead, Total	ND		mg/l	0.010	--	1	04/11/18 10:35	04/11/18 17:18	EPA 3005A	97,6010C	AB
Nickel, Total	ND		mg/l	0.025	--	1	04/11/18 10:35	04/11/18 17:18	EPA 3005A	97,6010C	AB

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1812382
Report Date: 04/12/18

Method Blank Analysis
Batch Quality Control

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: WG1105515-1										
Arsenic, Total	ND		mg/l	0.0050	--	1	04/11/18 10:35	04/11/18 16:51	97,6010C	AB
Copper, Total	ND		mg/l	0.010	--	1	04/11/18 10:35	04/11/18 16:51	97,6010C	AB
Iron, Total	ND		mg/l	0.050	--	1	04/11/18 10:35	04/11/18 16:51	97,6010C	AB
Lead, Total	ND		mg/l	0.010	--	1	04/11/18 10:35	04/11/18 16:51	97,6010C	AB
Nickel, Total	ND		mg/l	0.025	--	1	04/11/18 10:35	04/11/18 16:51	97,6010C	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1105518-1										
Hardness	ND		mg/l	0.660	NA	1	04/11/18 10:35	04/11/18 16:51	1,6010C	AB

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: VAN BRODIE BUILDING

Project Number: 6008.9.00

Lab Number: L1812382

Report Date: 04/12/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1105515-2 WG1105515-3								
Arsenic, Total	111		107		80-120	4		20
Copper, Total	97		96		80-120	1		20
Iron, Total	103		101		80-120	2		20
Lead, Total	102		100		80-120	2		20
Nickel, Total	98		96		80-120	2		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1105518-2								
Hardness	103		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1812382
Report Date: 04/12/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1105518-3 QC Sample: L1812382-01 Client ID: SPICKET RIVER												
Hardness	59.4	66.2	124	98		-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1812382
Report Date: 04/12/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1105518-4 QC Sample: L1812382-01 Client ID: SPICKET RIVER						
Hardness	59.4	58.2	mg/l	2		20

INORGANICS
&
MISCELLANEOUS

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1812382
Report Date: 04/12/18

SAMPLE RESULTS

Lab ID: L1812382-01
Client ID: SPICKET RIVER
Sample Location: LAWRENCE, MA

Date Collected: 04/10/18 10:30
Date Received: 04/10/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
pH (H)	7.1		SU	-	NA	1	-	04/10/18 23:06	1,9040C	AS
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	04/11/18 16:30	04/11/18 22:47	121,4500NH3-BH	AT

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00
Lab Number: L1812382
Report Date: 04/12/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1105615-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	04/11/18 16:30	04/11/18 22:35	121,4500NH3-BH	AT

Lab Control Sample Analysis

Batch Quality Control

Project Name: VAN BRODIE BUILDING

Project Number: 6008.9.00

Lab Number: L1812382

Report Date: 04/12/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1105357-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1105615-2								
Nitrogen, Ammonia	88		-		80-120	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1812382
Report Date: 04/12/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1105615-4 QC Sample: L1812382-01 Client ID: SPICKET RIVER												
Nitrogen, Ammonia	ND	4	3.57	89		-	-		80-120	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1812382
Report Date: 04/12/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1105615-3 QC Sample: L1812382-01 Client ID: SPICKET RIVER						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20

Project Name: VAN BRODIE BUILDING
Project Number: 6008.9.00

Lab Number: L1812382
Report Date: 04/12/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812382-01A	Plastic 250ml HNO3 preserved	A	<2	<2	5.9	Y	Absent		MCP-FE-6010T-10(180),MCP-AS-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180),MCP-NI-6010T-10(180),MCP-PB-6010T-10(180)
L1812382-01B	Plastic 950ml H2SO4 preserved	A	8	<2	5.9	N	Absent		NH3-4500(28)
L1812382-01C	Plastic 950ml unpreserved	A	8	8	5.9	Y	Absent		PH-9040(1)
L1812382-01D	Plastic 950ml unpreserved	A	8	8	5.9	Y	Absent		PH-9040(1)

*Values in parentheses indicate holding time in days

Project Name:	VAN BRODIE BUILDING	**Lab Number:**	L1812382
Project Number:	6008.9.00	**Report Date:**	04/12/18

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

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

Report Format: Data Usability Report

Project Name:	VAN BRODIE BUILDING	**Lab Number:**	L1812382
Project Number:	6008.9.00	**Report Date:**	04/12/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

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

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

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

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

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

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

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

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name:	VAN BRODIE BUILDING	**Lab Number:**	L1812382
Project Number:	6008.9.00	**Report Date:**	04/12/18

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: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

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

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL

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: 4/10/18

ALPHA Job #: L1812382

Client Information

Client: McPhail Associates, LLC
Address: 2269 Massachusetts Avenue
Cambridge, MA 02140
Phone: (617) 868-1420
Email: WB @McPhailgeo.com

Project Information

Project Name: Van Brodie
Project Location: Lawrence, MA
Project #: 6009.900
Project Manager: B. Burns
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH *(only confirmed if pre-approved!)*
Date Due:

Report Information - Data Deliverables

☒ ADEx ☐ EMAIL

Billing Information

☐ 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 _____ Criteria _____

Additional Project Information:

☐ Run TCLP (if triggered)
Metals → Arsenic, copper, iron, lead, nickel

Sample "Sample ID" Nomenclature: B-100, S-1

ALPHA Lab ID (Lab Use Only)	Sample ID	Sample Depth	Sample Material	Collection Date	Collection Time	Sampler Initials	Soil Assessment Package IV (less VOC)	VOC: ☐ 8260	Total Solids	SVOC: ☐ PAH	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	TOTAL METALS: ☐ RCRA8 ☐ PP13 ☐ MCP 14	DISSOLVED METALS: ☐ RCRA8 ☐ PP13 ☐ MCP 14	METALS: ~~Total Sb,Be,Ni,Tl,V,Zn~~ As,Cu,Fe,Pb	☐ PCBs ☐ Pesticides	RGP Section A Inorganics	pH, Hardness	Ammonia		SAMPLE INFO Filtration ☐ Field ☐ Lab to do Preservation ☐ Lab to do Sample Comments	TOTAL # BOTTLES
12382-01	SPICKET RIVER	—	SW	4-10-18	10:30	KEH									X			X	X			4

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

Sample Material
F=Fill S=Sand
O=Organics C=Clay
N=Natural T=Till
GM=Glaciomarine
GW=Groundwater

Preservative
A=None
B=HCl
C=HNO_3
D=H_2SO_4
E=NaOH
F=MeOH
G=NaHSO4
H=$Na_2S_2O_3$
I=Ascorbix Acid
J=NH_4Cl
K=Zn Acetate
O=Other

RGP Section A Inorganics :
Ammonia, Chloride, TRC, TSS, CrVI, CrIII, Total Cyanide, Total RGP Metals

	Container Type																					
	Preservative																					

Relinquished By:	Date/Time	Received By:	Date/Time
Kate Hanrahan	4-10-18 12:00	McPhail Associates secure sample storage for laboratory pick-up	4/10 1600
McPhail Associates secure sample storage for laboratory pick-up	4/10/18 1600	AAC 4/10/18	1600
AAC 4/10/18	1730	Danielle Matt	4/10/18 17:30

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

DOC ID: 25188 Rev 0 (11/28/2017)

APPENDIX F:

BEST MANAGEMENT PRACTICE PLAN

A Notice of Intent for a Remediation General Permit (RGP) under the National Pollutant Discharge Elimination System (NPDES) has been submitted to the US Environmental Protection Agency (EPA) in anticipation of temporary construction dewatering that will occur during redevelopment of 582 Broadway in Lawrence, Massachusetts. This Best Management Practices Plan (BMPP) has been prepared as an Appendix to the RGP and will be posted at the site during the time period that temporary construction dewatering is occurring at the site.

Water Treatment and Management

During subsurface utility work, dewatering effluent is anticipated to be pumped from localized sumps and trenches within the excavation directly into a settling tank. Dewatering effluent treatment will consist of a settling tank, bag filters to remove suspended soil particulates and granular activated carbon filters prior to off-site discharge.

Discharge Monitoring and Compliance

Sampling and testing will be conducted at the influent to the system and the treated effluent as required by the RGP. During the first week of discharge, the operator must sample the untreated influent and treated effluent two times: one (1) sample of untreated influent and one (1) sample of treated effluent be collected on the first day of discharge, and one (1) sample of untreated influent and one (1) sample of treated effluent must be collected on one additional non-consecutive day within the first week of discharge. Samples must be analyzed in accordance with 40 CFR §136 unless otherwise specified by the RGP, with a maximum 5-day turnaround time and results must be reviewed no more than 48 hours from receipt of the results of each sampling event. After the first week, samples may be analyzed with up to a ten (10)-day turnaround time and results must be reviewed no more than 72 hours from receipt of the results. If the treatment system is operating as designed and achieving the effluent limitations outlined in the RGP, on-going sampling shall be conducted weekly for three (3) additional weeks beginning no earlier than 24 hours following initial sampling, and monthly as described below. Any adjustments/reductions in monitoring frequency must be approved by EPA in writing.

In accordance with Part 4.1 of the RGP, the operator will perform routine monthly monitoring for both influent and effluent beginning no more than 30 days following the completion of the sampling requirements for new discharges or discharges that have been interrupted. The routine monthly monitoring is to be conducted through the end of the scheduled discharge. The routine monthly monitoring must continue for five (5) consecutive months prior to submission of any request for modification of monitoring frequency.

Dewatering activity for the Site is classified as Category III-G: Sites with Known Contamination. Monitoring shall include analysis of influent and effluent for contaminates specified by the EPA.

Monitoring will include checking the condition of the treatment system, assessing the need for treatment system adjustments based on monitoring data, observing, and recording daily flow rates and discharge quantities, and verifying the flow path of the discharged effluent.

The total monthly flow will be monitored by checking and documenting the flow through the flow meter to be installed on the system. Flow will be maintained below the "system design flow" by regularly monitoring flow and adjusting the amount of construction dewatering as needed. Monthly monitoring reports will be compiled and maintained at the site.

System Maintenance

Schedule regular maintenance and periodic cleaning of the treatment system will be conducted to verify proper operation and shall be conducted in accordance with Section 1.11 of the project earthwork specifications. Regular maintenance will include checking the condition of the treatment system equipment such as the settling tanks, bag filters, hoses, pumps, and flow meters. Equipment will be monitored daily for potential issues and unscheduled maintenance requirements.

Employees who have direct or indirect responsibility for ensuring compliance with the RGP will be trained by the Contractor.

Miscellaneous Items

It is anticipated that the erosion control measures and the nature of the site will minimize potential runoff to or from the site. The project specifications also include requirements for erosion control. Site security for the treatment system will be addressed within the overall site security plan.

No adverse effects on designated uses of surrounding surface water bodies is anticipated. The nearest surface water body is Stevens Pond. Dewatering effluent will be pumped into a settling tank. Water within the settling tank will pumped through bag filters and GAC filters in series (if necessary) prior to discharge into the storm drains.

Management of Treatment System Materials

Dewatering effluent will be pumped directly into the treatment system from the excavation with use of hoses and localized sumps to minimize handling. The Contractor will establish staging areas for equipment or materials storage that may be possible sources of pollution away from any dewatering activities, to the extent practicable.

Sediment from the tank used in the treatment system will be characterized and removed from the site to an appropriate receiving facility, in accordance with applicable laws and regulations. Bag and GAC filters will be replaced/disposed of as necessary.