



TERRA ENVIRONMENTAL, LLC
PLANNING | CONSULTING | MANAGEMENT | REMEDIATION

**NOTICE OF INTENT FOR DISCHARGE
PURSUANT TO US EPA
REMEDATION GENERAL PERMIT
MAG9100000**

Project:
City of Framingham
Department of Public Works
Beaver Street Over Beaver Dam Brook Bridge Replacement
Bridge No. F-07-021 (C14)

Owner:
City of Framingham
Department of Public Works
100 Western Ave.
Framingham, MA 01702

Prepared for:
Northern Construction Service, LLC
1520 Park Street
Palmer, MA 01069

Prepared by:
TERRA Environmental, LLC
159 Haven Street, Second Floor
Reading, MA 01867

April 1, 2019

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March 27, 2019

United States Environmental Protection Agency
Office of Ecosystem Protection
EPA RGP Applications Coordinator
5 Post Office Square, Suite 100 (Mail Code OEP06-01)
Boston, MA 02109-3912

RE: Notice of Intent for Remediation General Permit
Temporary Construction Dewatering Discharge
Beaver Street Bridge Replacement
Framingham, Massachusetts

Dear Sir/Madam:

On behalf of Northern Construction Service, LLC (Northern), TERRA Environmental, LLC (TERRA) has submitted this Notice of Intent (NOI) to the U.S. Environmental Protection Agency (EPA) for authorization to discharge treated groundwater under the National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) MAG910000 for the Beaver Street Bridge Replacement project, located at Beaver Street in Framingham, Massachusetts (the Project). The temporary discharge of construction dewatering will occur as part of the proposed replacement of the Beaver Street Bridge, which is being conducted by the City of Framingham. The dewatered groundwater will be treated to meet requirements of this NOI and RGP and will be discharged to Beaverdam Brook as shown in **Figure 1**; Site Locus.

A copy of the NOI 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 Know Contamination. Contaminants of concern (COC) in soil, groundwater, and sediment include volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPH), volatile petroleum hydrocarbons (VPH), cyanide, and heavy metals. Additional information is presented in later sections of this Letter. Thus, Technology Based Effluent Limitations (TBELs) for all parameters classified as "Type A" and all present parameters classified as "Type D" through "Type F" contamination apply.

The following is a summary of site and groundwater quality information in support of the NOI for temporary discharge of groundwater to the Beaver Brook. This letter and supporting documentation were prepared in accordance with the US EPA guidance for construction dewatering under the RGP program.

1.0 GENERAL SITE INFORMATION

Owner

City of Framingham – Department of Public Works
100 Western Ave
Framingham, MA 01702
Contact: Matthew J. Hayes, PE, ENV SP
Phone: 508-532-6094
Email: mjh@framinghamma.gov

Applicant/Operator

Northern Construction Service, LLC

1520 Park Street

Palmer, MA 01069

Contact: Kurt Cormier

Phone: 781-364-7325

Email: kcormier@northernconstruction.com

Consultant/LSP

TERRA Environmental, LLC

159 Haven Street, Second Floor

Reading, MA 01867

Contact: Philip Peterson, LSP

Phone: 781-944-6851

Email: ppeterson@terra-env.com

2.0 PROPOSED SCOPE OF WORK AND EXISTING CONDITIONS

The work under this Contract consist of rehabilitation of Bridge No. F-07-021(C-14) that carries Beaver Street over Beaver Dam Brook. The Project is in a mixed commercial and residential neighborhood of the City. The proposed structure will be a 9' wide x 11' high, 4-sided, precast concrete box culvert; existing water mains will be cut, capped and reconnected after culvert construction; existing sewer flow shall not be interrupted, flows shall be pumped around culvert excavation and manned 24 hours per day, while in operation; existing telephone duct shall be supported in place and reattached to the proposed culvert. The project includes control of water, demolition of the existing culvert structure, roadway, sidewalk and bridge barrier construction and all incidental items necessary to complete the work.

3.0 SITE ENVIRONMENTAL SETTING AND SURROUNDING HISTORICAL PLACES

The Project area is located on Beaver Street at the crossing of Beaverdam Brook, approximately 350 feet west from the intersection of Marian Road and Beaver Street. Dennison Playground is to the north of the site, and commercial and residential properties are located to the east, west, and south. Beaverdam Brook flows in a northerly direction through the site. The street is nearly level throughout the site, with a ground surface at approximately El. 152.

Per the Massachusetts Department of Environmental Protection (MassDEP) Phase I Site Assessment Maps, the limits of the Project are located within 500-feet of residentially zoned properties, wetlands, and public resource area(s). The Project area is also located within a FEMA 100-year floodplain, freshwater wetlands, and adjacent to a protected open space (the Mary Dennison Park). The Project area is not located within a MassDEP-approved Wellhead Protection Area (Zone II Area), MassDEP Interim Wellhead Protection Area (IWPA), or potentially productive aquifer (PPA), and no public water supplies or private drinking water wells are located within 500 feet of the Site. Further, there are no Areas of Critical Environmental Concern, no fish habitats, no habitats of Species of Special Concern or Threatened or Endangered Species within 500 feet of the Project area.

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

3.1 SITE AND RELEASE HISTORY

There are two (2) disposal sites, as defined by the Massachusetts Contingency Plan (MCP) at 310 Code of Massachusetts Regulations (CMR) 40.0000) within the Project limits. **Figure 2** presents the limits of each disposal site in relation to the Project. Detailed descriptions of each disposal site are presented below.

3.1.1 RTN 3-589 – Eversource/NSTAR Gas Company

According to the draft RAM prepared for the project (GEI, 2019), the majority of the Site was occupied by wetlands in 1886 prior to construction of the Sudbury Aqueduct, with the exception of several parcels along Irving Street. Portions of the Site were subsequently filled and developed by the Framingham Gas, Fuel, and Power Company in 1889. Additional areas of the Site were sequentially filled as Manufactured Gas Plant (MGP) and tar processing operations expanded. By 1907, an MGP was operated at the Site by the Framingham Gas, Fuel, and Power Company. By 1968, all MGP operations ceased and the majority of the MGP infrastructure had been removed.

The Project is located within the boundary of a Massachusetts Department of Environmental Protection (MassDEP) disposal site, identified as Release Tracking Number (RTN) 3-589, and located at 350 Irving Street in Framingham, Massachusetts. According to a Release Abatement Measure Plan (RAM) completed by GEI Consultants, Inc., the RTN is associated with a release of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPH), volatile petroleum hydrocarbons (VPH), cyanide, and heavy metals identified in soil, groundwater, sediment, and surface water. Polychlorinated Biphenyls (PCBs) were also detected at elevated concentrations in surficial soil in a limited portion of the southeast woodland. Dense non-aqueous phase liquid (DNAPL) is present in soil and continues to be measured in monitoring wells in the southern portion of the Site, and present as hardened tar primarily in the northern portion of the Site. The presence of DNAPL, VOCs, PAHs, EPH, VPH, cyanide, and metals appear attributable to historical MGP operations and potentially historical filling.

Additional information is available from the Massachusetts Department of Environmental Protection (MassDEP) Data Portal: <https://eeaonline.eea.state.ma.us/portal#!/wastesite/3-0000589>

3.1.2 RTN 3-32015 – Avery Dennison Corporation/Mary Dennison Park

The site (RTN 3-32015) currently consists of Mary Dennison Park and various off-park properties. The park is partially fenced and consists of approximately 14.9 acres of open land used for recreational activities including two playgrounds (the easternmost one is fenced), basketball courts, and three baseball/softball fields. The ground cover is mainly grass with some infield clay/sand for the baseball diamonds. There is paved parking along Beaver Street, and a gravel/asphalt parking area near Morton Street and Coolidge Street to the north. Beaver Dam Brook abuts the park to the east and is lower than the park surface with a wooded, vegetated bank. Beaver Street abuts the park to the south and commercial and residential properties adjoin the park to the west and north. Prior to the opening of the current park in 1958, the land comprising the park had a history of filling and burning. The park is currently in use and the City plans to build a new park at the current location.

In 2014, as part of an initial environmental assessment, it was found that various metals, including lead, from previous soil sampling at the Site exceeded applicable Reportable Concentrations category S-1. On February 20, 2014, the City reported a 120-day release condition due to the concentrations of various metals in soil to the Massachusetts Department of Environmental Protection (MassDEP), who subsequently assigned Release Tracking Number (RTN) 3-32015 to the release.

On March 7 and July 11, 2014, the MassDEP issued Notices of Responsibility (NOR) to the Town (now City) of Framingham and Avery Dennison Corporation (parties), respectively; both parties are considered Potentially Responsible Parties (PRPs) by MassDEP. Based on an agreement between the two parties, MCP testing, reporting, and remediation is being conducted cooperatively.

Additional information is available from the Massachusetts Department of Environmental Protection (MassDEP) Data Portal: <https://eeaonline.eea.state.ma.us/portal#!/wastesite/3-0032015>

4.0 CONSTRUCTION SITE DEWATERING

Excavations for the abutments and wingwalls will likely be performed using an open cut. For footings founded on soil, the Project specifications require the contractor to maintain the groundwater level below the bottom of the excavation at all times. It is anticipated that during site construction, excavations will extend below groundwater elevation and the discharge observed will likely be on order of up to 50 gallons per minute (gpm). These estimates do not include surface run-off which will be removed from the excavation during periods of precipitation.

Groundwater was observed at approximately 5 feet below existing grade at MW-515S, located approximately 15 feet from Beaver Brook, during groundwater sampling conducted by TERRA in March of 2019. Given the shallow groundwater, temporary on-Site collection and recharge of groundwater may not be feasible during construction. As a result, construction dewatering will discharge collected groundwater directly into Beaver Brook under the requested Remediation General Permit.

4.1 GROUNDWATER AND SURFACE WATER ANALYSIS

In preparation of the Project, GEI conducted groundwater sampling in April of 2016. Low levels of dissolved arsenic and barium were detected in three samples collected in 2016, and there was a single low-level detection of total cyanide in one sample collected in April 2016. There were no detected concentrations of VOCs, SVOC, or VPH or EPH fractions in the groundwater samples collected from MW515S in 2016, and all detected concentrations were well below the applicable Method 1 GW-3 standards. **Table 1**, adapted from GEI's draft RAM plan prepared for the project, presents historic groundwater sampling data obtained at the Site.

TERRA mobilized to the Project on March 13, 2019, a groundwater sample was collected from MW-515S, located approximately 15 feet from Beaver Brook. The sample was analyzed for RGP parameters including:

- Total metals (antimony, arsenic, cadmium, chromium (hexavalent, trivalent, and total), copper, iron, lead, nickel, mercury, selenium, silver, and zinc) in accordance with Method SW-846 6010B and SW-846 7471B
- Polychlorinated biphenyls (PCBs) by Method SW846 8082
- Volatile organic compounds (VOCs) by Method SW-846 8260B
- Semi-volatile Organic Compounds (SVOCs) by Method SW-846 8270C (Includes PAHs, specific polycyclic aromatic hydrocarbons)
- Pesticides by Method SW-8081B
- 1,4-Dioxane by Method SW-8260C
- Total Suspended Solids, Chloride/Total Residual Chlorine, pH, Oil and Grease, ammonia, chloride, other miscellaneous inorganics

Additionally, a surface water sample was collected from the receiving water body, Beaverdam Brook, and analyzed for the parameters listed above.

Laboratory analysis detected several metals, VOCs, and SVOCs above laboratory detection limits. No detections were above the applicable MCP RCGW-1 and RCGW-2 Standards. A summary of analytical data is provided in **Table 2** (Groundwater) and **Table 3** (Surface Water). Copies of laboratory analytical results are included in **Appendix D**.

4.2 TREATMENT SYSTEM

Based on groundwater results, the treatment of groundwater to meet EPA effluent limitations will not be necessary prior to dewatering. However,

Based on the results of groundwater testing performed at the subject site, the treatment of dewatered groundwater during construction will be necessary prior to its off-site discharge. The detected concentrations of metals, in particular iron, are considered to be likely attributable to total suspended solids. Therefore, a 10,000-gallon capacity settling tank and bag filter in series will be required to settle and filter out suspended soil particles in the discharge during construction dewatering to meet applicable effluent limits established by the US EPA prior to off-site discharge. Dewatered groundwater will be pumped to an on-site drainage basin that discharges to Beaverdam Brook. If petroleum impacted groundwater is encountered during excavation, a granular activated carbon (GAC) filter will be required to facilitate groundwater discharge. A schematic of the treatment system is shown on **Figure 3**.

5.0 CONCLUSION

The purpose of this report is to assess site environmental conditions and groundwater data at the Beaver Dam Brook Bridge located in Framingham, Massachusetts to support the attached Notice of Intent (NOI) for coverage under the Remediation General Permit (RGP) MAG910000 for the discharge of construction dewatering effluent into Fiske Pond by way of the Beaver Dam Brook via the City of Framingham storm drainage system.

The treatment of dewatered groundwater during construction will be necessary prior to its off-site discharge. Specifically, a 10,000-gallon capacity settling tank and bag filter in series will be required to settle and filter out suspended soil particles in the discharge during construction dewatering to meet applicable effluent limits established by the US EPA prior to off-site discharge.

Thank you for your consideration of this NOI/Permit. Please feel free to contact us if you wish to discuss the information contained in this application, or if any additional information is needed.

Very truly yours,

TERRA Environmental, LLC



James McMullen
Environmental Scientist



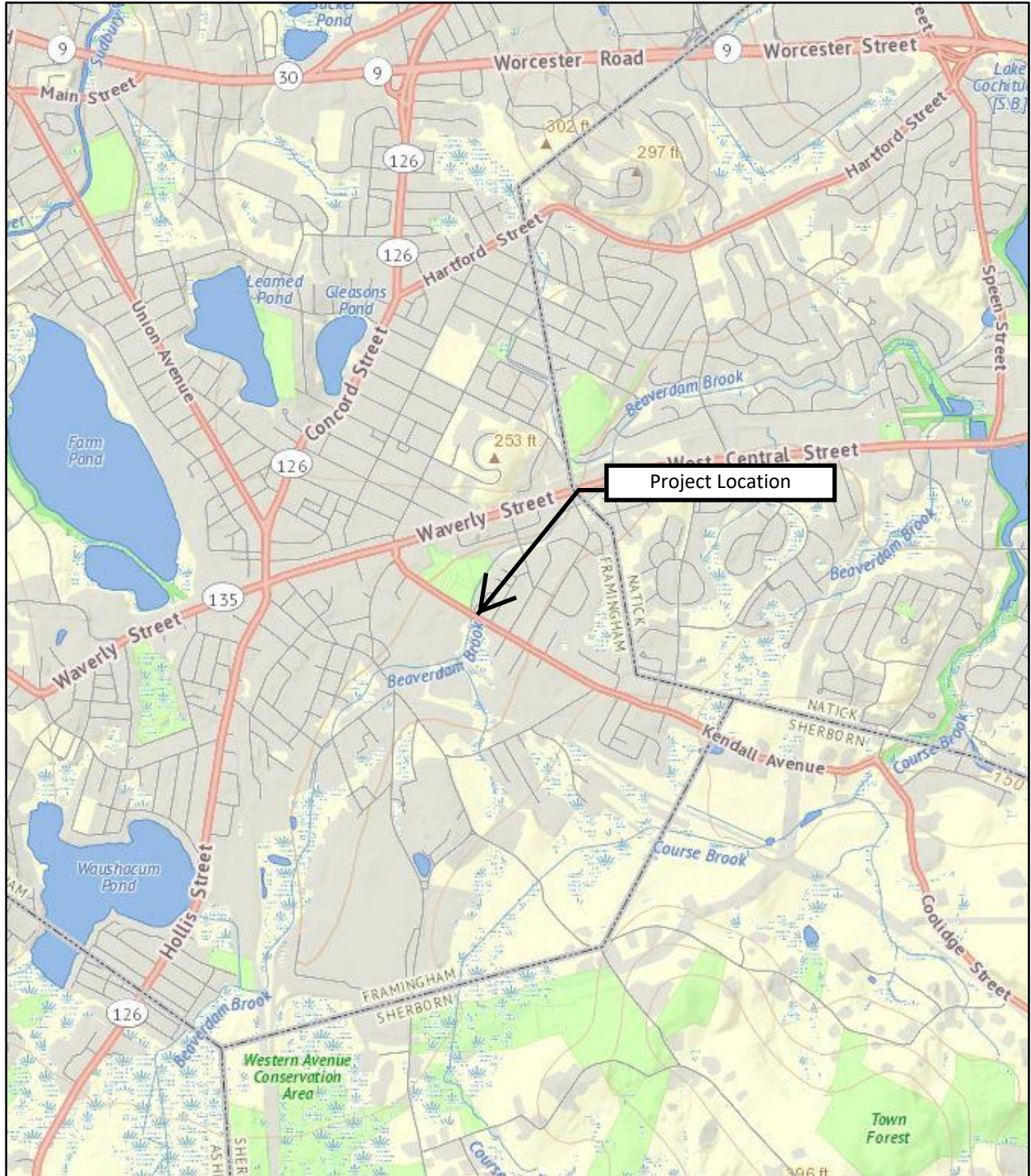
Christopher M. Ragnelli, EIT
Project Engineer



Philip M. Peterson, LSP
Principal / LSP

FIGURES

Figure 1 – Site Locus



Site Address:	Beaver Street, Framingham, MA 01702
MassDEP RTN:	3-589 / 3-32015
Base Map:	USGS National Map
Prepared by:	TERRA Environmental, LLC



Figure 2

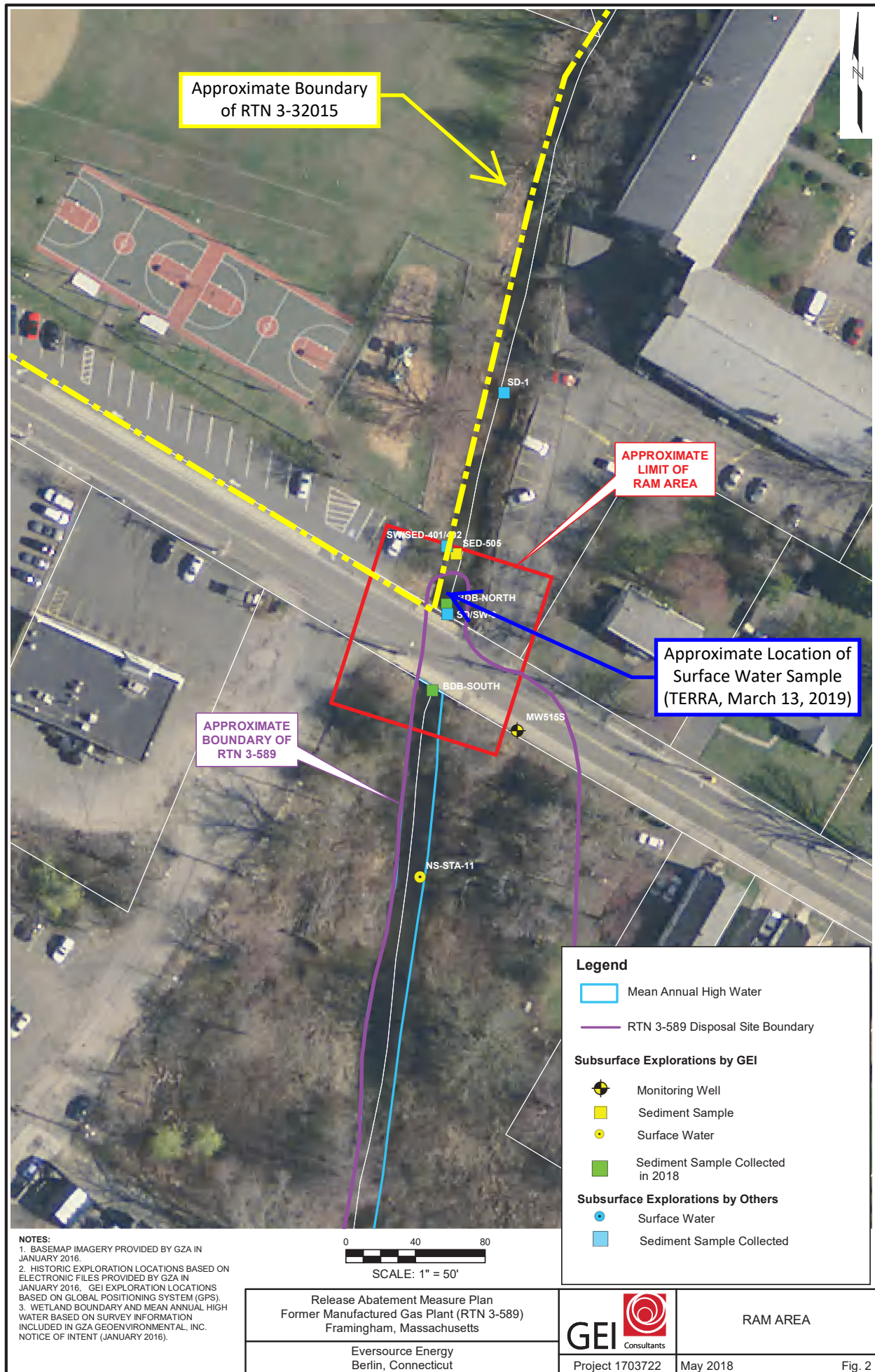
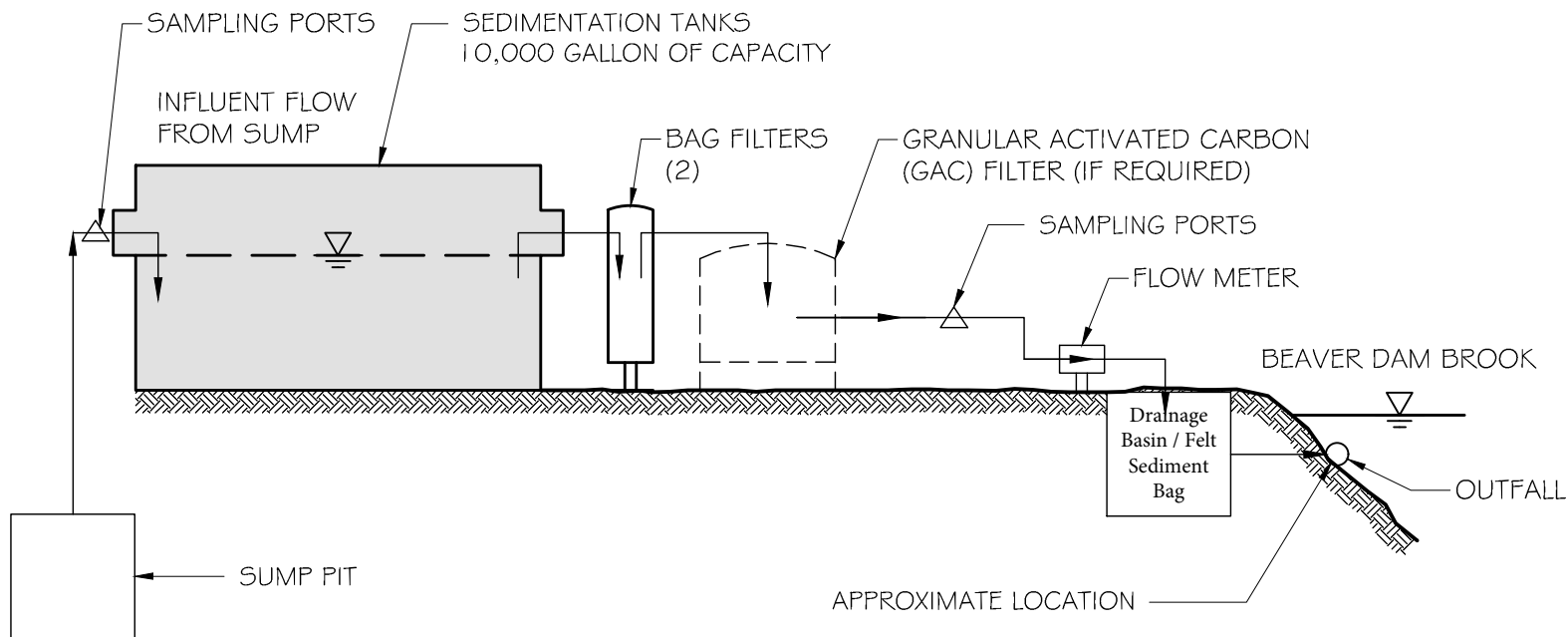


Figure 3



TERRA ENVIRONMENTAL, LLC
PLANNING | CONSULTING | MANAGEMENT | REMEDIATION

159 Haven Street
 Second Floor
 Reading, MA 01867
 (781) 944-6851

Beaver Street Bridge Replacement - Framingham Dept. of Public Works
 Beaver Street, Framinghma, MA

Schematic of Treatment System

Prepared For:
 Northern Construction Services, LLC

Prepared By:
 TERRA Environmental, LLC

Date: April 2019	Dwn: JM	Chkd: PP	Scale: NTS
Project No: 19-103			

TABLES

**Table 1. Historic Groundwater Chemical Testing Results -
Shallow Wells Release Abatement Measure (RAM) Plan
Beaver Dam Brook Bridge Replacement
Framingham, Massachusetts**

						Sample ID:	MW515S	MW515S	MW515S
						Sampling Date:	4/5/2016	5/18/2016	8/2/2016
						Monitoring Well Screen Interval (feet):	3 - 13	3 - 13	3 - 13
						Shallow/Medium/Deep Well:	Shallow	Shallow	Shallow
						Collected by:	GEI	GEI	GEI
						Laboratory Data Package:	1604077	1605510	1608112
Analyte	Method	Units	MCP GW-2	MCP GW-3	UCL				
Volatile Organic Compounds (VOCs)	8260	ug/L				ND	ND	ND	
Semivolatile Organic Compounds (SVOCs)	8270	ug/L				ND	ND	ND	
Volatile Petroleum Hydrocarbons (VPH)	MA VPH	ug/L							
C9 to C10 Aromatic Hydrocarbons			4000	50000	100000	<100	<100	<100	
C5 to C8 Aliphatic Hydrocarbons			3000	50000	100000	<150	<150	<150	
C9 to C12 Aliphatic Hydrocarbons			5000	50000	100000	<150	<150	<150	
Extractable Petroleum Hydrocarbons (EPH)	MA EPH	ug/L							
C9 to C18 Aliphatic Hydrocarbons			5000	50000	100000	<93	<93	<93	
C19 to C36 Aliphatic Hydrocarbons			NS	50000	100000	<93	<93	<93	
C11 to C22 Aromatics Hydrocarbons			50000	5000	100000	<93.5	<93.5	<93.5	
Metals		ug/L							
Antimony	7010/6010		NS	8000	80000	<2.5	<2.5	<2.5	
Arsenic	7010/6010		NS	900	9000	3.3	3.4	3.5	
Barium	6010		NS	50000	100000	241	165	86.5	
Beryllium	6010		NS	200	2000	<0.5	<0.5	<0.5	
Cadmium	6010		NS	4	50	<2.5	<2.5	<2.5	
Chromium	6010		NS	300	3000	<10.0	<10.0	<10.0	
Lead	6010		NS	10	150	<10.0	<10.0	<10.0	
Mercury	7470		NS	20	200	<0.20	<0.20	<0.20	
Nickel	6010		NS	200	2000	<25.0	<25.0	<25.0	
Selenium	7010/6010		NS	100	1000	<25.0	<25.0	<5.0	
Silver	6010		NS	7	1000	<5.0	<5.0	<5.0	
Thallium	7010/6010		NS	3000	30000	<1.0	<1.0	<1.0	
Vanadium	6010		NS	4000	40000	<10.0	<10.0	<10.0	
Zinc	6010		NS	900	50000	<25.0	<25.0	<25.0	
General Chemistry		ug/L							
Physiologically Available Cyanide (PAC)	MA PAC/9014		NS	30	2000	<5	<5.0	<5.0	
Total Cyanide	9014		NS	NS	NS	5.1	<5.0	<5.0	

General Notes:

- In general, analytes detected in at least one sample are reported here. For a complete list of analytes, see the laboratory data sheets.
- "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
- MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 20, 2014.
- Method 1 Standards (e.g., GW-3) and UCLs, where identified, are cited from the MCP.
- UCL = Upper Concentration Limit.
- NS = No standard or criteria has been established for this analyte.
- NT = The sample was not tested for this analyte.
- ND = Not detected.
- ug/L = microgram per liter.
- Values in bold exceed GW-3.
- Values in bold and underlined exceed UCL.
- All GEI samples were field filtered for metals (dissolved metals results are presented).

Table 2 - Source Water

TERRA Environmental 159 Haven Street Second Floor Reading, MA 01867 (781) 944-6851		Lab Sample Id Collection Date Client Id Matrix	CC66896 3/13/2019 MW5155 Gw Discharge		
Project Id : BEAVER ST BRIDGE					
	CAS	Units	Result	RL	
Miscellaneous/Inorganics					
Chloride	16887-00-6	mg/L	1,500	30.0	
Chlorine Residual	7782-50-5	mg/L	< 0.02	0.02	
1,2-Dibromoethane (EDB)	106-93-4	ug/L	< 0.02	0.02	
Ethanol	64-17-5	ug/L	< 400	400	
Ammonia as Nitrogen	7664-41-7	mg/L	0.69	0.05	
Phenolics	64743-03-9	mg/L	< 0.015	0.015	
pH	PHNX - PH	pH Units	7.82	1.00	
Tert-amyl-methyl-ether	994-05-8	ug/L	< 1.0	1.0	
Tert-butyl alcohol	75-65-0	ug/L	< 50	50	
Total Cyanide	57-12-5	mg/L	< 0.010	0.010	
O&G, Non-polar Material	PHNX - OIL-GREASE-NP	mg/L	< 1.4	1.4	
Total Suspended Solids	PHNX - TOTSUSPENDSOL	mg/L	6	5.0	
Metals, Total					
Antimony	7440-36-0	mg/L	< 0.005	0.005	
Arsenic	7440-38-2	mg/L	< 0.004	0.004	
Cadmium	7440-43-9	mg/L	< 0.001	0.001	
Calcium	7440-70-2	mg/L	131	0.010	
Chromium	7440-47-3	mg/L	< 0.001	0.001	
Chromium, Hexavalent	18540-29-9	mg/L	< 0.01	0.01	
Copper	7440-50-8	mg/L	< 0.005	0.005	
Hardness (CaCO3)	PHNX - HARDNESS	mg/L	401	0.1	
Iron	7439-89-6	mg/L	6.18	0.010	
Lead	7439-92-1	mg/L	< 0.002	0.002	
Magnesium	7439-95-4	mg/L	17.9	0.010	
Mercury	7439-97-6	mg/L	< 0.0002	0.0002	
Nickel	7440-02-0	mg/L	0.004	0.001	
Selenium	7782-49-2	mg/L	< 0.010	0.010	
Silver	7440-22-4	mg/L	< 0.001	0.001	
Trivalent Chromium	16065-83-1	mg/L	< 0.001	0.001	
Zinc	7440-66-6	mg/L	0.097	0.004	
PCBs By E608					
	Total PCBs	ug/L	ND		
Volatiles By E624.1					
	Total VOCs	ug/L	ND		
Semivolatiles By E625					
	Total SVOCs	ug/L	ND		
Semivolatiles (SIM) By 625(SIM)					
	Total SVOCs	ug/L	ND		
Pesticides By E608					
	Total Pesticides	ug/L	ND		
Oxygenates & Dioxane By E624.1					
	Total Oxygenates & Dioxin	ug/L	ND		
1,4-dioxane By E624.1					
1,4-dioxane	123-91-1	ug/l	< 40	40	

Result Detected
 RL Exceeds Criteria
 Result Exceeds Criteria

Table 3 - Receiving Water

TERRA Environmental
 159 Haven Street
 Second Floor
 Reading, MA 01867
 (781) 944-6851

Lab Sample Id CC66897
 Collection Date 3/13/2019
 Client Id BEAVER BROOK
 Matrix Receiving Water

Project Id : BEAVER ST BRIDGE

	CAS	Units	Result	RL
Miscellaneous/Inorganics				
Chloride	16887-00-6	mg/L	218	6.0
Chlorine Residual	7782-50-5	mg/L	< 0.02	0.02
1,2-Dibromoethane (EDB)	106-93-4	ug/L	< 0.02	0.02
Ethanol	64-17-5	ug/L	< 400	400
Ammonia as Nitrogen	7664-41-7	mg/L	0.21	0.05
Phenolics	64743-03-9	mg/L	< 0.015	0.015
pH	PHNX - PH	pH Units	7.53	1.00
Tert-amyl-methyl-ether	994-05-8	ug/L	< 1.0	1.0
Tert-butyl alcohol	75-65-0	ug/L	< 50	50
Total Cyanide	57-12-5	mg/L	< 0.010	0.010
O&G, Non-polar Material	PHNX - OIL-GREASE-NP	mg/L	< 1.4	1.4
Total Suspended Solids	PHNX - TOTSUSPENDSOL	mg/L	5	5.0
Metals, Total				
Antimony	7440-36-0	mg/L	< 0.005	0.005
Arsenic	7440-38-2	mg/L	< 0.004	0.004
Cadmium	7440-43-9	mg/L	< 0.001	0.001
Calcium	7440-70-2	mg/L	23.2	0.010
Chromium	7440-47-3	mg/L	< 0.001	0.001
Chromium, Hexavalent	18540-29-9	mg/L	< 0.01	0.01
Copper	7440-50-8	mg/L	< 0.005	0.005
Hardness (CaCO3)	PHNX - HARDNESS	mg/L	80	0.1
Iron	7439-89-6	mg/L	1.09	0.010
Lead	7439-92-1	mg/L	< 0.002	0.002
Magnesium	7439-95-4	mg/L	5.37	0.010
Mercury	7439-97-6	mg/L	< 0.0002	0.0002
Nickel	7440-02-0	mg/L	0.001	0.001
Selenium	7782-49-2	mg/L	< 0.010	0.010
Silver	7440-22-4	mg/L	< 0.001	0.001
Trivalent Chromium	16065-83-1	mg/L	< 0.001	0.001
Zinc	7440-66-6	mg/L	0.016	0.004
PCBs By E608				
Total PCBs		ug/L	ND	
Volatiles By E624.1				
Total VOCs		ug/L	12.9	
Ethylbenzene	100-41-4	ug/L	1.9	1.0
m&p-Xylene	179601-23-1	ug/L	2.5	1.0
Naphthalene	91-20-3	ug/L	1.5	1.0
o-Xylene	95-47-6	ug/L	1.6	1.0
Toluene	108-88-3	ug/L	1.3	1.0
Total Xylenes	1330-20-7	ug/L	4.1	1.0
All Other VOCs		ug/L	ND	
Semivolatiles By E625				
Total SVOCs		ug/L	ND	
Semivolatiles (SIM) By 625(SIM)				
Naphthalene	91-20-3	ug/L	1.5	0.48
All Other SVOCs		ug/L	ND	
Pesticides By E608				
Total Pesticides		ug/L	ND	
Oxygenates & Dioxane By E624.1				
Total Oxygenates & Dioxin		ug/L	ND	
1,4-dioxane By E624.1				
1,4-dioxane	123-91-1	ug/l	< 40	40

Result Detected
 RL Exceeds Criteria
 Result Exceeds Criteria

APPENDIX A

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 within the Beaver Street Bridge Replacement, along Beaver Street in Framingham, 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 groundwater at the Site.

This report and application have been prepared on behalf of, and for the exclusive use of Northern Construction Services, LLC. 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 TERRA Environmental, 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:

1. Name of site:	Site address:		
	Street:		
	City:	State:	Zip:
2. Site owner Owner is (check one): <input type="checkbox"/> Federal <input type="checkbox"/> State/Tribal <input type="checkbox"/> Private <input type="checkbox"/> Other; if so, specify:	Contact Person:		
	Telephone:	Email:	
	Mailing address:		
	Street:		
	City:	State:	Zip:
3. Site operator, if different than owner	Contact Person:		
	Telephone:	Email:	
	Mailing address:		
	Street:		
	City:	State:	Zip:
4. NPDES permit number assigned by EPA: NPDES permit is (check all that apply): <input type="checkbox"/> RGP <input type="checkbox"/> DGP <input type="checkbox"/> CGP <input type="checkbox"/> MSGP <input type="checkbox"/> Individual NPDES permit <input type="checkbox"/> Other; if so, specify:	5. Other regulatory program(s) that apply to the site (check all that apply):		
	<input type="checkbox"/> MA Chapter 21e; list RTN(s): <input type="checkbox"/> NH Groundwater Management Permit or Groundwater Release Detection Permit:	<input type="checkbox"/> CERCLA <input type="checkbox"/> UIC Program <input type="checkbox"/> POTW Pretreatment <input type="checkbox"/> CWA Section 404	

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Receiving water is (check any that apply): <input type="checkbox"/> Outstanding Resource Water <input type="checkbox"/> Ocean Sanctuary <input type="checkbox"/> territorial sea <input type="checkbox"/> Wild and Scenic River		
2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No Are sensitive receptors present near the site? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, specify:		
3. Indicate if the receiving water(s) is listed in the State’s Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP.		
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.		
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.		
6. Has the operator received confirmation from the appropriate State for the 7Q10 and dilution factor indicated? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, indicate date confirmation received:		
7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No		

C. Source water information:

1. Source water(s) is (check any that apply):			
<input type="checkbox"/> Contaminated groundwater Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Contaminated surface water Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> The receiving water <input type="checkbox"/> A surface water other than the receiving water; if so, indicate waterbody:	<input type="checkbox"/> Potable water; if so, indicate municipality or origin: <input type="checkbox"/> Other; if so, specify:

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

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): <input type="checkbox"/> Existing discharge <input type="checkbox"/> New discharge <input type="checkbox"/> New source	
Outfall(s):	Outfall location(s): (Latitude, Longitude)
Discharges enter the receiving water(s) via (check any that apply): <input type="checkbox"/> Direct discharge to the receiving water <input type="checkbox"/> Indirect discharge, if so, specify: <input type="checkbox"/> A private storm sewer system <input type="checkbox"/> A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No Has the operator has received permission from the owner to use such system for discharges? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No, if so, explain, with an estimated timeframe for obtaining permission: Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	
Provide the expected start and end dates of discharge(s) (month/year):	
Indicate if the discharge is expected to occur over a duration of: <input type="checkbox"/> less than 12 months <input type="checkbox"/> 12 months or more <input type="checkbox"/> is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	

2. Activity Category: (check all that apply)	3. Contamination Type Category: (check all that apply)	
<input type="checkbox"/> I – Petroleum-Related Site Remediation <input type="checkbox"/> II – Non-Petroleum-Related Site Remediation <input type="checkbox"/> III – Contaminated Site Dewatering <input type="checkbox"/> IV – Dewatering of Pipelines and Tanks <input type="checkbox"/> V – Aquifer Pump Testing <input type="checkbox"/> VI – Well Development/Rehabilitation <input type="checkbox"/> VII – Collection Structure Dewatering/Remediation <input type="checkbox"/> VIII – Dredge-Related Dewatering	a. If Activity Category I or II: (check all that apply) <input type="checkbox"/> A. Inorganics <input type="checkbox"/> B. Non-Halogenated Volatile Organic Compounds <input type="checkbox"/> C. Halogenated Volatile Organic Compounds <input type="checkbox"/> D. Non-Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> E. Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> F. Fuels Parameters	
	b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)	
	<input type="checkbox"/> G. Sites with Known Contamination	<input type="checkbox"/> H. Sites with Unknown Contamination
	c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply) <input type="checkbox"/> A. Inorganics <input type="checkbox"/> B. Non-Halogenated Volatile Organic Compounds <input type="checkbox"/> C. Halogenated Volatile Organic Compounds <input type="checkbox"/> D. Non-Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> E. Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> F. Fuels Parameters	d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia								Report mg/L	---
Chloride								Report µg/l	---
Total Residual Chlorine								0.2 mg/L	
Total Suspended Solids								30 mg/L	---
Antimony								206 µg/L	
Arsenic								104 µg/L	
Cadmium								10.2 µg/L	
Chromium III								323 µg/L	
Chromium VI								323 µg/L	
Copper								242 µg/L	
Iron								5,000 µg/L	
Lead								160 µg/L	
Mercury								0.739 µg/L	
Nickel								1,450 µg/L	
Selenium								235.8 µg/L	
Silver								35.1 µg/L	
Zinc								420 µg/L	
Cyanide								178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX								100 µg/L	---
Benzene								5.0 µg/L	---
1,4 Dioxane								200 µg/L	---
Acetone								7.97 mg/L	---
Phenol								1,080 µg/L	

E. Treatment system information

<p>1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)</p> <p><input type="checkbox"/> Adsorption/Absorption <input type="checkbox"/> Advanced Oxidation Processes <input type="checkbox"/> Air Stripping <input type="checkbox"/> Granulated Activated Carbon (“GAC”)/Liquid Phase Carbon Adsorption <input type="checkbox"/> Ion Exchange <input type="checkbox"/> Precipitation/Coagulation/Flocculation <input type="checkbox"/> Separation/Filtration <input type="checkbox"/> Other; if so, specify:</p>	
<p>2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.</p> <p>Identify each major treatment component (check any that apply):</p> <p><input type="checkbox"/> Fractionation tanks <input type="checkbox"/> Equalization tank <input type="checkbox"/> Oil/water separator <input type="checkbox"/> Mechanical filter <input type="checkbox"/> Media filter <input type="checkbox"/> Chemical feed tank <input type="checkbox"/> Air stripping unit <input type="checkbox"/> Bag filter <input type="checkbox"/> Other; if so, specify:</p> <p>Indicate if either of the following will occur (check any that apply):</p> <p><input type="checkbox"/> Chlorination <input type="checkbox"/> De-chlorination</p>	
<p>3. Provide the design flow capacity in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Is use of a flow meter feasible? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No, if so, provide justification:</p>	
<p>Provide the proposed maximum effluent flow in gpm.</p>	
<p>Provide the average effluent flow in gpm.</p>	
<p>If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:</p>	
<p>4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	

F. Chemical and additive information

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

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

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

- a. Product name, chemical formula, and manufacturer of the chemical/additive;
- 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.

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:

Notification provided to the appropriate State, including a copy of this NOI, if required. Check one: Yes No

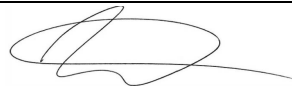
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested. Check one: Yes No

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:



Date:

Print Name and Title:

APPENDIX C

MASSDEP PRIORITY RESOURCE MAP

USGS STREAMFLOW STATISTICS REPORT

ADDITIONAL NOI SUPPORT INFORMATION

Figure 3

MassDEP - Bureau of Waste Site Cleanup

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

Sit Information:

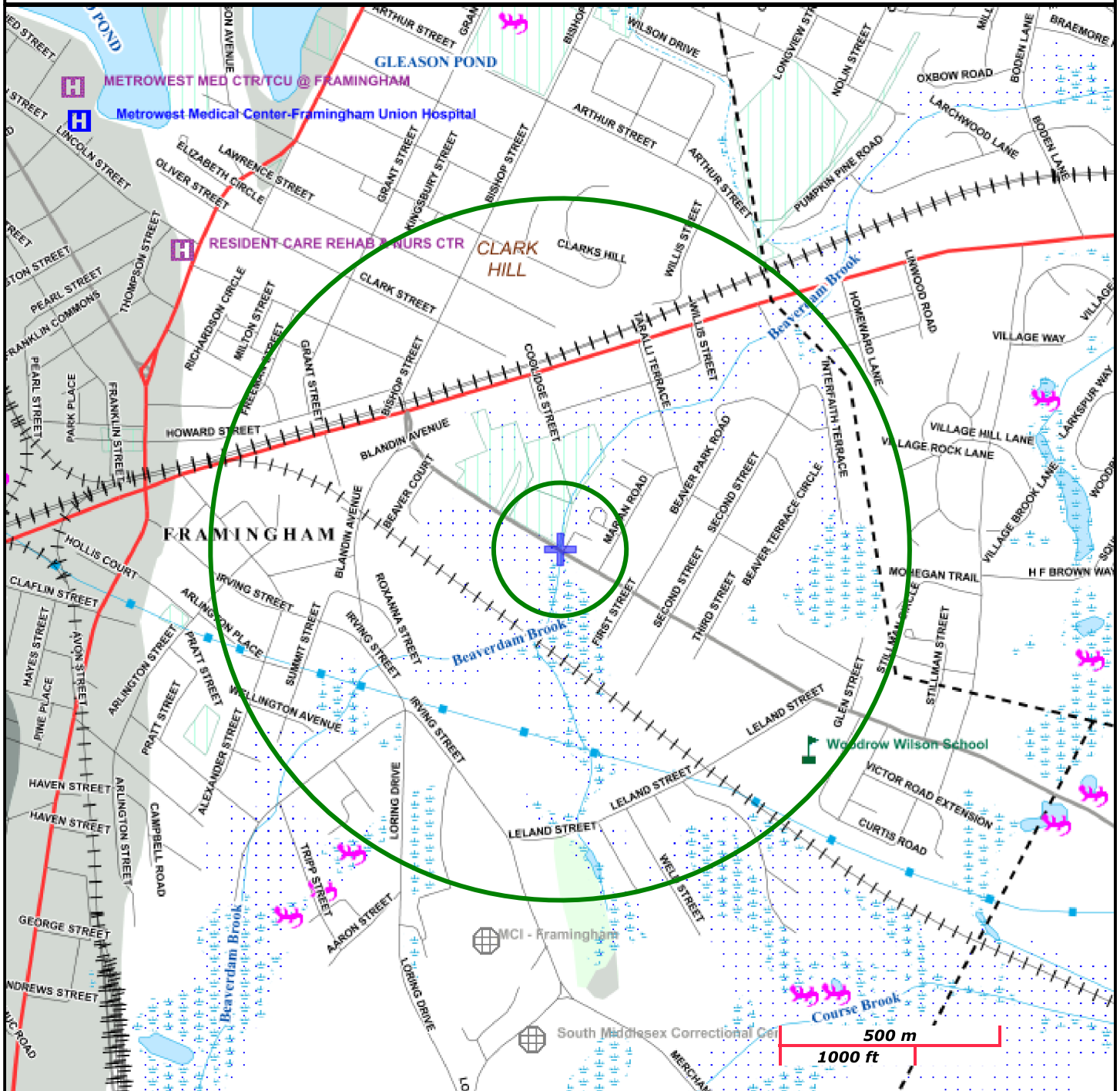
BEAVER STREET BRIDGE
 BEAVER STREET FRAMINGHAM, MA
 3 00000589
NAD83 UTM **ters:**
 4683164mN , 301661mE (Zone: 19)
 February 18, 2019

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

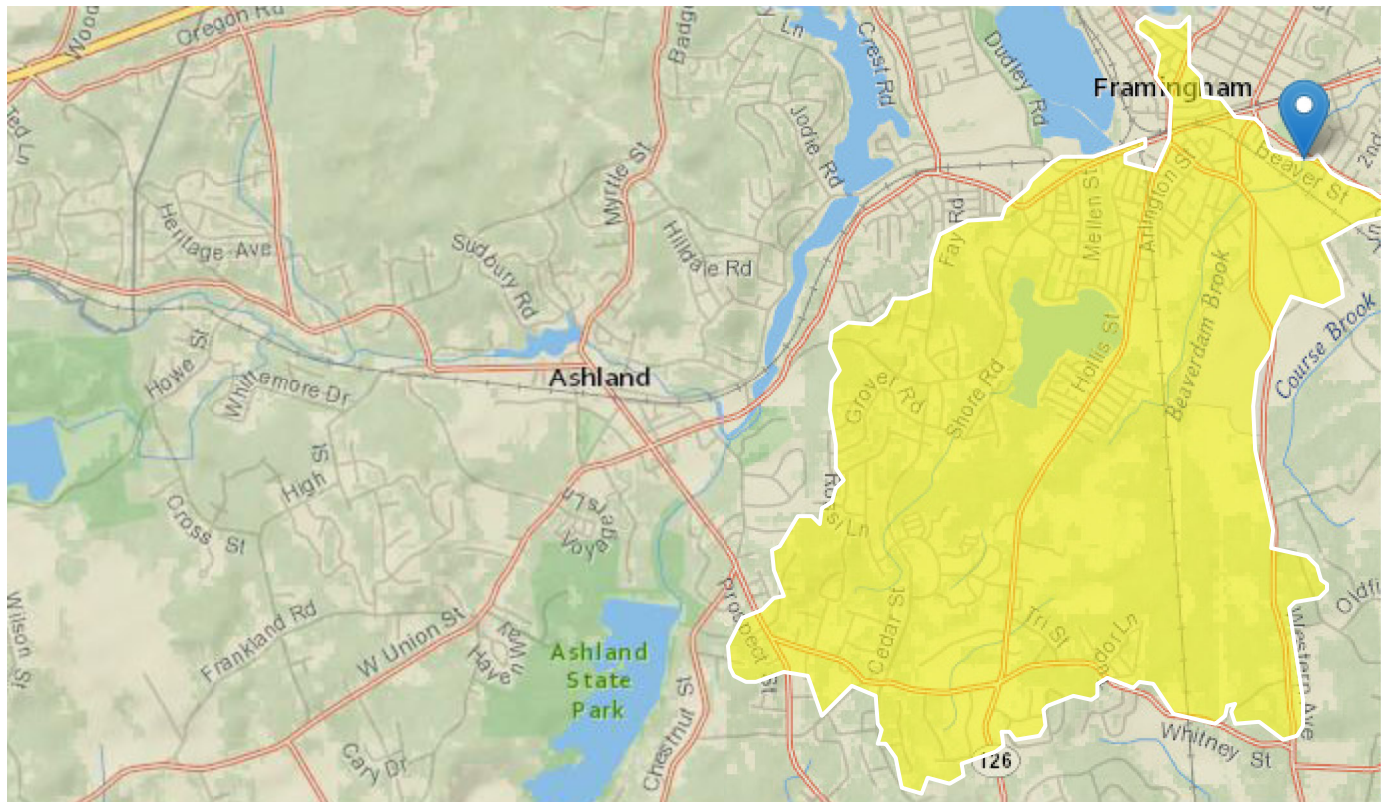
Beaverdam Brook StreamStats Report

Region ID: MA

Workspace ID: MA20190329152841711000

Clicked Point (Latitude, Longitude): 42.27504, -71.40530

Time: 2019-03-29 11:28:56 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.08	square miles
ELEV	Mean Basin Elevation	195	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	11.86	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	1.905	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.35	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Low-Flow Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.08	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.905	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.35	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Flow Report [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	0.652	ft ³ /s	0.22	1.86	49.5	49.5
7 Day 10 Year Low Flow	0.291	ft ³ /s	0.0775	1.02	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/>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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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>

IPaC Record Locator: 202-15985501

March 29, 2019

Subject: Consistency letter for the 'Beaverdam Brook Bridge Replacement' project (TAILS 05E1NE00-2019-R-1256) under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated to verify that the **Beaverdam Brook Bridge Replacement** (Proposed Action) may rely on the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action will have no effect on the endangered Indiana bat (*Myotis sodalis*) or the threatened Northern long-eared bat (*Myotis septentrionalis*). If the Proposed Action is not modified, **no consultation is required for these two species.**

For Proposed Actions that include bridge/structure removal, replacement, and/or maintenance activities: If your initial bridge/structure assessments failed to detect Indiana bats, but you later detect bats during construction, please submit the Post Assessment Discovery of Bats at Bridge/Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action may affect any other federally-listed or proposed species and/or designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please advise the lead Federal action agency for the Proposed Action accordingly.

Project Description

The following project name and description was collected in IPaC as part of the endangered species review process.

Name

Beaverdam Brook Bridge Replacement

Description

0.11-acre bridge replacement project in Framingham, MA. Project will begin in Spring 2019 and will be completed by Summer/Fall 2019.

Determination Key Result

Based on the information you provided, you have determined that the Proposed Action will have no effect on the endangered Indiana bat and/or the threatened Northern long-eared bat. Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for these two species.

Qualification Interview

1. Is the project within the range of the Indiana bat^[1]?

[1] See [Indiana bat species profile](#)

Automatically answered

No

2. Is the project within the range of the Northern long-eared bat^[1]?

[1] See [Northern long-eared bat species profile](#)

Automatically answered

Yes

3. Which Federal Agency is the lead for the action?

A) Federal Highway Administration (FHWA)

4. Are *all* project activities limited to non-construction^[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces^[1]?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum^[1]?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable^[1] summer habitat for Indiana Bat or NLEB **within** the project action area^[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [national consultation FAQs](#).

No

9. Does the project include maintenance of the surrounding landscape at existing facilities (e.g., rest areas, stormwater detention basins)?

No

10. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

11. Does the project include slash pile burning?

No

12. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

Yes

13. Is there *any* suitable habitat^[1] for Indiana bat or NLEB **within** 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's current [summer survey guidance](#) for our current definitions of suitable habitat.

No

14. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

No

15. Will the project involve the use of **temporary** lighting *during* the active season?

No

16. Will the project install new or replace existing **permanent** lighting?

Yes

17. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **permanent** lighting will be installed or replaced?

No

18. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage, rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

19. Will the project raise the road profile **above the tree canopy**?

No

20. Is the location of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the project action area not within suitable Indiana bat and/or NLEB summer habitat and is outside of 0.5 miles of a hibernaculum.

21. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the bridge is more than 1,000 feet from the nearest suitable habitat and is therefore considered unsuitable for use by bats

22. Is the permanent lighting portion of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the lighting will be more than 1,000 feet from the nearest suitable habitat

Determination Key Description: FHWA, FRA, FTA Programmatic Consultation For Transportation Projects Affecting NLEB Or Indiana Bat

This key was last updated in IPaC on March 16, 2018. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

APPENDIX D

LABORATORY ANALYTICAL REPORT – TERRA, MARCH 13, 2019



Tuesday, May 07, 2019

Attn: Mr. James McMullen
Terra Environmental LLC
P.O. Box 473
Reading, MA 01867

Project ID: BEAVER ST BRIDGE
SDG ID: GCC66896
Sample ID#s: CC66896 - CC66898

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

Enclosed are revised Analysis Report pages. Please replace and discard the original pages. If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

A handwritten signature in black ink that reads "Phyllis Shiller". The signature is written in a cursive style.

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
UT Lab Registration #CT00007
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



SDG Comments

May 07, 2019

SDG I.D.: GCC66896

Version 2: Updated methods per client request.

8260 Analysis:

1,2-Dibromoethane doesn't meet GW-1 criteria, this compound is analyzed by GC/FID to achieve this criteria.

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

May 07, 2019

SDG I.D.: GCC66896

Project ID: BEAVER ST BRIDGE

Client Id	Lab Id	Matrix
MW515S	CC66896	GW DISCHARGE
BEAVER BROOK	CC66897	GW DISCHARGE
TRIP BLANK	CC66898	GW DISCHARGE



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 07, 2019

FOR: Attn: Mr. James McMullen
 Terra Environmental LLC
 P.O. Box 473
 Reading, MA 01867

Sample Information

Matrix: GW DISCHARGE
 Location Code: TERRA-ENV
 Rush Request: Standard
 P.O.#: 19-103

Custody Information

Collected by:
 Received by: CP
 Analyzed by: see "By" below

Date

03/13/19
 03/13/19

Time

8:30
 15:24

Laboratory Data

SDG ID: GCC66896
 Phoenix ID: CC66896

Project ID: BEAVER ST BRIDGE
 Client ID: MW515S

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	03/16/19	CPP	E200.7
Arsenic	< 0.004	0.004	mg/L	1	03/16/19	CPP	E200.7
Calcium	131	0.010	mg/L	1	03/16/19	TH	E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/16/19	CPP	E200.7
Chromium	< 0.001	0.001	mg/L	1	03/16/19	CPP	E200.7
Copper	< 0.005	0.005	mg/L	1	03/16/19	CPP	E200.7
Iron	6.18	0.010	mg/L	1	03/16/19	CPP	E200.7
Hardness (CaCO3)	401	0.1	mg/L	1	05/07/19		E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/15/19	RS	E245.1
Magnesium	17.9	0.010	mg/L	1	03/16/19	TH	E200.7
Nickel	0.004	0.001	mg/L	1	03/16/19	CPP	E200.7
Lead	< 0.002	0.002	mg/L	1	03/16/19	CPP	E200.7
Antimony	< 0.005	0.005	mg/L	1	03/16/19	CPP	E200.7
Selenium	< 0.010	0.010	mg/L	1	03/16/19	CPP	E200.7
Trivalent Chromium	< 0.001	0.001	mg/L	1	03/16/19		Calculation
Zinc	0.097	0.004	mg/L	1	03/16/19	CPP	E200.7
Chloride	1500	30.0	mg/L	10	03/18/19	TB	SM4500CLE-11
Chlorine Residual	< 0.02	0.02	mg/L	1	03/13/19 17:27	O	SM4500CI-G-00
Chromium, Hexavalent	< 0.01	0.01	mg/L	1	03/13/19 18:11	O	SM3500CRB-09
Ammonia as Nitrogen	0.69	0.05	mg/L	1	03/15/19	KDB	E350.1
Phenolics	< 0.015	0.015	mg/L	1	03/15/19	MSF	E420.4
pH	7.82	1.00	pH Units	1	03/25/19 22:40	RR/EG	SM4500-H B-00
Total Cyanide	< 0.010	0.010	mg/L	1	03/15/19	EG	E335.4
O&G, Non-polar Material	< 1.4	1.4	mg/L	1	03/19/19	MSF	E1664A
Total Suspended Solids	6.0	5.0	mg/L	1	03/14/19	BA/DA	SM2540D-11
Mercury Digestion	Completed				03/14/19	I/I	E245.1
PCB Extraction (2 Liter)	Completed				03/14/19		E608
Extraction for Pest (2 Liter)	Completed				03/14/19	E/N	SW3510C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Semi-Volatile Extraction	Completed				03/13/19	S/D/D	SW3520C
Total Metals Digestion	Completed				03/14/19	AG	
<u>Polychlorinated Biphenyls</u>							
PCB-1016	ND	0.050	ug/L	1	03/14/19	SC	E608
PCB-1221	ND	0.050	ug/L	1	03/14/19	SC	E608
PCB-1232	ND	0.050	ug/L	1	03/14/19	SC	E608
PCB-1242	ND	0.050	ug/L	1	03/14/19	SC	E608
PCB-1248	ND	0.050	ug/L	1	03/14/19	SC	E608
PCB-1254	ND	0.050	ug/L	1	03/14/19	SC	E608
PCB-1260	ND	0.050	ug/L	1	03/14/19	SC	E608
PCB-1262	ND	0.050	ug/L	1	03/14/19	SC	E608
PCB-1268	ND	0.050	ug/L	1	03/14/19	SC	E608
<u>QA/QC Surrogates</u>							
% DCBP (Surrogate Rec)	62		%	1	03/14/19	SC	30 - 150 %
% DCBP (Surrogate Rec) (Confirmation)	64		%	1	03/14/19	SC	30 - 150 %
% TCMX (Surrogate Rec)	71		%	1	03/14/19	SC	30 - 150 %
% TCMX (Surrogate Rec) (Confirmation)	69		%	1	03/14/19	SC	30 - 150 %
<u>Pesticides</u>							
4,4' -DDD	ND	0.047	ug/L	1	03/18/19	CW	E608
4,4' -DDE	ND	0.047	ug/L	1	03/18/19	CW	E608
4,4' -DDT	ND	0.047	ug/L	1	03/18/19	CW	E608
a-BHC	ND	0.024	ug/L	1	03/18/19	CW	E608
Alachlor	ND	0.071	ug/L	1	03/18/19	CW	E608
Aldrin	ND	0.001	ug/L	1	03/18/19	CW	E608
b-BHC	ND	0.005	ug/L	1	03/18/19	CW	E608
Chlordane	ND	0.047	ug/L	1	03/18/19	CW	E608
d-BHC	ND	0.024	ug/L	1	03/18/19	CW	E608
Dieldrin	ND	0.001	ug/L	1	03/18/19	CW	E608
Endosulfan I	ND	0.047	ug/L	1	03/18/19	CW	E608
Endosulfan II	ND	0.047	ug/L	1	03/18/19	CW	E608
Endosulfan Sulfate	ND	0.047	ug/L	1	03/18/19	CW	E608
Endrin	ND	0.047	ug/L	1	03/18/19	CW	E608
Endrin Aldehyde	ND	0.047	ug/L	1	03/18/19	CW	E608
Endrin ketone	ND	0.047	ug/L	1	03/18/19	CW	E608
g-BHC (Lindane)	ND	0.024	ug/L	1	03/18/19	CW	E608
Heptachlor	ND	0.024	ug/L	1	03/18/19	CW	E608
Heptachlor epoxide	ND	0.024	ug/L	1	03/18/19	CW	E608
Hexachlorobenzene	ND	0.005	ug/L	1	03/18/19	CW	E608
Methoxychlor	ND	0.094	ug/L	1	03/18/19	CW	E608
Toxaphene	ND	0.94	ug/L	1	03/18/19	CW	E608
<u>QA/QC Surrogates</u>							
%DCBP (Surrogate Rec)	82		%	1	03/18/19	CW	30 - 150 %
%DCBP (Surrogate Rec) (Confirmation)	72		%	1	03/18/19	CW	30 - 150 %
%TCMX (Surrogate Rec)	68		%	1	03/18/19	CW	30 - 150 %
%TCMX (Surrogate Rec) (Confirmation)	62		%	1	03/18/19	CW	30 - 150 %
1,2-Dibromoethane (EDB)	ND	0.02	ug/L	1	03/18/19	CT	SW8011

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
<u>Volatiles</u>							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloropropene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dibromoethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dichloroethane	ND	0.60	ug/L	1	03/14/19	MH	E624.1
1,2-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2,2-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2-Chlorotoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2-Hexanone	ND	5.0	ug/L	1	03/14/19	MH	E624.1
2-Isopropyltoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
4-Chlorotoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Acetone	ND	25	ug/L	1	03/14/19	MH	E624.1
Acrylonitrile	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Benzene	ND	0.70	ug/L	1	03/14/19	MH	E624.1
Bromobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromochloromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromodichloromethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
Bromoform	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromomethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Carbon Disulfide	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Carbon tetrachloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloroform	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
cis-1,2-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
Dibromochloromethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
Dibromomethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Dichlorodifluoromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Ethylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Hexachlorobutadiene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
Isopropylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
m&p-Xylene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Methyl ethyl ketone	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Methylene chloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Naphthalene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
n-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
n-Propylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
o-Xylene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
p-Isopropyltoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
sec-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Styrene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
tert-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tetrachloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/14/19	MH	E624.1
Toluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Total Xylenes	ND	1.0	ug/L	1	03/14/19	MH	E624.1
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Trichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Trichlorofluoromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Trichlorotrifluoroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Vinyl chloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
<u>QA/QC Surrogates</u>							
% 1,2-dichlorobenzene-d4	96		%	1	03/14/19	MH	70 - 130 %
% Bromofluorobenzene	100		%	1	03/14/19	MH	70 - 130 %
% Dibromofluoromethane	94		%	1	03/14/19	MH	70 - 130 %
% Toluene-d8	94		%	1	03/14/19	MH	70 - 130 %
<u>1,4-dioxane</u>							
1,4-dioxane	ND	40	ug/l	1	03/14/19	PS	E624.1
<u>Oxygenates & Dioxane</u>							
1,4-Dioxane	ND	40	ug/L	1	03/14/19	MH	E624.1
Diethyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Di-isopropyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
tert-amyl methyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Ethanol	ND	400	ug/L	1	03/14/19	MH	E624.1
Tert-amyl-methyl-ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tert-butyl alcohol	ND	50	ug/L	1	03/14/19	MH	E624.1
<u>Semivolatiles</u>							
1,2,4,5-Tetrachlorobenzene	ND	3.6	ug/L	1	03/17/19	AW	E625
1,2,4-Trichlorobenzene	ND	5.2	ug/L	1	03/17/19	AW	E625
1,2-Dichlorobenzene	ND	2.6	ug/L	1	03/17/19	AW	E625
1,2-Diphenylhydrazine	ND	5.2	ug/L	1	03/17/19	AW	E625
1,3-Dichlorobenzene	ND	2.6	ug/L	1	03/17/19	AW	E625
1,4-Dichlorobenzene	ND	2.6	ug/L	1	03/17/19	AW	E625

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2,4,5-Trichlorophenol	ND	1.0	ug/L	1	03/17/19	AW	E625
2,4,6-Trichlorophenol	ND	1.0	ug/L	1	03/17/19	AW	E625
2,4-Dichlorophenol	ND	1.0	ug/L	1	03/17/19	AW	E625
2,4-Dimethylphenol	ND	1.0	ug/L	1	03/17/19	AW	E625
2,4-Dinitrophenol	ND	1.0	ug/L	1	03/17/19	AW	E625
2,4-Dinitrotoluene	ND	5.2	ug/L	1	03/17/19	AW	E625
2,6-Dinitrotoluene	ND	5.2	ug/L	1	03/17/19	AW	E625
2-Chloronaphthalene	ND	5.2	ug/L	1	03/17/19	AW	E625
2-Chlorophenol	ND	1.0	ug/L	1	03/17/19	AW	E625
2-Methylphenol (o-cresol)	ND	1.0	ug/L	1	03/17/19	AW	E625
2-Nitroaniline	ND	5.2	ug/L	1	03/17/19	AW	E625
2-Nitrophenol	ND	1.0	ug/L	1	03/17/19	AW	E625
3&4-Methylphenol (m&p-cresol)	ND	10	ug/L	1	03/17/19	AW	E625
3,3'-Dichlorobenzidine	ND	5.2	ug/L	1	03/17/19	AW	E625
3-Nitroaniline	ND	5.2	ug/L	1	03/17/19	AW	E625
4,6-Dinitro-2-methylphenol	ND	1.0	ug/L	1	03/17/19	AW	E625
4-Bromophenyl phenyl ether	ND	5.2	ug/L	1	03/17/19	AW	E625
4-Chloro-3-methylphenol	ND	1.0	ug/L	1	03/17/19	AW	E625
4-Chloroaniline	ND	5.2	ug/L	1	03/17/19	AW	E625
4-Chlorophenyl phenyl ether	ND	1.0	ug/L	1	03/17/19	AW	E625
4-Nitroaniline	ND	5.2	ug/L	1	03/17/19	AW	E625
4-Nitrophenol	ND	1.0	ug/L	1	03/17/19	AW	E625
Acetophenone	ND	5.2	ug/L	1	03/17/19	AW	E625
Aniline	ND	5.2	ug/L	1	03/17/19	AW	E625
Benzidine	ND	5.2	ug/L	1	03/17/19	AW	E625
Benzoic acid	ND	52	ug/L	1	03/17/19	AW	E625
Benzyl butyl phthalate	ND	5.2	ug/L	1	03/17/19	AW	E625
Bis(2-chloroethoxy)methane	ND	5.2	ug/L	1	03/17/19	AW	E625
Bis(2-chloroethyl)ether	ND	1.0	ug/L	1	03/17/19	AW	E625
Bis(2-chloroisopropyl)ether	ND	5.2	ug/L	1	03/17/19	AW	E625
Bis(2-ethylhexyl)phthalate	ND	1.0	ug/L	1	03/17/19	AW	E625
Carbazole	ND	5.2	ug/L	1	03/17/19	AW	E625
Dibenzofuran	ND	5.2	ug/L	1	03/17/19	AW	E625
Diethyl phthalate	ND	5.2	ug/L	1	03/17/19	AW	E625
Dimethylphthalate	ND	5.2	ug/L	1	03/17/19	AW	E625
Di-n-butylphthalate	ND	5.2	ug/L	1	03/17/19	AW	E625
Di-n-octylphthalate	ND	5.2	ug/L	1	03/17/19	AW	E625
Hexachloroethane	ND	1.0	ug/L	1	03/17/19	AW	E625
Isophorone	ND	5.2	ug/L	1	03/17/19	AW	E625
N-Nitrosodi-n-propylamine	ND	5.2	ug/L	1	03/17/19	AW	E625
N-Nitrosodiphenylamine	ND	5.2	ug/L	1	03/17/19	AW	E625
Pentachloronitrobenzene	ND	2.6	ug/L	1	03/17/19	AW	E625
Phenol	ND	1.0	ug/L	1	03/17/19	AW	E625
QA/QC Surrogates							
% 2,4,6-Tribromophenol	77		%	1	03/17/19	AW	15 - 110 %
% 2-Fluorobiphenyl	75		%	1	03/17/19	AW	30 - 130 %
% 2-Fluorophenol	41		%	1	03/17/19	AW	15 - 110 %
% Nitrobenzene-d5	65		%	1	03/17/19	AW	30 - 130 %
% Phenol-d5	46		%	1	03/17/19	AW	15 - 110 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Terphenyl-d14	64		%	1	03/17/19	AW	30 - 130 %
<u>Semivolatiles (SIM)</u>							
2-Methylnaphthalene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Acenaphthene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Acenaphthylene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Anthracene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Benz(a)anthracene	ND	0.10	ug/L	1	03/15/19	WB	625(SIM)
Benzo(a)pyrene	ND	0.20	ug/L	1	03/15/19	WB	625(SIM)
Benzo(b)fluoranthene	ND	0.10	ug/L	1	03/15/19	WB	625(SIM)
Benzo(ghi)perylene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Benzo(k)fluoranthene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Chrysene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Dibenz(a,h)anthracene	ND	0.10	ug/L	1	03/15/19	WB	625(SIM)
Fluoranthene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Fluorene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Hexachlorobenzene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Hexachlorobutadiene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Hexachlorocyclopentadiene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	1	03/15/19	WB	625(SIM)
Naphthalene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Nitrobenzene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
N-Nitrosodimethylamine	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Pentachlorophenol	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Phenanthrene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Pyrene	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
Pyridine	ND	0.52	ug/L	1	03/15/19	WB	625(SIM)
<u>QA/QC Surrogates</u>							
% 2,4,6-Tribromophenol	107		%	1	03/15/19	WB	15 - 110 %
% 2-Fluorobiphenyl	77		%	1	03/15/19	WB	30 - 130 %
% 2-Fluorophenol	53		%	1	03/15/19	WB	15 - 110 %
% Nitrobenzene-d5	82		%	1	03/15/19	WB	30 - 130 %
% Phenol-d5	66		%	1	03/15/19	WB	15 - 110 %
% Terphenyl-d14	93		%	1	03/15/19	WB	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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7 = This parameter is not certified by MA for this matrix.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

May 07, 2019

Reviewed and Released by: Bobbi Aloisa, Vice President



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 07, 2019

FOR: Attn: Mr. James McMullen
 Terra Environmental LLC
 P.O. Box 473
 Reading, MA 01867

Sample Information

Matrix: GW DISCHARGE
 Location Code: TERRA-ENV
 Rush Request: Standard
 P.O.#: 19-103

Custody Information

Collected by:
 Received by: CP
 Analyzed by: see "By" below

Date

03/13/19
 03/13/19

Time

10:00
 15:24

Laboratory Data

SDG ID: GCC66896
 Phoenix ID: CC66897

Project ID: BEAVER ST BRIDGE
 Client ID: BEAVER BROOK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	03/16/19	CPP	E200.7
Arsenic	< 0.004	0.004	mg/L	1	03/16/19	CPP	E200.7
Calcium	23.2	0.010	mg/L	1	03/16/19	TH	E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/16/19	CPP	E200.7
Chromium	< 0.001	0.001	mg/L	1	03/16/19	CPP	E200.7
Copper	< 0.005	0.005	mg/L	1	03/16/19	CPP	E200.7
Iron	1.09	0.010	mg/L	1	03/16/19	CPP	E200.7
Hardness (CaCO3)	80.0	0.1	mg/L	1	05/07/19		E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/15/19	RS	E245.1
Magnesium	5.37	0.010	mg/L	1	03/16/19	TH	E200.7
Nickel	0.001	0.001	mg/L	1	03/16/19	CPP	E200.7
Lead	< 0.002	0.002	mg/L	1	03/16/19	CPP	E200.7
Antimony	< 0.005	0.005	mg/L	1	03/16/19	CPP	E200.7
Selenium	< 0.010	0.010	mg/L	1	03/16/19	CPP	E200.7
Trivalent Chromium	< 0.001	0.001	mg/L	1	03/16/19		Calculation
Zinc	0.016	0.004	mg/L	1	03/16/19	CPP	E200.7
Chloride	218	6.0	mg/L	2	03/18/19	TB	SM4500CLE-11
Chlorine Residual	< 0.02	0.02	mg/L	1	03/13/19 17:28	O	SM4500CI-G-00
Chromium, Hexavalent	< 0.01	0.01	mg/L	1	03/13/19 18:11	O	SM3500CRB-09
Ammonia as Nitrogen	0.21	0.05	mg/L	1	03/15/19	KDB	E350.1
Phenolics	< 0.015	0.015	mg/L	1	03/15/19	MSF	E420.4
pH	7.53	1.00	pH Units	1	03/25/19 22:45	RR/EG	SM4500-H B-00
Total Cyanide	< 0.010	0.010	mg/L	1	03/15/19	EG	E335.4
O&G, Non-polar Material	< 1.4	1.4	mg/L	1	03/19/19	MSF	E1664A
Total Suspended Solids	5.0	5.0	mg/L	1	03/14/19	BA/DA	SM2540D-11
Mercury Digestion	Completed				03/14/19	I/I	E245.1
PCB Extraction (2 Liter)	Completed				03/14/19		E608
Extraction for Pest (2 Liter)	Completed				03/14/19	E/N	SW3510C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Semi-Volatile Extraction	Completed				03/13/19	S/D/D	SW3520C
Total Metals Digestion	Completed				03/14/19	AG	
<u>Polychlorinated Biphenyls</u>							
PCB-1016	ND	0.048	ug/L	1	03/14/19	SC	E608
PCB-1221	ND	0.048	ug/L	1	03/14/19	SC	E608
PCB-1232	ND	0.048	ug/L	1	03/14/19	SC	E608
PCB-1242	ND	0.048	ug/L	1	03/14/19	SC	E608
PCB-1248	ND	0.048	ug/L	1	03/14/19	SC	E608
PCB-1254	ND	0.048	ug/L	1	03/14/19	SC	E608
PCB-1260	ND	0.048	ug/L	1	03/14/19	SC	E608
PCB-1262	ND	0.048	ug/L	1	03/14/19	SC	E608
PCB-1268	ND	0.048	ug/L	1	03/14/19	SC	E608
<u>QA/QC Surrogates</u>							
% DCBP (Surrogate Rec)	74		%	1	03/14/19	SC	30 - 150 %
% DCBP (Surrogate Rec) (Confirmation)	73		%	1	03/14/19	SC	30 - 150 %
% TCMX (Surrogate Rec)	72		%	1	03/14/19	SC	30 - 150 %
% TCMX (Surrogate Rec) (Confirmation)	67		%	1	03/14/19	SC	30 - 150 %
<u>Pesticides</u>							
4,4' -DDD	ND	0.047	ug/L	1	03/18/19	PS	E608
4,4' -DDE	ND	0.047	ug/L	1	03/18/19	PS	E608
4,4' -DDT	ND	0.047	ug/L	1	03/18/19	PS	E608
a-BHC	ND	0.024	ug/L	1	03/18/19	PS	E608
Alachlor	ND	0.071	ug/L	1	03/18/19	PS	E608
Aldrin	ND	0.010	ug/L	1	03/18/19	PS	E608
b-BHC	ND	0.050	ug/L	1	03/18/19	PS	E608
Chlordane	ND	0.047	ug/L	1	03/18/19	PS	E608
d-BHC	ND	0.024	ug/L	1	03/18/19	PS	E608
Dieldrin	ND	0.001	ug/L	1	03/18/19	PS	E608
Endosulfan I	ND	0.047	ug/L	1	03/18/19	PS	E608
Endosulfan II	ND	0.047	ug/L	1	03/18/19	PS	E608
Endosulfan Sulfate	ND	0.047	ug/L	1	03/18/19	PS	E608
Endrin	ND	0.047	ug/L	1	03/18/19	PS	E608
Endrin Aldehyde	ND	0.047	ug/L	1	03/18/19	PS	E608
Endrin ketone	ND	0.047	ug/L	1	03/18/19	PS	E608
g-BHC (Lindane)	ND	0.024	ug/L	1	03/18/19	PS	E608
Heptachlor	ND	0.024	ug/L	1	03/18/19	PS	E608
Heptachlor epoxide	ND	0.024	ug/L	1	03/18/19	PS	E608
Hexachlorobenzene	ND	0.005	ug/L	1	03/18/19	PS	E608
Methoxychlor	ND	0.094	ug/L	1	03/18/19	PS	E608
Toxaphene	ND	0.94	ug/L	1	03/18/19	PS	E608
<u>QA/QC Surrogates</u>							
%DCBP (Surrogate Rec)	73		%	1	03/18/19	PS	30 - 150 %
%DCBP (Surrogate Rec) (Confirmation)	54		%	1	03/18/19	PS	30 - 150 %
%TCMX (Surrogate Rec)	86		%	1	03/18/19	PS	30 - 150 %
%TCMX (Surrogate Rec) (Confirmation)	60		%	1	03/18/19	PS	30 - 150 %
1,2-Dibromoethane (EDB)	ND	0.02	ug/L	1	03/18/19	CT	SW8011

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
<u>Volatiles</u>							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloropropene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dibromoethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dichloroethane	ND	0.60	ug/L	1	03/14/19	MH	E624.1
1,2-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2,2-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2-Chlorotoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2-Hexanone	ND	5.0	ug/L	1	03/14/19	MH	E624.1
2-Isopropyltoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
4-Chlorotoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Acetone	ND	25	ug/L	1	03/14/19	MH	E624.1
Acrylonitrile	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Benzene	ND	0.70	ug/L	1	03/14/19	MH	E624.1
Bromobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromochloromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromodichloromethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
Bromoform	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromomethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Carbon Disulfide	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Carbon tetrachloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloroform	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
cis-1,2-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
Dibromochloromethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
Dibromomethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Dichlorodifluoromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Ethylbenzene	1.9	1.0	ug/L	1	03/14/19	MH	E624.1
Hexachlorobutadiene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
Isopropylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
m&p-Xylene	2.5	1.0	ug/L	1	03/14/19	MH	E624.1
Methyl ethyl ketone	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Methylene chloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Naphthalene	1.5	1.0	ug/L	1	03/14/19	MH	E624.1
n-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
n-Propylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
o-Xylene	1.6	1.0	ug/L	1	03/14/19	MH	E624.1
p-Isopropyltoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
sec-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Styrene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
tert-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tetrachloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/14/19	MH	E624.1
Toluene	1.3	1.0	ug/L	1	03/14/19	MH	E624.1
Total Xylenes	4.1	1.0	ug/L	1	03/14/19	MH	E624.1
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Trichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Trichlorofluoromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Trichlorotrifluoroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Vinyl chloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
<u>QA/QC Surrogates</u>							
% 1,2-dichlorobenzene-d4	95		%	1	03/14/19	MH	70 - 130 %
% Bromofluorobenzene	97		%	1	03/14/19	MH	70 - 130 %
% Dibromofluoromethane	95		%	1	03/14/19	MH	70 - 130 %
% Toluene-d8	93		%	1	03/14/19	MH	70 - 130 %
<u>1,4-dioxane</u>							
1,4-dioxane	ND	40	ug/l	1	03/14/19	PS	E624.1
<u>Oxygenates & Dioxane</u>							
1,4-Dioxane	ND	40	ug/L	1	03/14/19	MH	E624.1
Diethyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Di-isopropyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
tert-amyl methyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Ethanol	ND	400	ug/L	1	03/14/19	MH	E624.1
Tert-amyl-methyl-ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tert-butyl alcohol	ND	50	ug/L	1	03/14/19	MH	E624.1
<u>Semivolatiles</u>							
1,2,4,5-Tetrachlorobenzene	ND	3.4	ug/L	1	03/17/19	AW	E625
1,2,4-Trichlorobenzene	ND	4.8	ug/L	1	03/17/19	AW	E625
1,2-Dichlorobenzene	ND	2.4	ug/L	1	03/17/19	AW	E625
1,2-Diphenylhydrazine	ND	4.8	ug/L	1	03/17/19	AW	E625
1,3-Dichlorobenzene	ND	2.4	ug/L	1	03/17/19	AW	E625
1,4-Dichlorobenzene	ND	2.4	ug/L	1	03/17/19	AW	E625

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2,4,5-Trichlorophenol	ND	0.96	ug/L	1	03/17/19	AW	E625
2,4,6-Trichlorophenol	ND	0.96	ug/L	1	03/17/19	AW	E625
2,4-Dichlorophenol	ND	0.96	ug/L	1	03/17/19	AW	E625
2,4-Dimethylphenol	ND	0.96	ug/L	1	03/17/19	AW	E625
2,4-Dinitrophenol	ND	0.96	ug/L	1	03/17/19	AW	E625
2,4-Dinitrotoluene	ND	4.8	ug/L	1	03/17/19	AW	E625
2,6-Dinitrotoluene	ND	4.8	ug/L	1	03/17/19	AW	E625
2-Chloronaphthalene	ND	4.8	ug/L	1	03/17/19	AW	E625
2-Chlorophenol	ND	0.96	ug/L	1	03/17/19	AW	E625
2-Methylphenol (o-cresol)	ND	0.96	ug/L	1	03/17/19	AW	E625
2-Nitroaniline	ND	4.8	ug/L	1	03/17/19	AW	E625
2-Nitrophenol	ND	0.96	ug/L	1	03/17/19	AW	E625
3&4-Methylphenol (m&p-cresol)	ND	9.6	ug/L	1	03/17/19	AW	E625
3,3'-Dichlorobenzidine	ND	4.8	ug/L	1	03/17/19	AW	E625
3-Nitroaniline	ND	4.8	ug/L	1	03/17/19	AW	E625
4,6-Dinitro-2-methylphenol	ND	0.96	ug/L	1	03/17/19	AW	E625
4-Bromophenyl phenyl ether	ND	4.8	ug/L	1	03/17/19	AW	E625
4-Chloro-3-methylphenol	ND	0.96	ug/L	1	03/17/19	AW	E625
4-Chloroaniline	ND	4.8	ug/L	1	03/17/19	AW	E625
4-Chlorophenyl phenyl ether	ND	0.96	ug/L	1	03/17/19	AW	E625
4-Nitroaniline	ND	4.8	ug/L	1	03/17/19	AW	E625
4-Nitrophenol	ND	0.96	ug/L	1	03/17/19	AW	E625
Acetophenone	ND	4.8	ug/L	1	03/17/19	AW	E625
Aniline	ND	4.8	ug/L	1	03/17/19	AW	E625
Benzidine	ND	4.8	ug/L	1	03/17/19	AW	E625
Benzoic acid	ND	48	ug/L	1	03/17/19	AW	E625
Benzyl butyl phthalate	ND	4.8	ug/L	1	03/17/19	AW	E625
Bis(2-chloroethoxy)methane	ND	4.8	ug/L	1	03/17/19	AW	E625
Bis(2-chloroethyl)ether	ND	0.96	ug/L	1	03/17/19	AW	E625
Bis(2-chloroisopropyl)ether	ND	4.8	ug/L	1	03/17/19	AW	E625
Bis(2-ethylhexyl)phthalate	ND	0.96	ug/L	1	03/17/19	AW	E625
Carbazole	ND	4.8	ug/L	1	03/17/19	AW	E625
Dibenzofuran	ND	4.8	ug/L	1	03/17/19	AW	E625
Diethyl phthalate	ND	4.8	ug/L	1	03/17/19	AW	E625
Dimethylphthalate	ND	4.8	ug/L	1	03/17/19	AW	E625
Di-n-butylphthalate	ND	4.8	ug/L	1	03/17/19	AW	E625
Di-n-octylphthalate	ND	4.8	ug/L	1	03/17/19	AW	E625
Hexachloroethane	ND	0.96	ug/L	1	03/17/19	AW	E625
Isophorone	ND	4.8	ug/L	1	03/17/19	AW	E625
N-Nitrosodi-n-propylamine	ND	4.8	ug/L	1	03/17/19	AW	E625
N-Nitrosodiphenylamine	ND	4.8	ug/L	1	03/17/19	AW	E625
Pentachloronitrobenzene	ND	2.4	ug/L	1	03/17/19	AW	E625
Phenol	ND	0.96	ug/L	1	03/17/19	AW	E625
<u>QA/QC Surrogates</u>							
% 2,4,6-Tribromophenol	79		%	1	03/17/19	AW	15 - 110 %
% 2-Fluorobiphenyl	70		%	1	03/17/19	AW	30 - 130 %
% 2-Fluorophenol	48		%	1	03/17/19	AW	15 - 110 %
% Nitrobenzene-d5	76		%	1	03/17/19	AW	30 - 130 %
% Phenol-d5	48		%	1	03/17/19	AW	15 - 110 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Terphenyl-d14	59		%	1	03/17/19	AW	30 - 130 %
<u>Semivolatiles (SIM)</u>							
2-Methylnaphthalene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Acenaphthene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Acenaphthylene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Anthracene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Benz(a)anthracene	ND	0.10	ug/L	1	03/15/19	WB	625(SIM)
Benzo(a)pyrene	ND	0.19	ug/L	1	03/15/19	WB	625(SIM)
Benzo(b)fluoranthene	ND	0.10	ug/L	1	03/15/19	WB	625(SIM)
Benzo(ghi)perylene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Benzo(k)fluoranthene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Chrysene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Dibenz(a,h)anthracene	ND	0.10	ug/L	1	03/15/19	WB	625(SIM)
Fluoranthene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Fluorene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Hexachlorobenzene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Hexachlorobutadiene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Hexachlorocyclopentadiene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	1	03/15/19	WB	625(SIM)
Naphthalene	1.5	0.48	ug/L	1	03/15/19	WB	625(SIM)
Nitrobenzene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
N-Nitrosodimethylamine	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Pentachlorophenol	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Phenanthrene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Pyrene	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
Pyridine	ND	0.48	ug/L	1	03/15/19	WB	625(SIM)
<u>QA/QC Surrogates</u>							
% 2,4,6-Tribromophenol	104		%	1	03/15/19	WB	15 - 110 %
% 2-Fluorobiphenyl	77		%	1	03/15/19	WB	30 - 130 %
% 2-Fluorophenol	63		%	1	03/15/19	WB	15 - 110 %
% Nitrobenzene-d5	85		%	1	03/15/19	WB	30 - 130 %
% Phenol-d5	69		%	1	03/15/19	WB	15 - 110 %
% Terphenyl-d14	83		%	1	03/15/19	WB	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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7 = This parameter is not certified by MA for this matrix.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

May 07, 2019

Reviewed and Released by: Bobbi Aloisa, Vice President



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

May 07, 2019

FOR: Attn: Mr. James McMullen
 Terra Environmental LLC
 P.O. Box 473
 Reading, MA 01867

Sample Information

Matrix: GW DISCHARGE
 Location Code: TERRA-ENV
 Rush Request: Standard
 P.O.#: 19-103

Custody Information

Collected by:
 Received by: CP
 Analyzed by: see "By" below

Date

03/13/19

Time

15:24

Laboratory Data

SDG ID: GCC66896
 Phoenix ID: CC66898

Project ID: BEAVER ST BRIDGE
 Client ID: TRIP BLANK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
<u>Volatiles</u>							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,1-Dichloropropene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dibromoethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,2-Dichloroethane	ND	0.60	ug/L	1	03/14/19	MH	E624.1
1,2-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,3-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2,2-Dichloropropane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2-Chlorotoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
2-Hexanone	ND	5.0	ug/L	1	03/14/19	MH	E624.1
2-Isopropyltoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
4-Chlorotoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
4-Methyl-2-pentanone	ND	5.0	ug/L	1	03/14/19	MH	E624.1

Client ID: TRIP BLANK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	25	ug/L	1	03/14/19	MH	E624.1
Acrylonitrile	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Benzene	ND	0.70	ug/L	1	03/14/19	MH	E624.1
Bromobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromochloromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromodichloromethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
Bromoform	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Bromomethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Carbon Disulfide	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Carbon tetrachloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chlorobenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloroform	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Chloromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
cis-1,2-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
Dibromochloromethane	ND	0.50	ug/L	1	03/14/19	MH	E624.1
Dibromomethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Dichlorodifluoromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Ethylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Hexachlorobutadiene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
Isopropylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
m&p-Xylene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Methyl ethyl ketone	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Methylene chloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Naphthalene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
n-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
n-Propylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
o-Xylene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
p-Isopropyltoluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
sec-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Styrene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
tert-Butylbenzene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tetrachloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	03/14/19	MH	E624.1
Toluene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Total Xylenes	ND	1.0	ug/L	1	03/14/19	MH	E624.1
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/14/19	MH	E624.1
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	03/14/19	MH	E624.1
Trichloroethene	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Trichlorofluoromethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Trichlorotrifluoroethane	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Vinyl chloride	ND	1.0	ug/L	1	03/14/19	MH	E624.1
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	93		%	1	03/14/19	MH	70 - 130 %
% Bromofluorobenzene	97		%	1	03/14/19	MH	70 - 130 %
% Dibromofluoromethane	93		%	1	03/14/19	MH	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	91		%	1	03/14/19	MH	70 - 130 %

Oxygenates & Dioxane

1,4-Dioxane	ND	40	ug/L	1	03/14/19	MH	E624.1
Diethyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Di-isopropyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Ethyl tert-butyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
tert-amyl methyl ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tert-amyl-methyl-ether	ND	1.0	ug/L	1	03/14/19	MH	E624.1
Tert-butyl alcohol	ND	50	ug/L	1	03/14/19	MH	E624.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TRIP BLANK INCLUDED.

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Phyllis Shiller, Laboratory Director

May 07, 2019

Reviewed and Released by: Bobbi Aloisa, Vice President



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

May 07, 2019

QA/QC Data

SDG I.D.: GCC66896

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 470204 (mg/L), QC Sample No: CC66896 (CC66896, CC66897)													
Mercury - Water	BRL	0.0002	<0.0002	<0.0002	NC	89.7			86.1			75 - 125	30
Comment:													
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%													
QA/QC Batch 470304 (mg/L), QC Sample No: CC66661 (CC66896, CC66897)													
<u>ICP Metals - Aqueous</u>													
Antimony	BRL	0.005	<0.005	<0.005	NC	109			114			75 - 125	20
Arsenic	BRL	0.004	<0.004	<0.004	NC	99.0			103			75 - 125	20
Cadmium	BRL	0.001	<0.001	<0.001	NC	99.3			102			75 - 125	20
Calcium	BRL	0.020	30.8	30.3	1.60	101			NC			75 - 125	20
Chromium	BRL	0.001	<0.001	<0.001	NC	99.7			103			75 - 125	20
Copper	BRL	0.005	0.011	0.011	NC	101			104			75 - 125	20
Iron	BRL	0.010	0.737	0.741	0.50	101			105			75 - 125	20
Lead	BRL	0.002	0.003	0.003	NC	100			102			75 - 125	20
Magnesium	BRL	0.010	4.63	4.55	1.70	102			105			75 - 125	20
Nickel	BRL	0.001	0.007	0.007	0	99.5			102			75 - 125	20
Selenium	BRL	0.010	<0.010	<0.010	NC	97.8			99.0			75 - 125	20
Silver	BRL	0.001	<0.001	<0.001	NC	99.1			102			75 - 125	20
Zinc	BRL	0.004	0.363	0.358	1.40	99.2			104			75 - 125	20



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QA/QC Report

May 07, 2019

QA/QC Data

SDG I.D.: GCC66896

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 470326 (mg/L), QC Sample No: CC66581 (CC66896, CC66897)													
Total Cyanide	BRL	0.010	0.150	0.162	7.70	90.7			92.0			90 - 110	30
Comment:													
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.													
QA/QC Batch 470220 (mg/L), QC Sample No: CC66766 (CC66896, CC66897)													
Total Suspended Solids	BRL	5.0	10	9.0	NC	90.0						85 - 115	
QA/QC Batch 470779 (mg/L), QC Sample No: CC67428 (CC66896, CC66897)													
O&G, Non-polar Material	BRL	1.4	<1.4	<1.4	NC	94.0			89.0			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 471804 (pH), QC Sample No: CC74244 (CC66896, CC66897)													
pH			7.4	7.45	0.70	97.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 470138 (mg/L), QC Sample No: CC66838 (CC66896, CC66897)													
Chromium, Hexavalent	BRL	0.01	0.02	0.02	NC	96.0			105			90 - 110	30
Comment:													
Additional Hexavalent Chromium criteria: LCS acceptance range for waters is 90-110% and MS acceptance range is 85-115%.													
QA/QC Batch 470765 (mg/L), QC Sample No: CC66897 (CC66896, CC66897)													
Chloride	BRL	3.0	218	222	1.80	96.6			109			90 - 110	20
QA/QC Batch 470233 (mg/L), QC Sample No: CC66645 (CC66896, CC66897)													
Ammonia as Nitrogen	BRL	0.05	0.24	0.23	NC	96.3			99.5			90 - 110	20
QA/QC Batch 470194 (mg/L), QC Sample No: CC66456 (CC66896, CC66897)													
Phenolics	BRL	0.015	<0.015	<0.015	NC	93.2			91.5			90 - 110	20
QA/QC Batch 470139 (mg/L), QC Sample No: CC66712 (CC66896, CC66897)													
Chlorine Residual	BRL	0.02	<0.02	<0.02	NC	110							



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QA/QC Report

May 07, 2019

QA/QC Data

SDG I.D.: GCC66896

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 470603 (ug/L), QC Sample No: CC69047 (CC66896, CC66897)										
<u>EDB and DBCP Analysis</u>										
1,2-Dibromoethane (EDB)	ND	0.01	101	102	1.0	112	108	3.6	70 - 130	25
QA/QC Batch 470019 (ug/L), QC Sample No: CC66391 (CC66896, CC66897)										
<u>Polychlorinated Biphenyls</u>										
PCB-1016	ND	0.050	87	59	38.4				40 - 140	20
PCB-1221	ND	0.050							40 - 140	20
PCB-1232	ND	0.050							40 - 140	20
PCB-1242	ND	0.050							40 - 140	20
PCB-1248	ND	0.050							40 - 140	20
PCB-1254	ND	0.050							40 - 140	20
PCB-1260	ND	0.050	99	65	41.5				40 - 140	20
PCB-1262	ND	0.050							40 - 140	20
PCB-1268	ND	0.050							40 - 140	20
% DCBP (Surrogate Rec)	83	%	92	68	30.0				30 - 150	20
% DCBP (Surrogate Rec) (Confirm	80	%	87	63	32.0				30 - 150	20
% TCMX (Surrogate Rec)	77	%	87	57	41.7				30 - 150	20
% TCMX (Surrogate Rec) (Confirm	72	%	84	57	38.3				30 - 150	20
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										
QA/QC Batch 470314 (ug/L), QC Sample No: CC67689 (CC66896, CC66897)										
<u>Pesticides</u>										
4,4' -DDD	ND	0.003	102	111	8.5	85	96	12.2	40 - 140	20
4,4' -DDE	ND	0.003	89	95	6.5	80	80	0.0	40 - 140	20
4,4' -DDT	ND	0.003	106	107	0.9	123	139	12.2	40 - 140	20
a-BHC	ND	0.002	86	89	3.4	70	73	4.2	40 - 140	20
Alachlor	ND	0.005	NA	NA	NC	NA	NA	NC	40 - 140	20
Aldrin	ND	0.002	65	70	7.4	64	65	1.6	40 - 140	20
b-BHC	ND	0.002	90	92	2.2	99	63	44.4	40 - 140	20
Chlordane	ND	0.050	90	95	5.4	85	63	29.7	40 - 140	20
d-BHC	ND	0.005	91	79	14.1	85	80	6.1	40 - 140	20
Dieldrin	ND	0.002	92	102	10.3	81	82	1.2	40 - 140	20
Endosulfan I	ND	0.005	94	96	2.1	74	79	6.5	40 - 140	20
Endosulfan II	ND	0.005	97	103	6.0	87	83	4.7	40 - 140	20
Endosulfan sulfate	ND	0.005	99	112	12.3	89	83	7.0	40 - 140	20
Endrin	ND	0.005	95	100	5.1	85	92	7.9	40 - 140	20
Endrin aldehyde	ND	0.005	102	104	1.9	82	98	17.8	40 - 140	20
Endrin ketone	ND	0.005	100	110	9.5	86	86	0.0	40 - 140	20
g-BHC	ND	0.002	76	82	7.6	71	63	11.9	40 - 140	20
Heptachlor	ND	0.005	83	87	4.7	89	82	8.2	40 - 140	20
Heptachlor epoxide	ND	0.005	91	93	2.2	82	85	3.6	40 - 140	20
Hexachlorobenzene	ND	0.005	86	92	6.7	73	82	11.6	40 - 140	20

QA/QC Data

SDG I.D.: GCC66896

Parameter	Blk		LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
	Blank	RL								
Methoxychlor	ND	0.005	116	124	6.7	90	86	4.5	40 - 140	20
Toxaphene	ND	0.20	NA	NA	NC	NA	NA	NC	40 - 140	20
% DCBP	86	%	84	87	3.5	60	65	8.0	30 - 150	20
% DCBP (Confirmation)	77	%	88	83	5.8	81	87	7.1	30 - 150	20
% TCMX	71	%	81	82	1.2	75	76	1.3	30 - 150	20
% TCMX (Confirmation)	70	%	87	83	4.7	83	94	12.4	30 - 150	20

QA/QC Batch 470113 (ug/L), QC Sample No: CC66838 (CC66896, CC66897)

Semivolatiles

1,2,4,5-Tetrachlorobenzene	ND	3.5	78						30 - 130	20
1,2,4-Trichlorobenzene	ND	3.5	65						30 - 130	20
1,2-Dichlorobenzene	ND	1.0	56						30 - 130	20
1,2-Diphenylhydrazine	ND	1.6	86						30 - 130	20
1,3-Dichlorobenzene	ND	1.0	56						30 - 130	20
1,4-Dichlorobenzene	ND	1.0	57						30 - 130	20
2,4,5-Trichlorophenol	ND	1.0	97						30 - 130	20
2,4,6-Trichlorophenol	ND	1.0	85						30 - 130	20
2,4-Dichlorophenol	ND	1.0	71						30 - 130	20
2,4-Dimethylphenol	ND	1.0	84						30 - 130	20
2,4-Dinitrophenol	ND	1.0	89						30 - 130	20
2,4-Dinitrotoluene	ND	3.5	100						30 - 130	20
2,6-Dinitrotoluene	ND	3.5	94						30 - 130	20
2-Chloronaphthalene	ND	3.5	78						30 - 130	20
2-Chlorophenol	ND	1.0	55						30 - 130	20
2-Methylphenol (o-cresol)	ND	1.0	67						30 - 130	20
2-Nitroaniline	ND	3.5	134						30 - 130	20
2-Nitrophenol	ND	1.0	69						30 - 130	20
3&4-Methylphenol (m&p-cresol)	ND	1.0	71						30 - 130	20
3,3'-Dichlorobenzidine	ND	5.0	52						30 - 130	20
3-Nitroaniline	ND	5.0	102						30 - 130	20
4,6-Dinitro-2-methylphenol	ND	1.0	98						30 - 130	20
4-Bromophenyl phenyl ether	ND	3.5	87						30 - 130	20
4-Chloro-3-methylphenol	ND	1.0	95						30 - 130	20
4-Chloroaniline	ND	3.5	33						30 - 130	20
4-Chlorophenyl phenyl ether	ND	1.0	87						30 - 130	20
4-Nitroaniline	ND	5.0	93						30 - 130	20
4-Nitrophenol	ND	1.0	82						30 - 130	20
Acetophenone	ND	3.5	67						30 - 130	20
Aniline	ND	3.5	<10						30 - 130	20
Benzidine	ND	4.5	<10						30 - 130	20
Benzoic acid	ND	10	62						30 - 130	20
Benzyl butyl phthalate	ND	1.5	91						30 - 130	20
Bis(2-chloroethoxy)methane	ND	3.5	76						30 - 130	20
Bis(2-chloroethyl)ether	ND	1.0	56						30 - 130	20
Bis(2-chloroisopropyl)ether	ND	1.0	52						30 - 130	20
Bis(2-ethylhexyl)phthalate	ND	1.5	94						30 - 130	20
Carbazole	ND	5.0	102						30 - 130	20
Dibenzofuran	ND	3.5	91						30 - 130	20
Diethyl phthalate	ND	1.5	97						30 - 130	20
Dimethylphthalate	ND	1.5	96						30 - 130	20
Di-n-butylphthalate	ND	1.5	111						30 - 130	20
Di-n-octylphthalate	ND	1.5	99						30 - 130	20
Hexachloroethane	ND	3.5	55						30 - 130	20

QA/QC Data

SDG I.D.: GCC66896

Parameter	Blk		LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
	Blank	RL								
Isophorone	ND	3.5	74						30 - 130	20
N-Nitrosodi-n-propylamine	ND	3.5	78						30 - 130	20
N-Nitrosodiphenylamine	ND	3.5	81						30 - 130	20
Pentachloronitrobenzene	ND	5.0	91						30 - 130	20
Phenol	ND	1.0	40						30 - 130	20
% 2,4,6-Tribromophenol	74	%	78						15 - 110	20
% 2-Fluorobiphenyl	65	%	78						30 - 130	20
% 2-Fluorophenol	47	%	39						15 - 110	20
% Nitrobenzene-d5	65	%	67						30 - 130	20
% Phenol-d5	47	%	41						15 - 110	20
% Terphenyl-d14	71	%	85						30 - 130	20

Comment:

This batch consists of a Blank and LCS, LCSD was lost during extraction.

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 470113 (ug/L), QC Sample No: CC66838 (CC66896, CC66897)

Semivolatiles (SIM)

2-Methylnaphthalene	ND	0.50	53						30 - 130	20
Acenaphthene	ND	0.50	62						30 - 130	20
Acenaphthylene	ND	0.50	58						30 - 130	20
Anthracene	ND	0.50	68						30 - 130	20
Benz(a)anthracene	ND	0.50	67						30 - 130	20
Benzo(a)pyrene	ND	0.50	67						30 - 130	20
Benzo(b)fluoranthene	ND	0.50	75						30 - 130	20
Benzo(ghi)perylene	ND	0.50	67						30 - 130	20
Benzo(k)fluoranthene	ND	0.50	74						30 - 130	20
Chrysene	ND	0.50	71						30 - 130	20
Dibenz(a,h)anthracene	ND	0.50	80						30 - 130	20
Fluoranthene	ND	0.50	72						30 - 130	20
Fluorene	ND	0.50	68						30 - 130	20
Hexachlorobenzene	ND	0.50	66						30 - 130	20
Hexachlorobutadiene	ND	0.50	45						30 - 130	20
Hexachlorocyclopentadiene	ND	0.50	27						30 - 130	20
Indeno(1,2,3-cd)pyrene	ND	0.50	75						30 - 130	20
Naphthalene	ND	0.50	48						30 - 130	20
Nitrobenzene	ND	0.50	55						30 - 130	20
N-Nitrosodimethylamine	ND	0.05	46						30 - 130	20
Pentachlorophenol	ND	0.50	67						30 - 130	20
Phenanthrene	ND	0.50	68						30 - 130	20
Pyrene	ND	0.50	73						30 - 130	20
Pyridine	ND	0.50	17						30 - 130	20
% 2,4,6-Tribromophenol	88	%	70						15 - 110	20
% 2-Fluorobiphenyl	70	%	57						30 - 130	20
% 2-Fluorophenol	54	%	31						15 - 110	20
% Nitrobenzene-d5	77	%	53						30 - 130	20
% Phenol-d5	65	%	34						15 - 110	20
% Terphenyl-d14	87	%	65						30 - 130	20

Comment:

This batch consists of a Blank and LCS, LCSD was lost during extraction.

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Data

SDG I.D.: GCC66896

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
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QA/QC Batch 470436 (ug/L), QC Sample No: CC66898 (CC66896, CC66897, CC66898)

Volatiles

1,1,1,2-Tetrachloroethane	ND	1.0	97	94	3.1				70 - 130	30
1,1,1-Trichloroethane	ND	1.0	94	94	0.0				70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	102	99	3.0				70 - 130	30
1,1,2-Trichloroethane	ND	1.0	96	93	3.2				70 - 130	30
1,1-Dichloroethane	ND	1.0	94	95	1.1				70 - 130	30
1,1-Dichloroethene	ND	1.0	98	99	1.0				70 - 130	30
1,1-Dichloropropene	ND	1.0	96	94	2.1				70 - 130	30
1,2,3-Trichlorobenzene	ND	1.0	90	91	1.1				70 - 130	30
1,2,3-Trichloropropane	ND	1.0	95	99	4.1				70 - 130	30
1,2,4-Trichlorobenzene	ND	1.0	92	92	0.0				70 - 130	30
1,2,4-Trimethylbenzene	ND	1.0	97	94	3.1				70 - 130	30
1,2-Dibromo-3-chloropropane	ND	1.0	103	100	3.0				70 - 130	30
1,2-Dibromoethane	ND	1.0	97	94	3.1				70 - 130	30
1,2-Dichlorobenzene	ND	1.0	97	96	1.0				70 - 130	30
1,2-Dichloroethane	ND	1.0	102	101	1.0				70 - 130	30
1,2-Dichloropropane	ND	1.0	95	94	1.1				70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	95	94	1.1				70 - 130	30
1,3-Dichlorobenzene	ND	1.0	96	93	3.2				70 - 130	30
1,3-Dichloropropane	ND	1.0	95	94	1.1				70 - 130	30
1,4-Dichlorobenzene	ND	1.0	97	94	3.1				70 - 130	30
1,4-dioxane	ND	100	115	117	1.7				40 - 160	30
2,2-Dichloropropane	ND	1.0	88	88	0.0				70 - 130	30
2-Chlorotoluene	ND	1.0	97	96	1.0				70 - 130	30
2-Hexanone	ND	5.0	109	107	1.9				40 - 160	30
2-Isopropyltoluene	ND	1.0	100	96	4.1				70 - 130	30
4-Chlorotoluene	ND	1.0	96	95	1.0				70 - 130	30
4-Methyl-2-pentanone	ND	5.0	113	111	1.8				40 - 160	30
Acetone	ND	5.0	116	104	10.9				40 - 160	30
Acrylonitrile	ND	5.0	95	96	1.0				70 - 130	30
Benzene	ND	0.70	94	94	0.0				70 - 130	30
Bromobenzene	ND	1.0	98	96	2.1				70 - 130	30
Bromochloromethane	ND	1.0	98	96	2.1				70 - 130	30
Bromodichloromethane	ND	0.50	99	97	2.0				70 - 130	30
Bromoform	ND	1.0	95	94	1.1				70 - 130	30
Bromomethane	ND	1.0	89	93	4.4				40 - 160	30
Carbon Disulfide	ND	1.0	96	97	1.0				70 - 130	30
Carbon tetrachloride	ND	1.0	92	96	4.3				70 - 130	30
Chlorobenzene	ND	1.0	97	95	2.1				70 - 130	30
Chloroethane	ND	1.0	91	94	3.2				70 - 130	30
Chloroform	ND	1.0	98	99	1.0				70 - 130	30
Chloromethane	ND	1.0	86	86	0.0				40 - 160	30
cis-1,2-Dichloroethene	ND	1.0	94	95	1.1				70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	92	91	1.1				70 - 130	30
Dibromochloromethane	ND	0.50	101	99	2.0				70 - 130	30
Dibromomethane	ND	1.0	96	95	1.0				70 - 130	30
Dichlorodifluoromethane	ND	1.0	95	97	2.1				40 - 160	30
Ethyl ether	ND	1.0	113	113	0.0				70 - 130	30
Ethylbenzene	ND	1.0	95	93	2.1				70 - 130	30
Hexachlorobutadiene	ND	0.40	98	95	3.1				70 - 130	30
Isopropylbenzene	ND	1.0	97	97	0.0				70 - 130	30

QA/QC Data

SDG I.D.: GCC66896

Parameter	Blk		LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
	Blank	RL								
m&p-Xylene	ND	1.0	95	93	2.1				70 - 130	30
Methyl ethyl ketone	ND	5.0	143	119	18.3				40 - 160	30
Methyl t-butyl ether (MTBE)	ND	1.0	93	92	1.1				70 - 130	30
Methylene chloride	ND	1.0	87	89	2.3				70 - 130	30
Naphthalene	ND	1.0	91	92	1.1				70 - 130	30
n-Butylbenzene	ND	1.0	100	97	3.0				70 - 130	30
n-Propylbenzene	ND	1.0	97	95	2.1				70 - 130	30
o-Xylene	ND	1.0	99	95	4.1				70 - 130	30
p-Isopropyltoluene	ND	1.0	99	96	3.1				70 - 130	30
sec-Butylbenzene	ND	1.0	103	101	2.0				70 - 130	30
Styrene	ND	1.0	95	94	1.1				70 - 130	30
tert-butyl alcohol	ND	10	124	123	0.8				70 - 130	30
tert-Butylbenzene	ND	1.0	99	96	3.1				70 - 130	30
Tetrachloroethene	ND	1.0	98	96	2.1				70 - 130	30
Tetrahydrofuran (THF)	ND	2.5	93	88	5.5				70 - 130	30
Toluene	ND	1.0	97	95	2.1				70 - 130	30
trans-1,2-Dichloroethene	ND	1.0	95	96	1.0				70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	89	87	2.3				70 - 130	30
trans-1,4-dichloro-2-butene	ND	5.0	87	82	5.9				70 - 130	30
Trichloroethene	ND	1.0	96	94	2.1				70 - 130	30
Trichlorofluoromethane	ND	1.0	95	96	1.0				70 - 130	30
Trichlorotrifluoroethane	ND	1.0	99	101	2.0				70 - 130	30
Vinyl chloride	ND	1.0	93	93	0.0				70 - 130	30
% 1,2-dichlorobenzene-d4	95	%	102	100	2.0				70 - 130	30
% Bromofluorobenzene	100	%	98	99	1.0				70 - 130	30
% Dibromofluoromethane	92	%	95	98	3.1				70 - 130	30
% Toluene-d8	92	%	101	100	1.0				70 - 130	30

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

QA/QC Batch 470308 (ug/L), QC Sample No: CC67027 (CC66896, CC66897)

Oxygenates

Ethanol	ND	200	112	112	0.0	100	106	5.8	70 - 130	30
tert-amyl methyl ether	ND	10	96	93	3.2	86	87	1.2	70 - 130	30
tert-butyl alcohol	ND	25	92	98	6.3	85	90	5.7	70 - 130	30

Comment:

A blank MS/MSD was analyzed with this batch.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.

r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample


LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference


 Phyllis Shiller, Laboratory Director
 May 07, 2019

Tuesday, May 07, 2019

Criteria: MA: GW1, GW2, GW3

State: MA

Sample Criteria Exceedances Report

GCC66896 - TERRA-ENV

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CC66896	\$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CC66896	\$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CC66896	\$DIOX_WMR	1,4-dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	40	3	3	ug/l
CC66896	\$DIOX_WMR	1,4-dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	40	0.3	0.3	ug/l
CC66896	\$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	40	3	3	ug/L
CC66896	\$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	40	0.3	0.3	ug/L
CC66897	\$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CC66897	\$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CC66897	\$DIOX_WMR	1,4-dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	40	3	3	ug/l
CC66897	\$DIOX_WMR	1,4-dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	40	0.3	0.3	ug/l
CC66897	\$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	40	3	3	ug/L
CC66897	\$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	40	0.3	0.3	ug/L
CC66898	\$8260GWR	1,2-Dibromoethane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	0.50	0.02	0.02	ug/L
CC66898	\$8260GWR	1,2-Dibromoethane	MA / GROUNDWATER STANDARDS / GW-1	ND	0.50	0.02	0.02	ug/L
CC66898	\$MCPADD-WM	1,4-Dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	40	3	3	ug/L
CC66898	\$MCPADD-WM	1,4-Dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	40	0.3	0.3	ug/L

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedances. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedance information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: BEAVER ST BRIDGE **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
 CC66896, CC66897, CC66898

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A <input checked="" type="checkbox"/>	7470/7471 Hg CAM III B <input checked="" type="checkbox"/>	MassDEP VPH CAM IV A <input type="checkbox"/>	8081 Pesticides CAM V B <input type="checkbox"/>	7196 Hex Cr CAM VI B <input type="checkbox"/>	MassDEP APH CAM IX A <input type="checkbox"/>
8270 SVOC CAM II B <input checked="" type="checkbox"/>	7010 Metals CAM III C <input type="checkbox"/>	MassDEP EPH CAM IV B <input type="checkbox"/>	8151 Herbicides CAM V C <input type="checkbox"/>	8330 Explosives CAM VIII A <input type="checkbox"/>	TO-15 VOC CAM IX B <input type="checkbox"/>
6010 Metals CAM III A <input checked="" type="checkbox"/>	6020 Metals CAM III D <input type="checkbox"/>	8082 PCB CAM V A <input type="checkbox"/>	9012 Total Cyanide/PAC CAM V1 A <input type="checkbox"/>	6860 Perchlorate CAM VIII B <input type="checkbox"/>	

Affirmative responses to questions A through F are 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 with method holding times? (* see narrative)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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"?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
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)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Responses to questions G, H and I below 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350		
H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Sections: PCB, SVOA, SVOASIM Narrations .	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized
Signature: _____

Rashmi Makol

Date: Tuesday, May 07, 2019

Printed Name: Rashmi Makol

Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



MCP Certification Report

May 07, 2019

SDG I.D.: GCC66896

SDG Comments

Metals Analysis:

The client requested a site specific list of elements which is shorter than the 6010 MCP list.

8260 Analysis:

1,2-Dibromoethane doesn't meet GW-1 criteria, this compound is analyzed by GC/FID to achieve this criteria.

1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

504.1

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM30 03/18/19-1

Chelsey Tinson, Chemist 03/18/19

CC66896, CC66897

The initial calibration (CHEM30/504tcp_0318): RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 470603 (CC69047)

CC66896, CC66897

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 25% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Cyanide Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

LACHAT 03/15/19-1

Eric Geyer, Chemist 03/15/19

CC66896, CC66897

The samples were distilled in accordance with the method.

The initial calibration met criteria.

The calibration check standards (ICV,CCV) were within 15% of true value and were analyzed at a frequency of one per ten samples.

The continuing calibration blanks (ICB,CCB) had concentrations less than the reporting level.

The method blank, laboratory control sample (LCS), and matrix spike were distilled with the samples.

QC (Batch Specific):



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MCP Certification Report

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SDG I.D.: GCC66896

Cyanide Narration

Batch 470326 (CC66581)

CC66896, CC66897

All LCS recoveries were within 90 - 110 with the following exceptions: None.

Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Hexavalent Chromium (Aqueous)

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

BECKMAN DU720 03/13/19-1 Dustin Harrison, Chemist 03/13/19

CC66896, CC66897

The initial calibration met all criteria including a standard run at the reporting level.

All calibration verification standards (ICV, CCV) met criteria.

All calibration blank verification standards (ICB, CCB) met criteria.

QC (Batch Specific):

Batch 470138 (CC66838)

CC66896, CC66897

All LCS recoveries were within 90 - 110 with the following exceptions: None.

Additional Hexavalent Chromium criteria: LCS acceptance range for waters is 90-110% and MS acceptance range is 85-115%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 03/15/19 07:44 Rick Schweitzer, Chemist 03/15/19

CC66896, CC66897

The method preparation blank contains all of the acids and reagents as the samples; the instrument blanks do not.

The initial calibration met all criteria including a standard run at or below the reporting level.

All calibration verification standards (ICV, CCV) met criteria.

All calibration blank verification standards (ICB, CCB) met criteria.

The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.

The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.

The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):



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Certification Report

May 07, 2019

SDG I.D.: GCC66896

Mercury Narration

Batch 470204 (CC66896)

CC66896, CC66897

All LCS recoveries were within 75 - 125 with the following exceptions: None.

Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BLUE 03/15/19 08:57

Cindy Pearce, Tina Hall, Chemist 03/15/19

CC66896, CC66897

The initial calibration met criteria.

The continuing calibration standards met criteria for all the elements reported. The linear range is defined daily by the calibration range.

The continuing calibration blanks were less than the reporting level for the elements reported.

The ICSA and ICSAB were analyzed at the beginning and end of the run and were within criteria. The linear range is defined daily by the calibration range.

The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.

The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 470304 (CC66661)

CC66896, CC66897

All LCS recoveries were within 75 - 125 with the following exceptions: None.

LCHAT

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

LCHAT 03/18/19-2

Thomas Budz, Chemist 03/18/19

CC66896, CC66897

The initial calibration met all criteria including a standard run at the reporting level.

All method verification standards and blanks met criteria.

QC (Batch Specific):

Batch 470765 (CC66897)

CC66896, CC66897

All LCS recoveries were within 90 - 110 with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for



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MCP Certification Report

May 07, 2019

SDG I.D.: GCC66896

LACHAT

obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

NITROGEN

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

LACHAT 03/15/19-1 Kandi Della Bella, Chemist 03/15/19

CC66896, CC66897

The initial calibration met all criteria including a standard run at the reporting level.
All method verification standards and blanks met criteria.

QC (Batch Specific):

Batch 470233 (CC66645)

CC66896, CC66897

All LCS recoveries were within 85 - 115 with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

PCB Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 470019 (Samples: CC66896, CC66897): -----

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (PCB-1016, PCB-1260)

The LCS/LCSD RPD exceeds the method criteria for one or more surrogates, therefore there may be variability in the reported result. (% DCBP (Surrogate Rec), % DCBP (Surrogate Rec) (Confirmation), % TCMX (Surrogate Rec), % TCMX (Surrogate Rec) (Confirmation))

Instrument:

AU-ECD29 03/13/19-1 Saadia Chudary, Chemist 03/13/19

CC66896, CC66897

The initial calibration (PC301AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC301BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 470019 (CC66391)

CC66896, CC66897

All LCS recoveries were within 40 - 140 with the following exceptions: None.



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MCP Certification Report

May 07, 2019

SDG I.D.: GCC66896

PCB Narration

All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: % DCBP (Surrogate Rec)(30.0%), % DCBP (Surrogate Rec) (Confirmation)(32.0%), % TCMX (Surrogate Rec)(41.7%), % TCMX (Surrogate Rec) (Confirmation)(38.3%), PCB-1016(38.4%), PCB-1260(41.5%)
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

PEST Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-ECD35 03/18/19-1 Carol Wohlmuth, Chemist 03/18/19
CC66896, CC66897

The initial calibration (PS312AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS312BI) RSD for the compound list was less than 20% except for the following compounds: None.
The Endrin and DDT breakdown does not exceed 15% except for the following compounds:None.
The Endrin and DDT breakdown does not exceed the maximum of 20% except for the following compounds:None.
The continuing calibration %D for the compound list was less than 20% except for the following compounds:None.

QC (Batch Specific):

Batch 470314 (CC67689)

CC66896, CC66897

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

PHENOLS

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

LACHAT 03/15/19-1
CC66896, CC66897

The initial calibration met all criteria including a standard run at the reporting level.
All method verification standards and blanks met criteria.

QC (Batch Specific):

Batch 470194 (CC66456)



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MCP Certification Report

May 07, 2019

SDG I.D.: GCC66896

PHENOLS

CC66896, CC66897

All LCS recoveries were within 90 - 110 with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

SVOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 470113 (Samples: CC66896, CC66897): -----

The LCS and/or the LCSD recovery is above the upper range for one or more analytes that were not reported in the sample(s), therefore no significant bias is suspected. (2-Nitroaniline)

The LCS and/or the LCSD recovery is below the method criteria. All of the other QC is acceptable, therefore no significant bias is suspected. (Aniline, Benzidine)

Instrument:

CHEM28 03/17/19-1

Matt Richard, Chemist 03/17/19

CC66896, CC66897

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.

For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM28/28_SPLIT_0313):

91% of target compounds met criteria.

The following compounds had %RSDs >20%: 2,4-Dinitrophenol 28% (20%), 3&4-Methylphenol (m&p-cresol) 24% (20%), 4-Nitrophenol 30% (20%), Benzidine 22% (20%), Benzoic acid 24% (20%)

The following compounds did not meet recommended response factors: 2-Nitrophenol 0.063 (0.1), Bis(2-chloroethoxy)methane 0.269 (0.3)

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM28/0317_03-28_SPLIT_0313) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

96% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: 2-Nitrophenol 0.061 (0.1), Bis(2-chloroethoxy)methane 0.266 (0.3), Bis(2-chloroethyl)ether 0.637 (0.7)

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 470113 (CC66838)

CC66896, CC66897

All LCS recoveries were within 30 - 130 with the following exceptions: 2-Nitroaniline(134%), Aniline(<10%), Benzidine(<10%)

This batch consists of a Blank and LCS, LCSD was lost during extraction.



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MCP Certification Report

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SDG I.D.: GCC66896

SVOA Narration

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

SVOASIM Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 470113 (Samples: CC66896, CC66897): -----

The LCS and/or the LCSD recovery is below the method criteria. All of the other QC is acceptable, therefore no significant bias is suspected. (Hexachlorocyclopentadiene, Pyridine)

Instrument:

CHEM25 03/15/19-2

Wes Bryon, Chemist 03/15/19

CC66896, CC66897

For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM25/25_SIM18_0315):

100% of target compounds met criteria.

The following compounds had %RSDs >20%: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM25/0315_16-25_SIM18_0315) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

100% of target compounds met criteria.

The following compounds did not meet % deviation criteria: None.

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: None.

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 470113 (CC66838)

CC66896, CC66897

All LCS recoveries were within 30 - 130 with the following exceptions: Hexachlorocyclopentadiene(27%), Pyridine(17%)

This batch consists of a Blank and LCS, LCSD was lost during extraction.

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA Narration



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MCP Certification Report

May 07, 2019

SDG I.D.: GCC66896

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM17 03/14/19-2 Michael Hahn, Chemist 03/14/19

CC66896, CC66897, CC66898

Initial Calibration Evaluation (CHEM17/VT-S0313):

95% of target compounds met criteria.

The following compounds had %RSDs >15%: 1,2-Dibromo-3-chloropropane 23% (15%), Acetone 34% (15%), Bromoform 22% (15%), Dibromochloromethane 19% (15%), Methylene chloride 18% (15%), Tetrahydrofuran (THF) 26% (15%), trans-1,4-dichloro-2-butene 16% (15%)

The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.035 (0.05), 2-Hexanone 0.059 (0.1), 4-Methyl-2-pentanone 0.085 (0.1), Acetone 0.030 (0.1), Bromoform 0.064 (0.1), Methyl ethyl ketone 0.039 (0.1), Tetrahydrofuran (THF) 0.036 (0.05)

The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM17/0314_23-VT-S0313) (MCP Compliance):

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.

96% of target compounds met criteria.

The following compounds did not meet % deviation criteria: 2,2-Dichloropropane 22%L (20%), tert-butyl alcohol 29%H (20%), trans-1,4-dichloro-2-butene 21%L (20%)

The following compounds did not meet maximum % deviations: None.

The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.035 (0.05), 2-Hexanone 0.057 (0.1), 4-Methyl-2-pentanone 0.084 (0.1), Acetone 0.027 (0.1), Bromoform 0.056 (0.1), Methyl ethyl ketone 0.041 (0.1), Tetrahydrofuran (THF) 0.033 (0.05)

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 470436 (CC66898)

CC66896, CC66897, CC66898

All LCS recoveries were within 70 - 130 with the following exceptions: None.

All LCSD recoveries were within 70 - 130 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA-OXY Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM23 03/14/19-1 Michael Hahn, Chemist 03/14/19

CC66896, CC66897

Initial Calibration Evaluation (CHEM23/OXY0308):

100% of target compounds met criteria.



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MCP Certification Report

May 07, 2019

SDG I.D.: GCC66896

VOA-OXY Narration

The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM23/0314_03-OXY0308) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 470308 (CC67027)

CC66896, CC66897

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
A blank MS/MSD was analyzed with this batch.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

GCC66894 Pg. 2 of 2

Phoenix Environmental Laboratories, Inc.
 587 East Middle Turnpike
 Manchester, CT 06040
 (860) 645-1102

Container Order

Company: Terra Environmental, LLC

Project: NPDES-RGP
 Contact: James
 Date: 3/11/19

<u>Water</u>			
<u># Per Set</u>	<u>Sets</u>	<u>Total</u>	<u>Parameter</u>
1	2	2	TSS, Clin, Chld, Hex Cr
1	2	2	Cyanide
1	2	2	TPH 1664
1	2	2	NH3
1	2	2	Tri Cr, Metals (listed on chain)
1	2	2	Pesticides
3	2	6	VOC 624, 1,4 Dioxane
3	2	6	VOC 524
2	2	4	PAH
1	2	2	PCB
2	2	4	EDB
2	2	4	Alcohols

Also included:
 Chains & Labels
 4 HCL vials with Reagent Water for TRIP BLANK

Sarah Bell

From: James McMullen <jmcmullen@terra-env.com>
Sent: Monday, March 25, 2019 2:59 PM
To: Bobbi Aloisa; Sarah Bell
Subject: GCC66896 (Beaver St Bridge)

Good Afternoon, Bobbi/Sarah,

Please add pH to the lab analysis.

Thank you,

James McMullen, Environmental Scientist
TERRA Environmental, LLC
159 Haven Street, 2nd Floor
Reading, MA 01867
T: 781-944-6851
M: 978-604-5057
Email:
jmcmullen@terra-env.com
Website
www.terra-env.com



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Bobbi Aloisa

From: James McMullen <jmcmullen@terra-env.com>
Sent: Tuesday, May 07, 2019 1:04 PM
To: Bobbi Aloisa; Sarah Bell
Cc: Philip Peterson
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

Bobbi,

Can we add hardness to the samples? If not, please let me know what is needed for sample collection.

Thank you,

James McMullen, Environmental Scientist
TERRA Environmental, LLC
159 Haven Street, 2nd Floor
Reading, MA 01867
T: 781-944-6851
M: 978-604-5057
Email:
jmcmullen@terra-env.com
Website
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From: Bobbi Aloisa <bobbi@phoenixlabs.com>
Sent: Tuesday, May 7, 2019 12:42 PM
To: James McMullen <jmcmullen@terra-env.com>; Sarah Bell <sarah@phoenixlabs.com>
Cc: Philip Peterson <ppeterson@terra-env.com>
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

You shouldn't have to .. working on revising report now

Bobbi Aloisa
Vice President
Director of Client Services
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-8728

From: James McMullen [<mailto:jmcmullen@terra-env.com>]
Sent: Tuesday, May 07, 2019 12:41 PM
To: Bobbi Aloisa; Sarah Bell
Cc: Philip Peterson
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

Please let me know if we will need to resample asap. I will need to coordinate the field work with my client.

Thank you,

James McMullen, Environmental Scientist
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From: Bobbi Aloisa <bobbi@phoenixlabs.com>
Sent: Tuesday, May 7, 2019 11:58 AM
To: James McMullen <jmcmullen@terra-env.com>; Sarah Bell <sarah@phoenixlabs.com>
Cc: Philip Peterson <ppeterson@terra-env.com>
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

Thanks. I saw that after I sent the email, sorry!

We should be good.

Bobbi Aloisa
Vice President
Director of Client Services
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-8728

From: James McMullen [<mailto:jmcmullen@terra-env.com>]
Sent: Tuesday, May 07, 2019 11:56 AM
To: Bobbi Aloisa; Sarah Bell

Cc: Philip Peterson
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

Bobbi,

We need to meet 50-ug/L. Please see the attached.

Thank you,

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From: Bobbi Aloisa <bobbi@phoenixlabs.com>
Sent: Tuesday, May 7, 2019 11:53 AM
To: James McMullen <jmcmullen@terra-env.com>; Sarah Bell <sarah@phoenixlabs.com>
Cc: Philip Peterson <ppeterson@terra-env.com>
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

What level , RL do you need to meet for Dioxane?

Bobbi Aloisa
Vice President
Director of Client Services
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-8728

From: James McMullen [<mailto:jmcmullen@terra-env.com>]
Sent: Tuesday, May 07, 2019 11:12 AM
To: Bobbi Aloisa; Sarah Bell
Cc: Philip Peterson
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

Sure thing!

Please clarify a few items. Will we need to resample? Additionally, is the 624 a SIM method? It appears that is all that is required by the permit (40 CFR).

James McMullen, Environmental Scientist
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From: Bobbi Aloisa <bobbi@phoenixlabs.com>
Sent: Tuesday, May 7, 2019 11:02 AM
To: James McMullen <jmcmullen@terra-env.com>; Sarah Bell <sarah@phoenixlabs.com>
Cc: Philip Peterson <ppeterson@terra-env.com>
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

I hit send to soon! LOL

In the future , do you think you can write on the chain, must be run by approved 40 CFR methods in the comments section?

Bobbi Aloisa
Vice President
Director of Client Services
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-8728

From: Bobbi Aloisa
Sent: Tuesday, May 07, 2019 11:01 AM
To: James McMullen; Sarah Bell
Cc: Philip Peterson
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

We are going to fix this for you. The one item that we can't fix is the Dioxane by 8270SIM. There is not an approved method by 625. We can run Dioxane by 624 and we will look up and report results via 624 for you.

Bobbi Aloisa
Vice President
Director of Client Services
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-8728

From: James McMullen [<mailto:jmcmullen@terra-env.com>]
Sent: Tuesday, May 07, 2019 10:43 AM
To: Sarah Bell; Bobbi Aloisa
Cc: Philip Peterson
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

Sarah,

Thanks for the update. I am still waiting on confirmation from the EPA. In the meantime, please schedule a field delivery of the requested glassware to 109 Beaver Street, Framingham tomorrow. Please let me know the earliest a delivery can be scheduled.

James McMullen, Environmental Scientist
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From: Sarah Bell <sarah@phoenixlabs.com>
Sent: Tuesday, May 7, 2019 10:40 AM
To: James McMullen <jmcmullen@terra-env.com>; Bobbi Aloisa <bobbi@phoenixlabs.com>
Cc: Philip Peterson <ppeterson@terra-env.com>
Subject: RE: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

Hi, We will have to get back to you we don't have the samples anymore we only hold for 30 days.

From: James McMullen [<mailto:jmcmullen@terra-env.com>]
Sent: Tuesday, May 07, 2019 9:30 AM
To: Bobbi Aloisa; Sarah Bell

Cc: Philip Peterson
Subject: GCC66896 (Beaver St Bridge) - NPDES RGP Analytical Methods

Good Morning, Bobbi & Sarah,

We received the following comment from the EPA regarding our sample analysis:

- Suggested NOI format Part D.4. The RGP requires test methods in 40 CFR Part 136 be used. SW methods may not be used and both MassDEP EPH and VPH and SW8260 and 8270 are specifically prohibited. Where the minimum level otherwise meets the sufficiently sensitive test method requirements of the RGP, substitution is allowed. However, any analysis using an incorrect test method that is not sufficiently sensitive must be reanalyzed. This resource will help you identify the required MLs and allowed test methods that achieve those MLs:
https://www3.epa.gov/region1/npdes/remediation/AppendixVII_Resource.pdf

I have included several attachments for reference.

The samples were collected on March 13, 2019, does the lab still have the samples? If so, can they be reanalyzed? Otherwise, I am waiting on a response from the EPA specifying which compounds will need to be reanalyzed and will need a glassware delivery for tomorrow. Please include glassware for all parameters listed in the RGP Test Methods attachment. If I receive any further information from the EPA, I will pass it along immediately.

If you should have any questions, or require additional information, please do not hesitate to contact me directly.

Thank you,

James McMullen, Environmental Scientist
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APPENDIX E

BEST MANAGEMENT PLAN

A Notice of Intent for a Remediation General Permit (RGP) under the National Pollutant Discharge Elimination System (NPDES) has been submitted to the U.S. Environmental Protection Agency (EPA) in anticipation of temporary construction dewatering that will occur during the Beaver Street Bridge Replacement project in Framingham, 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 construction of the proposed building foundation, dewatering effluent is anticipated to be pumped from localized sumps and trenches within the excavation directly into a settling tank. The effluent will then flow through the necessary treatment systems and discharge through felt sediment bags into an on-Site drainage basin. Dewatering effluent treatment will consist of a settling tank and felt sediment bags to remove suspended soil particulates. If further treatment is necessary, effluent discharge will be passed through ion resin media vessels prior to on-Site discharge to lower concentrations of metals below applicable TBELs. pH adjustment will be conducted, if necessary, through the addition of hydrochloric acid, caustic soda, or carbon dioxide.

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 contaminants 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 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 the Beaverdam brook which bisects the site into eastern and western areas. Dewatering effluent will be pumped into a settling tank. Water within the settling tank will be pumped through felt sediment bags and, if necessary, ion exchange chambers 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. Bags will be replaced/disposed of as necessary.