Proactive by Design

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

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May 4, 2020
File No. 02.0174198.00

United States Environmental Protection Agency – Region 1
1 Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

Attention: Ms. Shauna Little

Re: Submittal of Notice of Intent (NOI)
Remediation General Permit
4 Birnie Avenue
Springfield, Massachusetts

Dear Ms. Little:

GZA GeoEnvironmental, Inc. (GZA), on behalf of our Client, the Massachusetts Department of Transportation (MassDOT), is submitting the attached Notice of Intent (NOI) form (Appendix A) for a Remediation General Permit (RGP) for the 4 Birnie Avenue Project (the Site). The NOI and RGP are required for dewatering activities due to the presence of a Massachusetts Department of Environmental Protection (MassDEP) disposal site near a portion of the project area with documented petroleum-related impacts to groundwater.

This NOI and RGP submittal are subject to the limitations included in Appendix A.

BACKGROUND

The Project includes the construction of a pedestrian walkway under the Connecticut River Railroad trestle in order to provide a safe pedestrian connection between the Brightwood and North End neighborhoods in Springfield and more specifically between the Chestnut Middle School area in Brightwood and the Birnie Avenue/Main Street area in the North End.

A portion of the Site is subject to a Massachusetts Contingency Plan (MCP) Activity and Use Limitation (AUL). The AUL is associated with MassDEP in place under Release Tracking Number (RTN) 1-11927. Project activities occurring in the area of the AUL are being conducted under a MCP Release Abatement Measure (RAM) Plan. Based on reviewed information, the identified impacts to soil and groundwater in the area of the AUL include extractable and volatile petroleum hydrocarbons (EPH and VPH).

NOTICE OF INTENT

GZA is submitting this NOI to request authorization for dewatered groundwater from the Site to be discharged to the existing stormwater drainage system following treatment. Treated groundwater will be discharged to a storm drain located on Plainfield Street, ultimately discharging to the Connecticut River. A BMPP meeting the requirements of the RGP has been prepared and will be posted at the Site and implemented during the time-period that temporary dewatering is occurring at the Site.

This NOI application includes the following items:

- Laboratory analytical results of the influent source and receiving water are included as Appendix B;

- Calculation sheets for establishing effluent limitations and MassDEP's approval of 7Q10 are included as Appendix C;

- Review of Areas of Critical Environmental Concern indicate that the proposed discharge is not to an ACEC. Review of Federally Listed Endangered and Threatened Species in Massachusetts indicate that the Northern Long-eared Bat is located state-wide. However, this species is not likely to be present at the Site Additionally, the discharge does not impact habitat. Review of the US Fish and Wildlife's online Information for Planning and Consultation (IPaC) service, indicates that federally listed species were not likely to be present within the action area of site activities (see Appendix D);

- Review of the Massachusetts Geographic Information Systems (MassGIS) DEP Priority Resources Map of Waltham shows that there are no ACECs and no habitats for Species of Special Concern or Threatened or Endangered Species within 500 feet of the subject site (Figure 4). Therefore, permit eligibility meets "Criterion A"; and

- Review of the electronic Massachusetts Cultural Resource Information System database, made available through Massachusetts Historical Commission, found that the are no properties listed or eligible for listing on the National Registry of Historic Places under the National Historic Preservation Act. Therefore, there will be no impact associated with this discharge to such properties. The documentation of this review can be found in Appendix E.

Please do not hesitate to contact the undersigned at (781) 278-3700 if you have any questions or require further information.

Very truly yours,
GZA GEOENVIRONMENTAL, INC.

William Davis
Assistant Project Manager

Neal Carey, LSP
Consultant Reviewer

Scott Ollerhead
Project Manager

Enclosures:

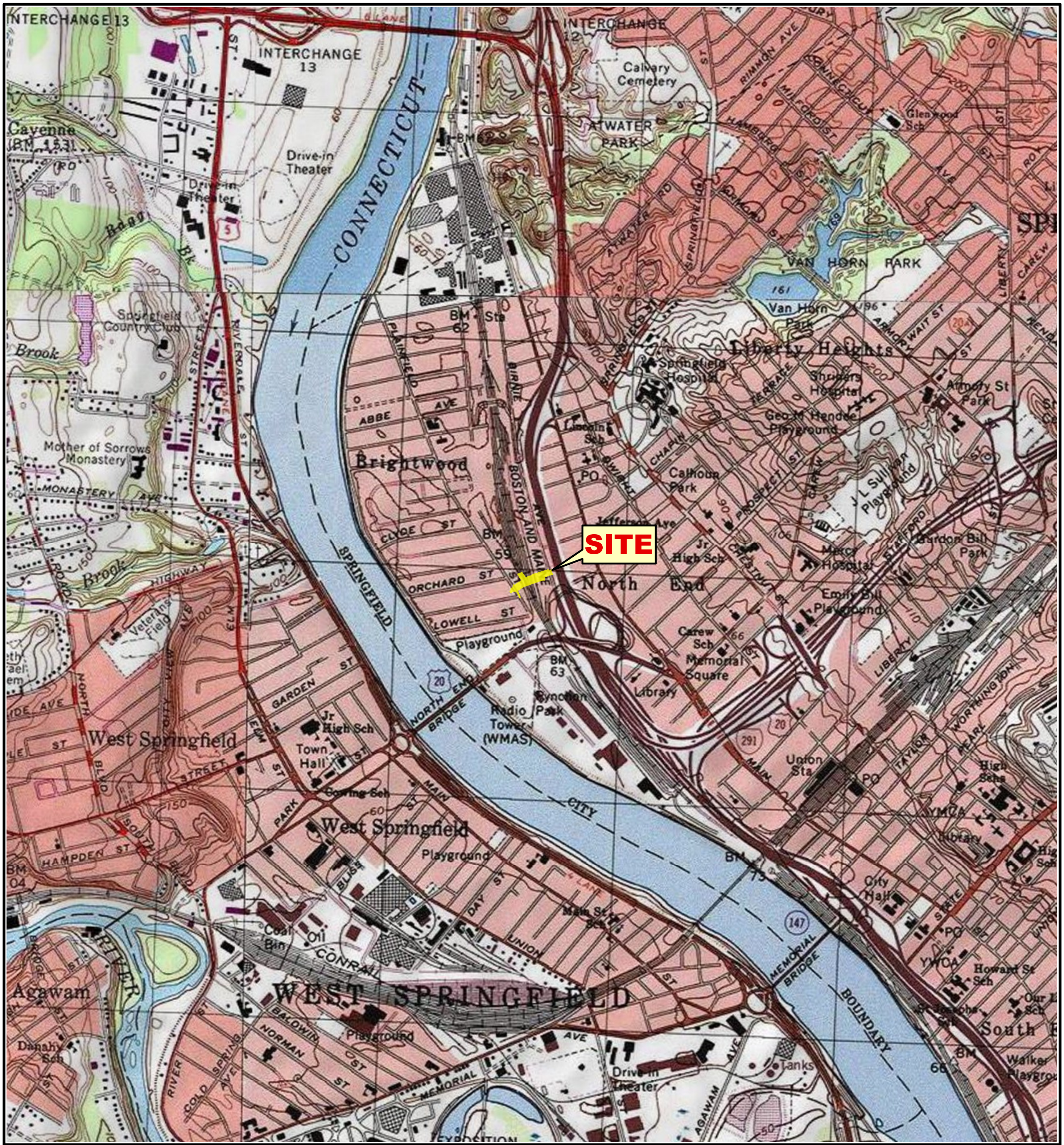
Figures:
Figure 1 - Site Locus Map
Figure 2 – Site Plan
Figure 3 – Discharge Outfall Location Plan
Figure 4 – Groundwater Treatment System Process Flow Diagram
Figure 5 – Site Scoring Map Showing 500 Foot & ½ Mile Radii

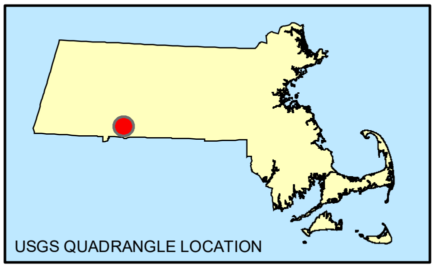
Appendices: Appendix A - Notice of Intent Form
Appendix B – Influent and Receiving Water Laboratory Analytical Reports
Appendix C – Calculation Sheets for Effluent Limitations
Appendix D – ACEC and Federally Listed Endangered and Threatened Species in Massachusetts Evaluation
Appendix E – MACRIS Search Results

K:\174198\174198-00.SMO\RGP\NOI Cover Letter May2020.docx

FIGURE 1

Site Locus Map





SOURCE : THIS MAP CONTAINS THE ESRI ARCGIS ONLINE USA TOPOGRAPHIC MAP SERVICE, PUBLISHED FEBRUARY 5, 2018 BY ESRI ARCIMS SERVICES AND UPDATED AS NEEDED. THIS SERVICE USES UNIFORM NATIONALLY RECOGNIZED DATUM AND CARTOGRAPHY STANDARDS AND A VARIETY OF AVAILABLE SOURCES FROM SEVERAL DATA PROVIDERS.

0 1,000 2,000 4,000 6,000

SCALE IN FEET

Data Supplied by :

N W E S

PROJ. MGR.: SMO
DESIGNED BY: JJS
REVIEWED BY: BWR
OPERATOR: EMD

DATE: 05-14-2019

SITE LOCUS

NORTH END PEDESTRIAN PATH UNDER THE CONNECTICUT RIVER LINE (BRIDGE No. S-24-044) SPRINGFIELD, MASSACHUSETTS

JOB NO. 02.0174198.00

FIGURE NO. 1

FIGURE 2
Site Plan

CITY OF SPRINGFIELD
NORTH END PEDESTRIAN PATH
UNDER THE CONNECTICUT RIVER LINE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CMQ/TAP-003S(182)X	14	82
PROJECT FILE NO.	607589		

DRAINAGE PLAN

DRAINAGE DETAILS

REM: DMH 2+28.43 5.74' RT
CB 4+04.30 7.81' RT

PROP.: DMH 4 0+33.53 12.24' LT
18" HDPE 0+33.53 12.24' LT TO 1+42.62 31.41' LT
DMH 3 1+42.62 31.41' LT
8" HDPE 1+42.62 31.41' LT TO 1+42.62 7.00' LT
TRENCH DRAIN 1+42.62 0.00'
8" FM 1+42.62 31.41' LT TO 1+88.49 37.54' LT
PS 1+88.49 37.45' LT
12" HDPE 2+01.00 34.89' LT TO 2+42.97 21.11' LT
DMH 2 2+42.97 21.11' LT
8" HDPE 2+42.97 21.11' LT TO 2+42.97 8.93' LT
TRENCH DRAIN 2+42.97 0.00'
12" HDPE 2+42.97 21.11' LT TO 3+09.14 21.02' LT
24" DI SLEEVE 2+54.88 21.11' LT TO 3+00.51 21.02' LT
DMH 1 3+09.14 21.02' LT
8" HDPE 3+09.14 21.02' LT TO 3+09.14 8.82' LT
TRENCH DRAIN 3+09.14 0.00'
TRENCH DRAIN 4+12.63 0.00'
8" HDPE 4+12.63 7.00' RT TO 4+12.63 14.96 RT
DMH 6 4+12.63 14.96' RT
12" HDPE 4+12.63 14.96' RT TO 5+00.39 13.17' RT
CB 1 4+17.90 50.94' RT
12" HDPE 4+17.90 50.94' RT TO 4+64.49 37.70' RT
DMH 5 4+64.49 37.70' RT
12" HDPE 4+64.49 37.70' RT TO 4+66.11 52.85' RT
CB 2 4+66.11 52.85' RT
12" HDPE 4+64.49 37.70' RT TO 5+76.00 25.75' RT
DMH 7 5+00.39 13.17' RT
12" RCP 5+00.39 13.17' RT TO 5+76.00 25.75' RT
DMH 8 5+76.00 25.75' RT
12" HDPE 5+76.00 25.75' RT TO 5+96.62 34.86' RT

PROP.: 8" UD 1+42.62 31.41' LT TO 1+51.20 22.83' LT
8" UD 1+51.20 22.83' LT TO 1+58.07 22.83' LT
8" UD 1+58.07 22.83' LT TO 2+01.65 22.83' LT
8" UD 2+01.65 22.83' LT TO 2+50.28 10.79' LT
8" UD 1+58.07 22.83' LT TO 1+58.53 26.10' RT
8" UD 1+58.53 26.10' RT TO 2+00.77 20.22' RT
8" UD 2+00.77 20.22' RT TO 2+50.22 10.81' RT
8" UD 3+01.82 10.80' LT TO 4+05.62 34.80' LT
8" UD 4+05.62 34.80' LT TO 4+06.12 15.09' RT
8" UD 4+06.12 15.09' RT TO 4+12.63 14.96' RT
8" UD 4+06.12 15.09' RT TO 4+05.73 22.44' RT
8" UD 4+05.73 22.44' RT TO 3+54.49 22.83' RT
8" UD 3+54.49 22.83' RT TO 3+01.83 10.80' RT

PROJECT BEGIN
STA 0+00
N2868337.2124
E354835.2448

PROJECT END
STA 6+14.43
N2868597.8634
E355391.6487

0+28.92 UNDERPASS ALIGNMENT=
504+03.17 PLAINFIELD STREET

EASTERN DRAINAGE SWALE
(SEE SHEET 16 - DRAINAGE AND GRADING DETAILS)

PLAINFIELD STREET
(PUBLIC - 100' WIDE)

BIRNIE AVENUE
(PUBLIC - 50' WIDE)

PROPOSED PEDESTRIAN PATH ALIGNMENT

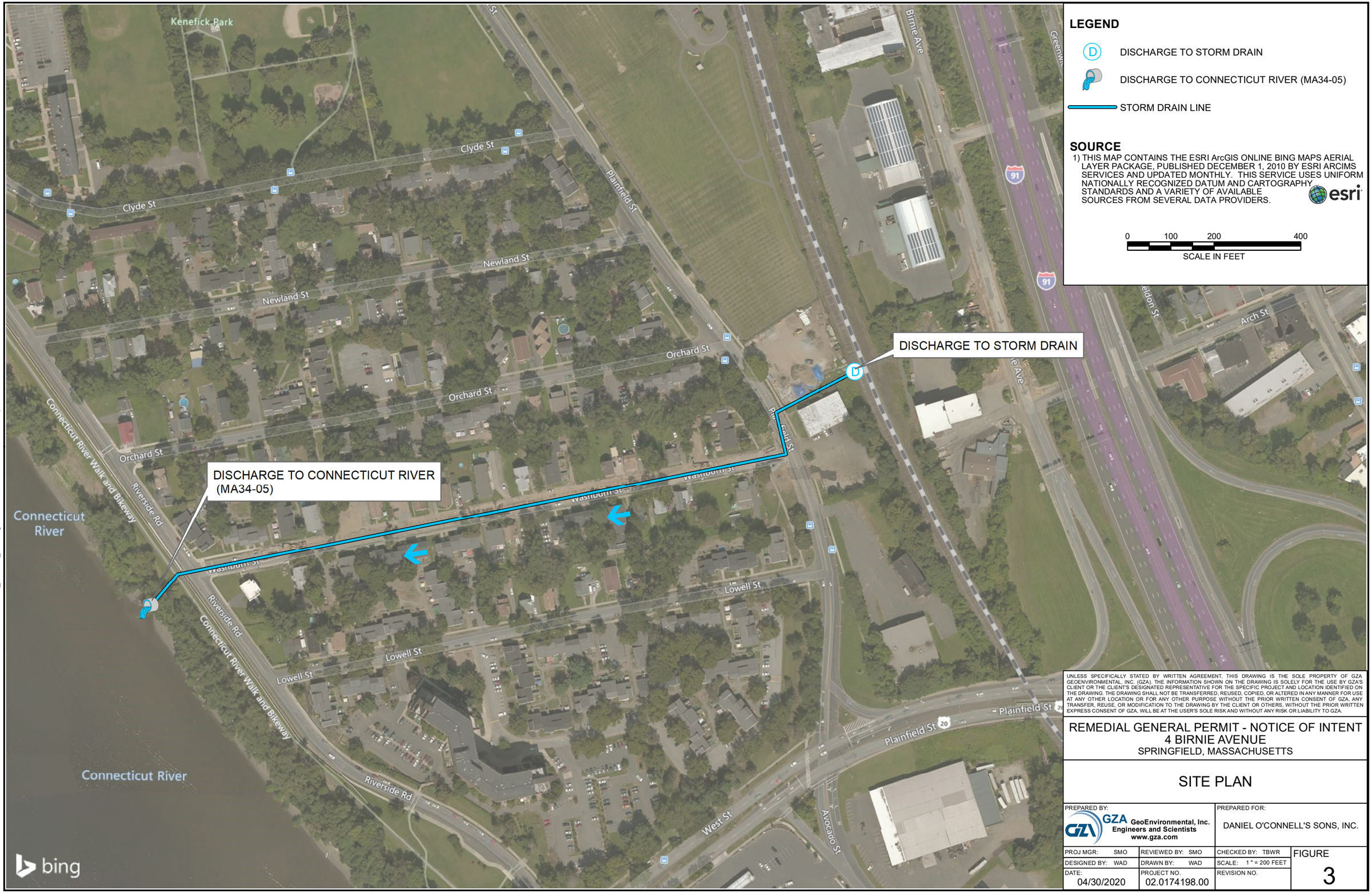
DRAINAGE STRUCTURES TABLE			
STRUCTURE	RIM	INVERT IN	INVERT OUT
DMH 1	60.2	46.6	46.5
DMH 2	61.5	A = 45.8, B = 46.6	C = 45.7
DMH 3	59.2	A = 55.0, B = 51.1, C = 52.8	D = 51.0
DMH 4	56.7	A = 44.8 (MATCH EXISTING), B = 50.0	C = 44.8 (MATCH EXISTING)
DMH 5	56.9	A = 49.0, B = 49.4	C = 48.9
DMH 6	55.8	A = 52.1, B = 51.1	C = 50.7
DMH 7	60.2	49.8	46.5
DMH 8	62.2	A = 47.7, B = 45.7	C = 45.6
CB 1	54.8	-	49.8
CB 2	54.6	-	49.6
PS 1	61.0	45.1	SEE DETAIL

0 20 50 100
SCALE: 1" = 20'

SPRINGFIELD UNDERPASS DRAINAGE.DWG Plotted on 30-Aug-2018 10:39 AM

FIGURE 3

Discharge Outfall Location Plan



LEGEND

- DISCHARGE TO STORM DRAIN
- DISCHARGE TO CONNECTICUT RIVER (MA34-05)
- STORM DRAIN LINE

SOURCE

1) THIS MAP CONTAINS THE ESRI ArcGIS ONLINE BING MAPS AERIAL LAYER PACKAGE, PUBLISHED DECEMBER 1, 2010 BY ESRI ARCIMS SERVICES AND UPDATED MONTHLY. THIS SERVICE USES UNIFORM NATIONALLY RECOGNIZED DATUM AND CARTOGRAPHY STANDARDS AND A VARIETY OF AVAILABLE SOURCES FROM SEVERAL DATA PROVIDERS.

esri

0 100 200 400
SCALE IN FEET

REMEDIAL GENERAL PERMIT - NOTICE OF INTENT
4 BIRNIE AVENUE
SPRINGFIELD, MASSACHUSETTS

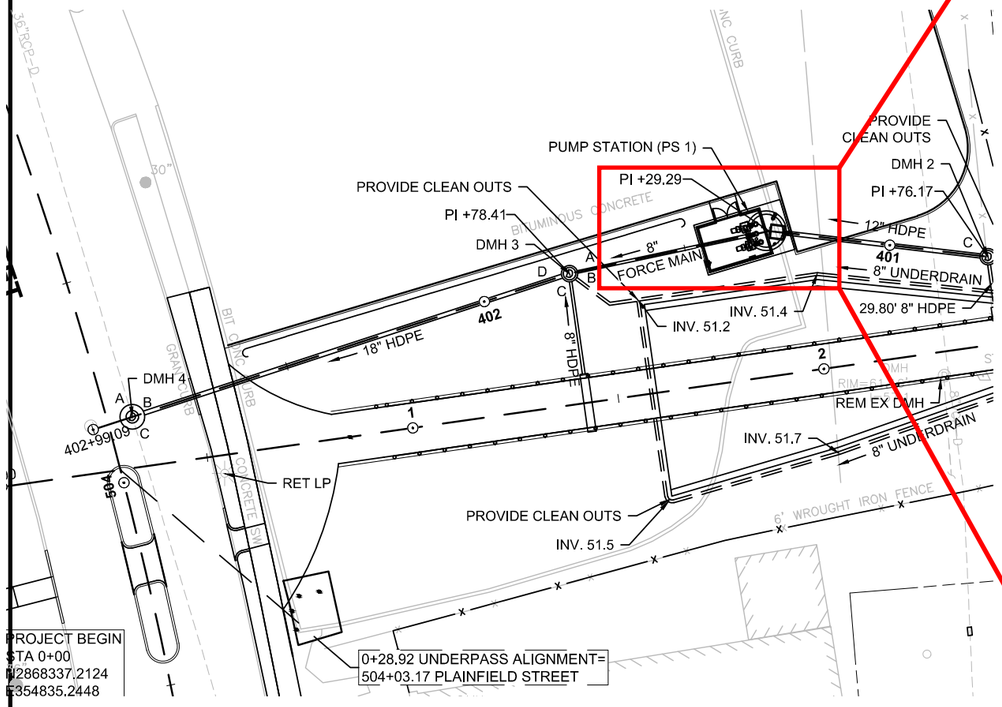
SITE PLAN

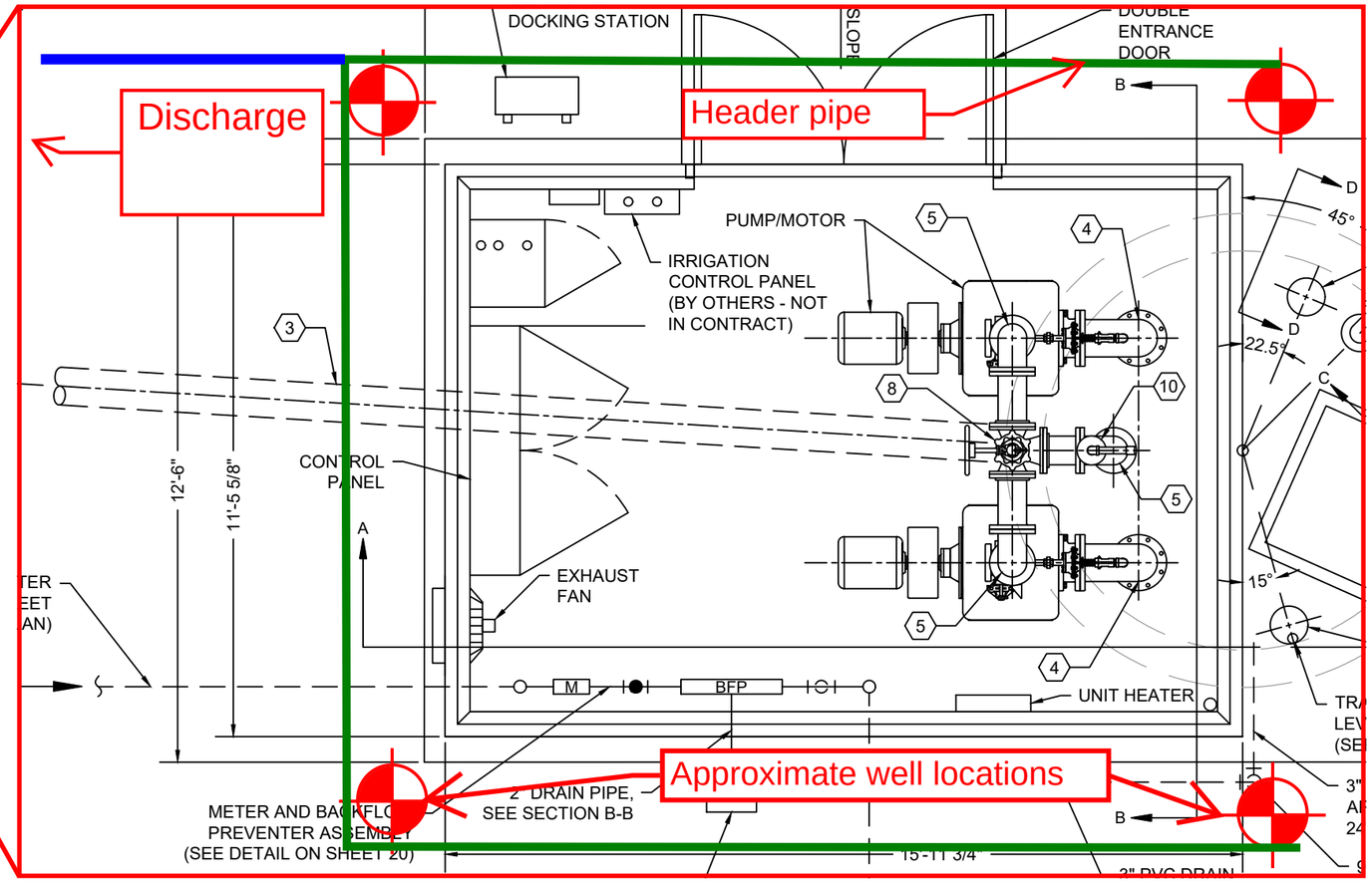
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: DANIEL O'CONNELL'S SONS, INC.	
PROJ MGR: SMO	REVIEWED BY: SMO	CHECKED BY: TBWR	FIGURE 3
DESIGNED BY: WAD	DRAWN BY: WAD	SCALE: 1 " = 200 FEET	
DATE: 04/30/2020	PROJECT NO. 02.0174198.00	REVISION NO.	

FIGURE 4

Groundwater Treatment System

Process Flow Diagram





Notes:

1. Background image used for reference only.
2. Well and wellpoint locations are approximate and are subject to field adjustment.
3. Wells will be developed and cleaned and the discharge will be verified to be clean prior to discharge.

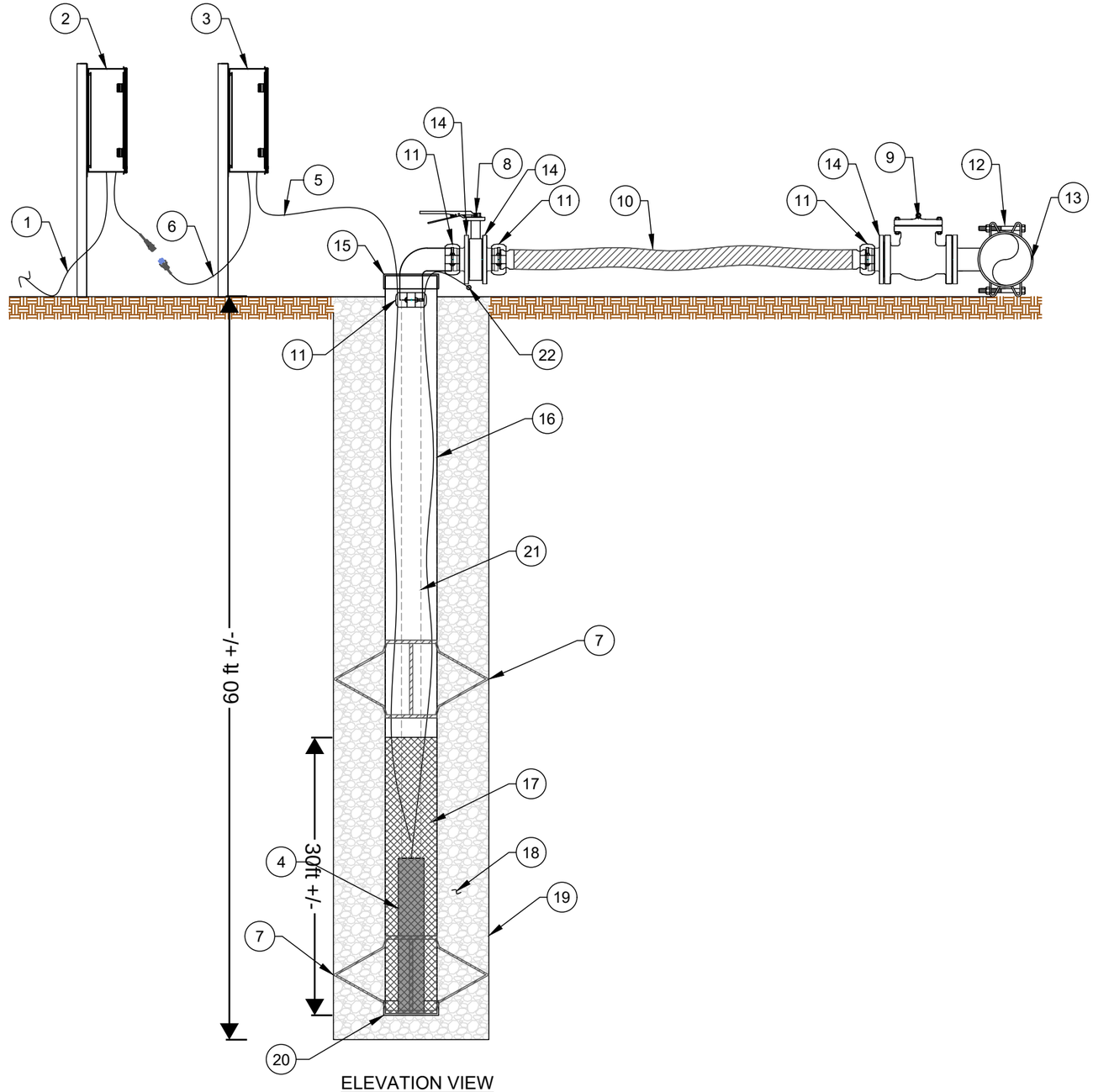
MDOT HD North End Pump Station
Springfield, Massachusetts
Dewatering System Plan View

GRIFFIN

Drawn By: DW | Date: 7/01/19

DWG
1
Ver. 1

MATERIAL LIST			BELOW LIST IS TYPICAL; MATERIAL SUBSTITUTIONS MADE AS APPROPRIATE
NO.	QTY.	U.O.M	EQUIPMENT
1	1	EA	ELECTRICAL DISTRIBUTION CABLE (BY OTHERS)
2	1	EA	JUNCTION BOX w/ 30AMP WEATHER TIGHT TWISTLOCK CONNECTOR (BY OTHERS)
3	1	EA	PUMP CONTROL BOX
4	1	EA	SUBMERSIBLE TURBINE PUMP (10HP , 460V, 3 PHASE)
5	1	EA	PUMP CABLE
6	1	EA	PIGTAIL w/ 30AMP WEATHER TIGHT TWISTLOCK PLUG- TO CONNECT CONTROL BOX TO JUNCTION BOX- FOR UP TO 15HP @460V
7	-	EA	CENTRALIZER (AS REQUIRED)
8	1	EA	BUTTERFLY VALVE, SUPPORTED TO PREVENT EXCESS WEIGHT ON ELBOW
9	1	EA	FLANGED CHECK VALVE
10	1	LF	HOSE,
11	4	EA	COUPLING
12	1	EA	STEEL TAPPING SLEEVE
13	1	EA	DISCHARGE PIPE
14	3	EA	FLANGE X GROOVE ADAPTER
15	1	EA	WELL CAP,
16	1	EA	PVC CASING (8-12")
17	1	EA	WELLSCREEN (8-12")
18	1	EA	WELLPACK (2s filter sand or similar)
19	1	EA	BOREHOLE (24-32")
20	1	EA	PVC BOTTOM CAP
21	1	EA	RISER PIPE-
22	1	EA	SAFETY CABLE FOR PUMP RETRIEVAL



ELEVATION VIEW

GRIFFIN DEWATERING L.L.C.
5306 CLINTON DRIVE
HOUSTON, TX 77020
TEL: (713) 676-8000
FAX: (713) 676-8080
E MAIL: griffin@griffindewatering.com
WEBSITE: www.griffindewatering.com

REV.	DESCRIPTION	DATE	BY	APPVD.

TYPICAL DEWATERING WELL DETAIL

DRAWN: DW

SCALE: N.T.S.

-

DATE: 7/1/19

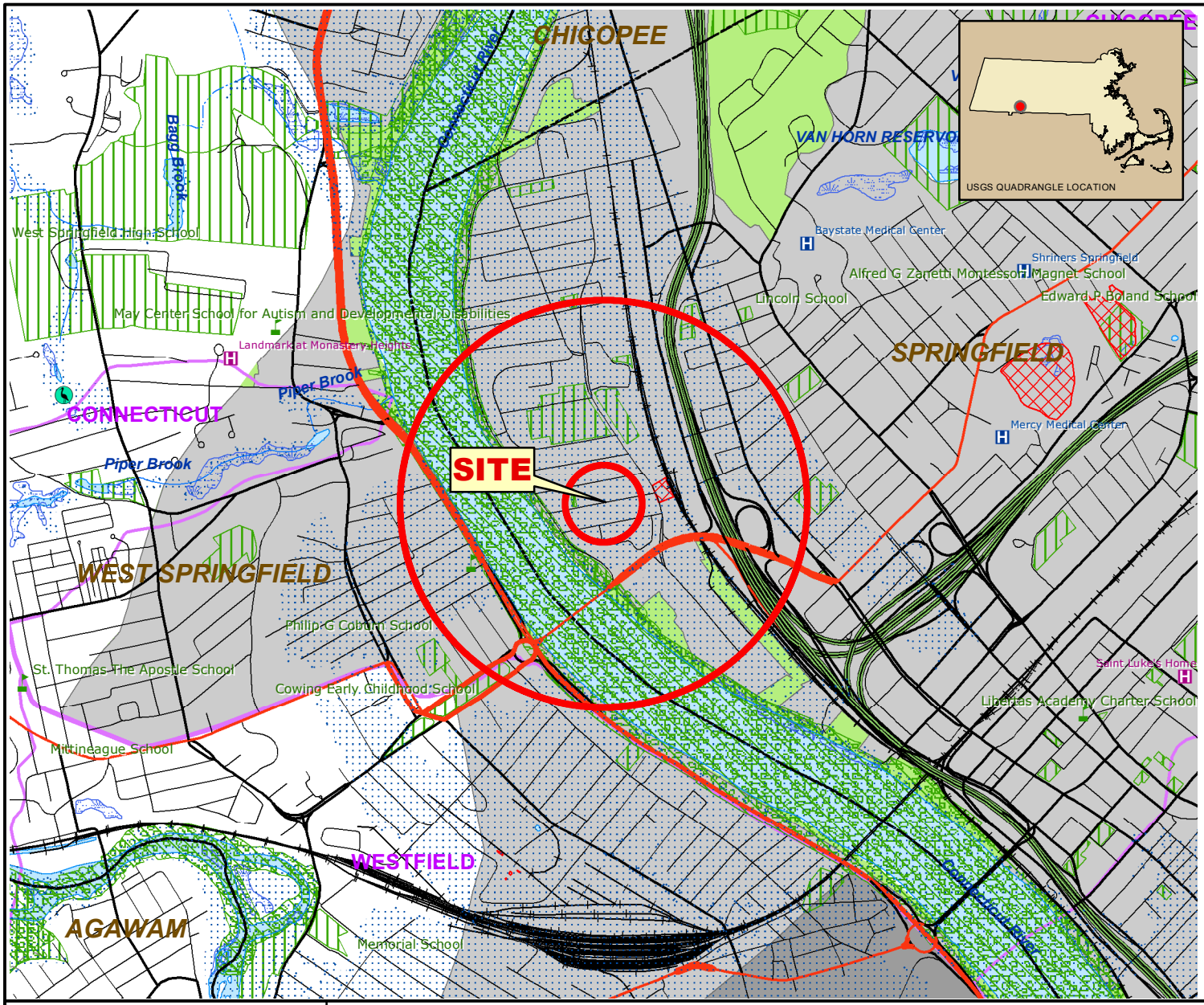
TYPICAL DEWATERING WELLS w/6" AND LARGER DISCHARGE

DWG: 02

FIGURE 5

Site Scoring Map

500 Foot and ½ Mile Radii



DEP MCP 21e LEGEND

- Public Water Supply Well: Community GW, Community SW, Emergency SW, Non-Community
- Zone II's
- Interim Wellhead Protection Areas (IWPA's)
- Zone A
- Sole Source Aquifers
- Solid Waste Sites
- Protected Openspace
- Areas of Critical Environmental Concern
- NHESP Estimated Habitats of Rare Wildlife: Use with MA Wetlands Protection Act (310 CMR 10.12)
- NHESP Priority Habitats of State-Listed Rare Species: Use with MA Wetlands Protection Act (310 CMR 10.12)
- NHESP Vernal Pools: Certified, Potential
- Drainage Subbasins
- Massachusetts Major Basins
- MassDEP Regions
- Town Boundaries
- County Boundaries

Aquifers, By Yield

- High Yield - Potential Source
- Medium Yield - Potential Source
- Low Yield - Potential Source

Non-Potential Drinking Water Souce Area

- High Yield - Non Potential Source
- Medium Yield - Non Potenital Source

FEMA Floodplains

- 100 Year Floodplain

Hydrography

- Lake, Pond, Wide River, Impoundment
- Reservoir (with PWSID)
- Wetlands: Marsh, Wooded Swamp
- Saltwater Wetlands; Cranberry Bog
- Tidal Flats, Shoals

Rivers and Streams

- Stream
- Intermittent Stream
- Shoreline
- Man-Made Shoreline
- Dam

EOT-OTP Roads, Transmission Lines

- Limited Access Highway
- Multi-Lane Highway, Unlimited Access
- Other Numbered Highway
- Major Road - Connector
- Minor Street or Road
- Railroad Lines
- Aqueducts
- Powerline
- Pipeline
- Airport
- Track
- Trail

Source Data Supplied by MassGIS (April 2020)

N W E S

0 1,000 2,000

SCALE IN FEET

SITE SCORING MAP SHOWING 500 FOOT & 1/2 MILE RADII

REMEDIAL GENERAL PERMIT - NOTICE OF INTENT
4 BIRNIE AVENUE
SPRINGFIELD, MASSACHUSETTS

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

JOB NO. 02.0174198.00

PROJ. MGR.: SMO
DESIGNED BY.: WAD
REVIEWED BY.: SMO
OPERATOR.: SMW
DATE: 04-30-2020

FIGURE NO. 5

APPENDIX A

NOTICE OF INTENT FORM

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

A. General site information:

<table>
<tr><td rowspan="4">1. Name of site:
North End Pedestrian Underpass Project</td><td colspan="3">Site address: 4
Street: Birnie Avenue</td></tr>
<tr><td colspan="2">City: Springfield</td><td>State: MA Zip: 01107</td></tr>
<tr><td colspan="3">Contact Person: John Donoghue</td></tr>
<tr><td colspan="2">Telephone: 413-582-0522</td><td>Email: John.Donoghue@dot.state.ma.us</td></tr>
<tr><td rowspan="4">2. Site owner
MassDOT

Owner is (check one): ☐ Federal ■ State/Tribal ☐ Private
☐ Other; if so, specify:</td><td colspan="3">Mailing address: 200
Street: Plainfield Street</td></tr>
<tr><td colspan="2">City: Springfield</td><td>State: MA Zip: 01107</td></tr>
<tr><td colspan="3">Contact Person: Edwin Colondres</td></tr>
<tr><td colspan="2">Telephone: 908-487-1024</td><td>Email: Edwin.Colondres@griffindewatering.com</td></tr>
<tr><td rowspan="3">3. Site operator, if different than owner
Griffin Dewatering</td><td colspan="3">Mailing address: 111
Street: N. Michigan Avenue</td></tr>
<tr><td colspan="2">City: Kenilworth</td><td>State: NJ Zip: 07073</td></tr>
<tr><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
■ MA Chapter 21e; list RTN(s): 1-11927
☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:
☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
N/A

NPDES permit is (check all that apply: ■ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3"></td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Connecticut River	MA34-05	B(C50)

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

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

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

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

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	1,549.86 MGD
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	1,550.86

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ■ Yes ☐ No
If yes, indicate date confirmation received: 4/16/2020

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

C. Source water information:

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

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

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

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ☐ Existing discharge ■ New discharge ☐ New source	
Outfall(s): 24 inch storm sewer discharging to CT River	Outfall location(s): (Latitude, Longitude) 42°06'44.06"N, 72°36'56.74"W
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: DMH on-site, discharging to a DMH on Plainfield St, ultimately discharging to CT River ☐ A private storm sewer system ■ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ■ Yes ☐ No, if so, explain, with an estimated timeframe for obtaining permission: Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ■ No	
Provide the expected start and end dates of discharge(s) (month/year): June 2020 - May 2020 Indicate if the discharge is expected to occur over a duration of: ■ less than 12 months ☐ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="4">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
■ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

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

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

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia	✔		1	E350.1	50.0	<50.0		Report mg/L	---
Chloride	✔		1	SM450.0	3,000	<3,000		Report µg/l	---
Total Residual Chlorine	✔		1	SM450.0	20	<20.0		0.2 mg/L	
Total Suspended Solids		✔	1	200.7	5,000	22,000		30 mg/L	---
Antimony	✔		1	200.7	5.0	<5.0		206 µg/L	
Arsenic	✔		1	200.7	4.0	<4.0		104 µg/L	
Cadmium	✔		1	200.7	1.0	<1.0		10.2 µg/L	
Chromium III		✔	1	200.7	1.0	5		323 µg/L	
Chromium VI	✔		1	200.7	10.0	<10.0		323 µg/L	
Copper	✔		1	200.7	5.0	<5.0		242 µg/L	
Iron		✔	1	200.7	10.0	9,180		5,000 µg/L	
Lead	✔		1	200.7	2.0	<2.0		160 µg/L	
Mercury	✔		1	200.7	0.2	<0.2		0.739 µg/L	
Nickel		✔	1	200.7	1.0	10.0		1,450 µg/L	
Selenium	✔		1	200.7	10.0	<10.0		235.8 µg/L	
Silver	✔		1	200.7	1.0	<1.0		35.1 µg/L	
Zinc		✔	1	200.7	4.0	21.0		420 µg/L	
Cyanide	✔		1	SM450.0	10.0	<10.0		178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX	✔		1	624.1	1.0	<1.0		100 µg/L	---
Benzene	✔		1	624.1	1.0	<1.0		5.0 µg/L	---
1,4 Dioxane	✔		1	624.1	50.0	<50.0		200 µg/L	---
Acetone	✔		1	624.1	10.0	<10.0		7.97 mg/L	---
Phenol	✔		1	624.1	0.03	<0.03		1,080 µg/L	

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✔		1	624.1	1.0	<1.0		4.4 µg/L	
1,2 Dichlorobenzene	✔		1	624.1	5.0	<5.0		600 µg/L	---
1,3 Dichlorobenzene	✔		1	624.1	5.0	<5.0		320 µg/L	---
1,4 Dichlorobenzene	✔		1	624.1	5.0	<5.0		5.0 µg/L	---
Total dichlorobenzene	✔		1	624.1	5.0	<5.0		763 µg/L in NH	---
1,1 Dichloroethane	✔		1	624.1	1.5	<1.5		70 µg/L	---
1,2 Dichloroethane	✔		1	624.1	1.0	<1.0		5.0 µg/L	---
1,1 Dichloroethylene	✔		1	624.1	1.0	<1.0		3.2 µg/L	---
Ethylene Dibromide	✔		1	14,504.1	0.01	<0.01		0.05 µg/L	---
Methylene Chloride	✔		1	624.1	1.0	<1.0		4.6 µg/L	---
1,1,1 Trichloroethane	✔		1	624.1	2.0	<2.0		200 µg/L	---
1,1,2 Trichloroethane	✔		1	624.1	1.5	<1.5		5.0 µg/L	---
Trichloroethylene	✔		1	624.1	1.0	<1.0		5.0 µg/L	---
Tetrachloroethylene	✔		1	624.1	1.0	<1.0		5.0 µg/L	
cis-1,2 Dichloroethylene	✔		1	624.1	1.0	<1.0		70 µg/L	---
Vinyl Chloride	✔		1	624.1	1.0	<1.0		2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		1	8270D	3.5	<3.5		190 µg/L	
Diethylhexyl phthalate	✔		1	8270D	3.5	<3.5		101 µg/L	
Total Group I PAHs	✔		1	625.1	0.10	<0.10		1.0 µg/L	---
Benzo(a)anthracene	✔		1	625.1	0.05	<0.05		As Total PAHs	
Benzo(a)pyrene	✔		1	625.1	0.10	<0.10			
Benzo(b)fluoranthene	✔		1	625.1	0.05	<0.05			
Benzo(k)fluoranthene	✔		1	625.1	0.10	<0.10			
Chrysene	✔		1	625.1	0.10	<0.10			
Dibenzo(a,h)anthracene	✔		1	625.1	0.02	<0.02			
Indeno(1,2,3-cd)pyrene	✔		1	625.1	0.10	<0.10			

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs	✔		1	625.1	0.10	<0.10		100 µg/L	---
Naphthalene	✔		1	625.1	0.10	<0.10		20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		1	608.3	0.048	<0.048		0.000064 µg/L	---
Pentachlorophenol	✔		1	8270D	0.8	<0.8		1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✔		1	1664A	1.4	<1.4		5.0 mg/L	---
Ethanol	✔	✔	1	624.1	400	<400		Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	624.1	1.0	<1.0		70 µg/L	
tert-Butyl Alcohol	✔		1	624.1	10	<10		120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		1	624.1	1.0	<1.0		90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
Hardness		✔	1	20.7	100	45,300	45,300		
Oil & Grease	✔		1	1,664	1,400	<1,400	<1,400		
pH		✔	1	Field	NA	6.72			
Temperature		✔	1	Field	NA	6.1			

E. Treatment system information

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

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

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.
Four groundwater extraction wells will pump through bag filtration prior to discharge.

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

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

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Is use of a flow meter feasible? (check one): ☐ Yes ☐ No, if so, provide justification:	694 gpm
Provide the proposed maximum effluent flow in gpm.	694 gpm
Provide the average effluent flow in gpm.	347 gpm
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	

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

F. Chemical and additive information

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

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

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

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.

List attachments

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

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

J. Certification requirement

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

BMPP certification statement:	A BMPP meeting the requirements of this general permit will be implemented upon initiation of the discharge.
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ■ No ☐ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ■ NA ☐
Signature: 	Date: May 7, 2020
Print Name and Title: John Donoghue, District Two Construction Engineer MassD	

APPENDIX B

LABORATORY ANALYTICAL REPORTS

PHOENIX
Environmental Laboratories, Inc.

Thursday, April 30, 2020

Attn: Mr. Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Project ID: 174198
SDG ID: GCF57711
Sample ID#s: CF57711 - CF57712, CF57886

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,

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

NY # 11301

SDG Comments

April 30, 2020

SDG I.D.: GCF57711

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

Version 2: Per client request Phthalates were added on.

Version 3: Per client request additional compounds were added on.

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

April 30, 2020

SDG I.D.: GCF57711

Project ID: 174198

Client Id	Lab Id	Matrix
MW-1	CF57711	WATER
CT-R1	CF57712	WATER
TB	CF57886	WATER

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

Analysis Report

April 30, 2020

FOR: Attn: Mr. Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/27/20	11:10
Location Code:	GZA-MA	Received by:	LB	03/27/20	14:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF57711
Phoenix ID: CF57711

Project ID: 174198
Client ID: MW-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Arsenic	< 0.004	0.004	mg/L	1	03/31/20	EK	SW6010D/E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Chromium	0.005	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Copper	< 0.005	0.005	mg/L	1	03/31/20	EK	SW6010D/E200.7
Iron	9.18	0.010	mg/L	1	03/31/20	EK	SW6010D/E200.7
Hardness (CaCO3)	45.3	0.1	mg/L	1	04/01/20		E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/31/20	RS	SW7470/E245.1
Nickel	0.010	0.001	mg/L	1	03/31/20	TH	SW6010D/E200.7
Lead	< 0.002	0.002	mg/L	1	03/31/20	EK	SW6010D/E200.7
Antimony	< 0.005	0.005	mg/L	1	03/31/20	EK	SW6010D/E200.7
Selenium	< 0.010	0.010	mg/L	1	03/31/20	EK	SW6010D/E200.7
Trivalent Chromium	0.005	0.001	mg/L	1	03/31/20		Calculation
Zinc	0.021	0.004	mg/L	1	03/31/20	EK	SW6010D/E200.7
Chloride	< 3.0	3.0	mg/L	1	03/27/20	TB	SM4500CLE-11
Chlorine Residual	< 0.02	0.02	mg/L	1	03/27/20 18:55	O	SM4500Cl-G-00
Chromium, Hexavalent	< 0.01	0.01	mg/L	1	03/27/20 18:33	O	SM3500CRB-11
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	03/31/20	KDB	E350.1
Oil and Grease by EPA 1664A	< 1.4	1.4	mg/L	1	03/30/20	MSF	EPA 1664
Phenolics	< 0.015	0.015	mg/L	1	03/30/20	MSF	E420.4
Total Cyanide	< 0.010	0.010	mg/L	1	03/31/20	EG	SM 4500 CN-11
Total Suspended Solids	22	5.0	mg/L	1	03/30/20	ARG	SM 2540D-11
Mercury Digestion	Completed				03/30/20	S/RA/LS/R	SW7470/245.1
PCB Extraction	Completed				03/27/20	C	E608.3
Semi-Volatile Extraction	Completed				03/31/20	P/AK	E625.1
Total Metals Digestion	Completed				03/30/20	AG	

Ver 3

Project ID: 174198
Client ID: MW-1

Phoenix I.D.: CF57711

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Polychlorinated Biphenyls							
PCB-1016	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1221	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1232	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1242	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1248	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1254	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1260	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1262	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1268	ND	0.048	ug/L	1	03/31/20	SC	E608.3
QA/QC Surrogates							
% DCBP	66		%	1	03/31/20	SC	30 - 150 %
% DCBP (Confirmation)	69		%	1	03/31/20	SC	30 - 150 %
% TCMX	66		%	1	03/31/20	SC	30 - 150 %
% TCMX (Confirmation)	64		%	1	03/31/20	SC	30 - 150 %
1,2-Dibromoethane (EDB)	ND	0.01	ug/L	1	03/30/20	CG	E504.1
Acrolein, Acrylonitrile, 2 CEVE							
2-Chloroethyl vinyl ether	ND	5.0	ug/L	1	03/27/20	MH	E624.1 As is
Acrolein	ND	5.0	ug/L	1	03/27/20	MH	E624.1 As is
Acrylonitrile	ND	5.0	ug/L	1	03/27/20	MH	E624.1 As is
Volatiles							
1,1,1-Trichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1,2,2-tetrachloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1,2-Trichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1-Dichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichloropropane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,3-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,4-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Benzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromodichloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromoform	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromomethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Carbon tetrachloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloroform	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/27/20	MH	E624.1
Dibromochloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Ethylbenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
m&p-Xylene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	1	03/27/20	MH	E624.1

Project ID: 174198
Client ID: MW-1

Phoenix I.D.: CF57711

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
Methylene chloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1	
o-Xylene	ND	0.50	ug/L	1	03/27/20	MH	E624.1	
Tetrachloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1	
Toluene	ND	0.50	ug/L	1	03/27/20	MH	E624.1	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1	
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/27/20	MH	E624.1	
Trichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1	
Trichlorofluoromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1	
Vinyl chloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1	
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	102		%	1	03/27/20	MH	70 - 130 %	
% Bromofluorobenzene	98		%	1	03/27/20	MH	70 - 130 %	
% Dibromofluoromethane	99		%	1	03/27/20	MH	70 - 130 %	
% Toluene-d8	112		%	1	03/27/20	MH	70 - 130 %	
1,4-dioxane								
1,4-dioxane	ND	100	ug/l	1	03/27/20	HM	SW8260C	7
QA/QC Surrogates								
% 1,2-dichlorobenzene-d4	102		%	1	03/27/20	HM	70 - 130 %	7
% Bromofluorobenzene	98		%	1	03/27/20	HM	70 - 130 %	7
% Dibromofluoromethane	99		%	1	03/27/20	HM	70 - 130 %	7
% Toluene-d8	112		%	1	03/27/20	HM	70 - 130 %	7
Ethanol	ND	400	ug/L	1	03/27/20	HM	E624.1	
Tert amyl methyl ether	ND	1.0	ug/L	1	03/27/20	HM	E624.1	
Tert-butyl alcohol	ND	10	ug/L	1	03/27/20	HM	E624.1	
Semivolatiles, PAH's								
2-Methylnaphthalene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Acenaphthene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Acenaphthylene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Anthracene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Benz(a)anthracene	ND	0.05	ug/L	1	04/03/20	WB	E625.1 SIM	
Benzo(a)pyrene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Benzo(b)fluoranthene	ND	0.05	ug/L	1	04/03/20	WB	E625.1 SIM	
Benzo(ghi)perylene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Benzo(k)fluoranthene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Chrysene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Dibenz(a,h)anthracene	ND	0.02	ug/L	1	04/03/20	WB	E625.1 SIM	
Fluoranthene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Fluorene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Naphthalene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
Phenanthrene	ND	0.05	ug/L	1	04/03/20	WB	E625.1 SIM	
Pyrene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM	
QA/QC Surrogates								
% 2-Fluorobiphenyl	68		%	1	04/03/20	WB	30 - 130 %	
% Nitrobenzene-d5	62		%	1	04/03/20	WB	15 - 130 %	
% Terphenyl-d14	82		%	1	04/03/20	WB	30 - 130 %	

Project ID: 174198
Client ID: MW-1

Phoenix I.D.: CF57711

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Phthalates							
Benzyl butyl phthalate	ND	3.5	ug/L	1	04/03/20	WB	SW8270D
Bis(2-ethylhexyl)phthalate	ND	3.5	ug/L	1	04/03/20	WB	SW8270D
Diethyl phthalate	ND	3.5	ug/L	1	04/03/20	WB	SW8270D
Dimethyl phthalate	ND	3.5	ug/L	1	04/03/20	WB	SW8270D
Di-n-butyl phthalate	ND	3.5	ug/L	1	04/03/20	WB	SW8270D
Di-n-octyl phthalate	ND	3.5	ug/L	1	04/03/20	WB	SW8270D
Pentachlorophenol	ND	1.0	ug/L	1	04/03/20	WB	SW8270D

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:

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

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.

8260 Analysis:
1,4-Dioxane doesn't meet GW-1 criteria, this compound is analyzed by 8270SIM to achieve this criteria.

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
April 30, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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

Analysis Report

April 30, 2020

FOR: Attn: Mr. Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/27/20	11:10
Location Code:	GZA-MA	Received by:	LB	03/27/20	14:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF57711
Phoenix ID: CF57712

Project ID: 174198
Client ID: CT-R1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.002	0.002	mg/L	1	03/31/20	EK	SW6010D/E200.7
Arsenic	< 0.004	0.004	mg/L	1	03/31/20	EK	SW6010D/E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Chromium	0.011	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Copper	0.017	0.005	mg/L	1	03/31/20	EK	SW6010D/E200.7
Iron	7.14	0.010	mg/L	1	03/31/20	EK	SW6010D/E200.7
Hardness (CaCO3)	38.3	0.1	mg/L	1	04/01/20		E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/31/20	RS	SW7470/E245.1
Nickel	0.015	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Lead	0.006	0.002	mg/L	1	03/31/20	EK	SW6010D/E200.7
Antimony	< 0.005	0.005	mg/L	1	03/31/20	EK	SW6010D/E200.7
Selenium	< 0.010	0.010	mg/L	1	03/31/20	EK	SW6010D/E200.7
Zinc	0.037	0.004	mg/L	1	03/31/20	EK	SW6010D/E200.7
Mercury Digestion	Completed				03/30/20	S/RA/LS/R	SW7470/245.1
Total Metals Digestion	Completed				03/30/20	AG	

Project ID: 174198
Client ID: CT-R1

Phoenix I.D.: CF57712

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

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

Comments:

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

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Phyllis Shiller, Laboratory Director

April 30, 2020

Reviewed and Released by: Rashmi Makol, Project Manager

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

Analysis Report

April 30, 2020

FOR: Attn: Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/27/20	
Location Code:	GZA-MA	Received by:	SW	03/27/20	14:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF57711
Phoenix ID: CF57886

Project ID: 174198
Client ID: TB

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1-Trichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1,2,2-tetrachloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1,2-Trichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1-Dichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichloropropane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,3-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,4-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Benzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromodichloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromoform	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromomethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Carbon tetrachloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloroform	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/27/20	MH	E624.1
Dibromochloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Ethylbenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
m&p-Xylene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	1	03/27/20	MH	E624.1
Methylene chloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1

Project ID: 174198
Client ID: TB

Phoenix I.D.: CF57886

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
o-Xylene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Tetrachloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Toluene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/27/20	MH	E624.1
Trichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Trichlorofluoromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Vinyl chloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	1	03/27/20	MH	70 - 130 %
% Bromofluorobenzene	99		%	1	03/27/20	MH	70 - 130 %
% Dibromofluoromethane	96		%	1	03/27/20	MH	70 - 130 %
% Toluene-d8	98		%	1	03/27/20	MH	70 - 130 %

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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The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
April 30, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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

April 30, 2020

QA/QC Data

SDG I.D.: GCF57711

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 524404 (mg/L), QC Sample No: CF51083 (CF57711, CF57712)														
Mercury - Water	BRL	0.0002	<0.0005	<0.0005	NC	89.4			71.5			75 - 125	30	m
Comment:														
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%														
QA/QC Batch 524535 (mg/L), QC Sample No: CF58144 (CF57711, CF57712)														
ICP Metals - Aqueous														
Antimony	BRL	0.005	<0.005	<0.005	NC	104	104	0.0	102			80 - 120	20	
Arsenic	BRL	0.004	0.004	<0.004	NC	102	103	1.0	101			80 - 120	20	
Cadmium	BRL	0.001	<0.001	<0.001	NC	104	105	1.0	101			80 - 120	20	
Chromium	BRL	0.001	0.001	0.001	NC	103	104	1.0	101			80 - 120	20	
Copper	BRL	0.005	<0.005	<0.005	NC	103	102	1.0	100			80 - 120	20	
Iron	BRL	0.010	0.062	0.056	10.2	103	103	0.0	102			80 - 120	20	
Lead	BRL	0.002	<0.002	<0.002	NC	99.0	100	1.0	96.2			80 - 120	20	
Nickel	BRL	0.001	<0.001	<0.001	NC	102	102	0.0	98.4			80 - 120	20	
Selenium	BRL	0.010	<0.010	<0.010	NC	97.3	98.0	0.7	95.5			80 - 120	20	
Silver	BRL	0.001	<0.001	<0.001	NC	99.8	99.5	0.3	96.7			80 - 120	20	
Zinc	BRL	0.004	0.009	0.009	NC	101	101	0.0	98.9			80 - 120	20	
Comment:														
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.														

m = This parameter is outside laboratory MS/MSD specified recovery limits.

Environmental Laboratories, Inc.
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QA/QC Report

April 30, 2020

QA/QC Data

SDG I.D.: GCF57711

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 524541 (mg/L), QC Sample No: CF55900 (CF57711)														
Total Cyanide	BRL	0.010	0.257	0.246	4.40	89.3			101			90 - 110	30	I
Comment:														
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.														
QA/QC Batch 524418 (mg/L), QC Sample No: CF57616 (CF57711)														
Oil and Grease by EPA 1664A	BRL	1.4				98.0	97.0	1.0				85 - 115	20	
Comment:														
Additional: MS acceptance range 75-125%.														
QA/QC Batch 524416 (mg/L), QC Sample No: CF57711 (CF57711)														
Total Suspended Solids	BRL	2.5	22	25	NC	97.0						85 - 115		
QA/QC Batch 524328 (mg/L), QC Sample No: CF58097 (CF57711)														
Chromium, Hexavalent	BRL	0.01	<0.01	<0.01	NC	101			107			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 524320 (mg/L), QC Sample No: CF57054 (CF57711)														
Chloride	BRL	3.0	33.2	32.1	3.40	99.2			104			90 - 110	20	
QA/QC Batch 524420 (mg/L), QC Sample No: CF58097 (CF57711)														
Ammonia as Nitrogen	BRL	0.05	<0.05	<0.05	NC	95.1			97.0			90 - 110	20	
QA/QC Batch 524399 (mg/L), QC Sample No: CF57711 (CF57711)														
Phenolics	BRL	0.015	<0.015	<0.015	NC	96.0			103			90 - 110	20	
QA/QC Batch 524330 (mg/L), QC Sample No: CF57615 (CF57711)														
Chlorine Residual	BRL	0.02	<0.01	<0.02	NC	98.4								

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

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

April 30, 2020

QA/QC Data

SDG I.D.: GCF57711

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 524413 (ug/L), QC Sample No: CF57390 (CF57711)										
EDB and DBCP Analysis - Water										
1,2-Dibromoethane (EDB)	ND	0.01	100	99	1.0	103	101	2.0	70 - 130	25
QA/QC Batch 524342 (ug/L), QC Sample No: CF56925 (CF57711)										
Polychlorinated Biphenyls - Water										
PCB-1016	ND	0.050	81	82	1.2				50 - 140	20
PCB-1221	ND	0.050							15 - 178	20
PCB-1232	ND	0.050							10 - 200	20
PCB-1242	ND	0.050							39 - 150	20
PCB-1248	ND	0.050							38 - 158	20
PCB-1254	ND	0.050							29 - 140	20
PCB-1260	ND	0.050	91	90	1.1				10 - 140	20
PCB-1262	ND	0.050							40 - 140	20
PCB-1268	ND	0.050							40 - 140	20
% DCBP (Surrogate Rec)	67	%	76	75	1.3				30 - 150	20
% DCBP (Surrogate Rec) (Confirm	68	%	78	79	1.3				30 - 150	20
% TCMX (Surrogate Rec)	67	%	76	73	4.0				30 - 150	20
% TCMX (Surrogate Rec) (Confirm	67	%	76	73	4.0				30 - 150	20
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										
QA/QC Batch 524671 (ug/L), QC Sample No: CF58991 (CF57711)										
Semivolatiles (SIM) - Water										
2-Methylnaphthalene	ND	0.50	70	69	1.4				30 - 130	20
Acenaphthene	ND	0.50	96	95	1.0				60 - 132	48
Acenaphthylene	ND	0.50	90	89	1.1				54 - 126	74
Anthracene	ND	0.50	91	91	0.0				43 - 120	66
Benz(a)anthracene	ND	0.50	95	94	1.1				42 - 133	53
Benzo(a)pyrene	ND	0.50	85	85	0.0				32 - 148	72
Benzo(b)fluoranthene	ND	0.50	93	92	1.1				42 - 140	71
Benzo(ghi)perylene	ND	0.50	93	91	2.2				10 - 195	97
Benzo(k)fluoranthene	ND	0.50	120	119	0.8				25 - 146	63
Chrysene	ND	0.50	96	94	2.1				44 - 140	87
Dibenz(a,h)anthracene	ND	0.50	94	93	1.1				10 - 200	126
Fluoranthene	ND	0.50	91	93	2.2				43 - 121	66
Fluorene	ND	0.50	99	97	2.0				70 - 120	38
Indeno(1,2,3-cd)pyrene	ND	0.50	82	82	0.0				10 - 151	99
Naphthalene	ND	0.50	72	71	1.4				36 - 120	65
Phenanthrene	ND	0.50	85	84	1.2				65 - 120	39
Pyrene	ND	0.50	97	100	3.0				70 - 120	49
% 2-Fluorobiphenyl	64	%	80	80	0.0				30 - 130	20
% Nitrobenzene-d5	59	%	79	81	2.5				15 - 130	20
% Terphenyl-d14	67	%	80	83	3.7				30 - 130	20

QA/QC Data

SDG I.D.: GCF57711

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Comment:											
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 524671 (ug/L), QC Sample No: CF58991 (CF57711)											
Semivolatiles - Water											
Benzyl butyl phthalate	ND	1.5	100	98	2.0				10 - 140	60	
Bis(2-ethylhexyl)phthalate	ND	1.5	104	100	3.9				29 - 137	82	
Diethyl phthalate	ND	1.5	98	97	1.0				10 - 120	100	
Dimethylphthalate	ND	1.5	95	92	3.2				10 - 120	183	
Di-n-butylphthalate	ND	1.5	97	97	0.0				8 - 120	47	
Di-n-octylphthalate	ND	1.5	105	102	2.9				19 - 132	69	
Pentachlorophenol	ND	3.5	104	103	1.0				38 - 152	86	
QA/QC Batch 528044 (ug/L), QC Sample No: CF57711 (CF57711)											
Volatiles - Water											
1,1,1-Trichloroethane	ND	1.0	98	99	1.0	113	107	5.5	70 - 130	30	
1,1,2,2-Tetrachloroethane	ND	0.50	101	105	3.9	115	114	0.9	70 - 130	30	
1,1,2-Trichloroethane	ND	1.0	91	103	12.4	117	105	10.8	70 - 130	30	
1,1-Dichloroethane	ND	1.0	98	100	2.0	115	109	5.4	70 - 130	30	
1,1-Dichloroethene	ND	1.0	103	104	1.0	120	116	3.4	70 - 130	30	
1,2-Dichlorobenzene	ND	1.0	98	102	4.0	114	110	3.6	70 - 130	30	
1,2-Dichloroethane	ND	1.0	95	104	9.0	119	107	10.6	70 - 130	30	
1,2-Dichloropropane	ND	1.0	92	104	12.2	119	105	12.5	70 - 130	30	
1,3-Dichlorobenzene	ND	1.0	103	105	1.9	120	114	5.1	70 - 130	30	
1,4-Dichlorobenzene	ND	1.0	97	98	1.0	112	107	4.6	70 - 130	30	
1,4-dioxane	ND	100	92	91	1.1	103	98	5.0	40 - 160	30	
2 chlorethyl vinyl ether	ND	1.0	109	122	11.3	140	124	12.1	70 - 130	30	m
Acrolein	ND	5.0	98	99	1.0	113	111	1.8	70 - 130	30	
Acrylonitrile	ND	5.0	98	105	6.9	110	110	0.0	70 - 130	30	
Benzene	ND	0.70	101	109	7.6	126	112	11.8	70 - 130	30	
Bromodichloromethane	ND	0.50	99	109	9.6	123	113	8.5	70 - 130	30	
Bromoform	ND	1.0	110	117	6.2	126	122	3.2	70 - 130	30	
Bromomethane	ND	1.0	82	83	1.2	95	93	2.1	40 - 160	30	
Carbon tetrachloride	ND	1.0	101	102	1.0	120	113	6.0	70 - 130	30	
Chlorobenzene	ND	1.0	98	101	3.0	114	110	3.6	70 - 130	30	
Chloroethane	ND	1.0	90	96	6.5	118	109	7.9	70 - 130	30	
Chloroform	ND	1.0	98	98	0.0	115	108	6.3	70 - 130	30	
Chloromethane	ND	1.0	93	94	1.1	108	100	7.7	40 - 160	30	
cis-1,2-Dichloroethene	ND	1.0	99	100	1.0	112	110	1.8	70 - 130	30	
cis-1,3-Dichloropropene	ND	0.40	96	106	9.9	120	108	10.5	70 - 130	30	
Dibromochloromethane	ND	0.50	108	112	3.6	123	119	3.3	70 - 130	30	
Ethylbenzene	ND	1.0	105	106	0.9	120	115	4.3	70 - 130	30	
m&p-Xylene	ND	1.0	105	107	1.9	122	116	5.0	70 - 130	30	
Methyl t-butyl ether (MTBE)	ND	1.0	95	98	3.1	110	108	1.8	70 - 130	30	
Methylene chloride	ND	1.0	87	87	0.0	100	95	5.1	70 - 130	30	
o-Xylene	ND	1.0	106	108	1.9	124	117	5.8	70 - 130	30	
Tetrachloroethene	ND	1.0	94	100	6.2	117	105	10.8	70 - 130	30	
Toluene	ND	1.0	99	109	9.6	125	112	11.0	70 - 130	30	
trans-1,2-Dichloroethene	ND	1.0	100	101	1.0	117	111	5.3	70 - 130	30	
trans-1,3-Dichloropropene	ND	0.40	100	111	10.4	125	112	11.0	70 - 130	30	
Trichloroethene	ND	1.0	96	96	0.0	110	106	3.7	70 - 130	30	
Trichlorofluoromethane	ND	1.0	94	95	1.1	112	107	4.6	70 - 130	30	
Vinyl chloride	ND	1.0	99	100	1.0	116	109	6.2	70 - 130	30	

Parameter	Blank	Blk RL		LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
% 1,2-dichlorobenzene-d4	100	%		101	100	1.0	100	101	1.0	70 - 130	30
% Bromofluorobenzene	98	%		101	102	1.0	102	101	1.0	70 - 130	30
% Dibromofluoromethane	97	%		97	96	1.0	98	95	3.1	70 - 130	30
% Toluene-d8	102	%		97	104	7.0	107	98	8.8	70 - 130	30

Comment:

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

QA/QC Batch 524455 (ug/L), QC Sample No: CF57711 (CF57711, CF57886)

Volatiles - Water

1,1,1-Trichloroethane	ND	1.0		98	99	1.0	113	107	5.5	70 - 130	20
1,1,2,2-Tetrachloroethane	ND	0.50		101	105	3.9	115	114	0.9	60 - 140	20
1,1,2-Trichloroethane	ND	1.0		91	103	12.4	117	105	10.8	70 - 130	20
1,1-Dichloroethane	ND	1.0		98	100	2.0	115	109	5.4	70 - 130	20
1,1-Dichloroethene	ND	1.0		103	104	1.0	120	116	3.4	50 - 150	20
1,2-Dichlorobenzene	ND	1.0		98	102	4.0	114	110	3.6	65 - 135	20
1,2-Dichloroethane	ND	1.0		95	104	9.0	119	107	10.6	70 - 130	20
1,2-Dichloropropane	ND	1.0		92	104	12.2	119	105	12.5	35 - 165	20
1,3-Dichlorobenzene	ND	1.0		103	105	1.9	120	114	5.1	70 - 130	20
1,4-Dichlorobenzene	ND	1.0		97	98	1.0	112	107	4.6	65 - 135	20
1,4-dioxane	ND	100		92	91	1.1	103	98	5.0	70 - 130	30
2 chlorethyl vinyl ether	ND	1.0		109	122	11.3	140	124	12.1	10 - 200	20
Acrolein	ND	5.0		98	99	1.0	113	111	1.8	70 - 130	20
Acrylonitrile	ND	5.0		98	105	6.9	110	110	0.0	70 - 130	20
Benzene	ND	0.70		101	109	7.6	126	112	11.8	65 - 135	20
Bromodichloromethane	ND	0.50		99	109	9.6	123	113	8.5	65 - 135	20
Bromoform	ND	1.0		110	117	6.2	126	122	3.2	70 - 130	20
Bromomethane	ND	1.0		82	83	1.2	95	93	2.1	15 - 185	20
Carbon tetrachloride	ND	1.0		101	102	1.0	120	113	6.0	70 - 130	20
Chlorobenzene	ND	1.0		98	101	3.0	114	110	3.6	65 - 135	20
Chloroethane	ND	1.0		90	96	6.5	118	109	7.9	40 - 160	20
Chloroform	ND	1.0		98	98	0.0	115	108	6.3	70 - 135	20
Chloromethane	ND	1.0		93	94	1.1	108	100	7.7	10 - 200	20
cis-1,2-Dichloroethene	ND	1.0		99	100	1.0	112	110	1.8	70 - 130	20
cis-1,3-Dichloropropene	ND	0.40		96	106	9.9	120	108	10.5	25 - 175	20
Dibromochloromethane	ND	0.50		108	112	3.6	123	119	3.3	70 - 135	20
Ethylbenzene	ND	1.0		105	106	0.9	120	115	4.3	60 - 140	20
m&p-Xylene	ND	1.0		105	107	1.9	122	116	5.0	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	1.0		95	98	3.1	110	108	1.8	70 - 130	30
Methylene chloride	ND	1.0		87	87	0.0	100	95	5.1	60 - 140	20
o-Xylene	ND	1.0		106	108	1.9	124	117	5.8	70 - 130	30
Tetrachloroethene	ND	1.0		94	100	6.2	117	105	10.8	70 - 130	20
Toluene	ND	1.0		99	109	9.6	125	112	11.0	70 - 130	20
trans-1,2-Dichloroethene	ND	1.0		100	101	1.0	117	111	5.3	70 - 130	20
trans-1,3-Dichloropropene	ND	0.40		100	111	10.4	125	112	11.0	50 - 150	20
Trichloroethene	ND	1.0		96	96	0.0	110	106	3.7	65 - 135	20
Trichlorofluoromethane	ND	1.0		94	95	1.1	112	107	4.6	50 - 150	20
Vinyl chloride	ND	1.0		99	100	1.0	116	109	6.2	10 - 195	20
% 1,2-dichlorobenzene-d4	100	%		101	100	1.0	100	101	1.0	70 - 130	30
% Bromofluorobenzene	98	%		101	102	1.0	102	101	1.0	70 - 130	30
% Dibromofluoromethane	97	%		97	96	1.0	98	95	3.1	70 - 130	30
% Toluene-d8	102	%		97	104	7.0	107	98	8.8	70 - 130	30

Comment:

A blank MS/MSD was analyzed with this batch.

QA/QC Data

SDG I.D.: GCF57711

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 524464 (ug/L), QC Sample No: CF56899 (CF57711)										
Oxygenates - Water										
Ethanol	ND	200	94	89	5.5	87	103	16.8	70 - 130	30
tert-amyl methyl ether	ND	10	93	97	4.2	108	106	1.9	70 - 130	30
tert-butyl alcohol	ND	25	85	88	3.5	108	105	2.8	70 - 130	30

Comment:

A blank MS/MSD was analyzed with this batch.

m = This parameter is outside laboratory MS/MSD 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
April 30, 2020

Thursday, April 30, 2020

Criteria: MA: CAM, GW1

State: MA

Sample Criteria Exceedances Report

GCF57711 - GZA-MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CF57711	$624ADD	Acrylonitrile	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CF57711	$DIOX_WMR	1,4-dioxane	MA / CMR 310.40.1600 / GW-1 (mg/l)	ND	100	3	3	ug/l
CF57711	$DIOX_WMR	1,4-dioxane	MA / GROUNDWATER STANDARDS / GW-1	ND	100	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 exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence 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: 174198 **RTN:**

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

CF57711, CF57712, CF57886

Matrices: ☐ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☑ Other: WATER, W

CAM Protocol (check all that apply below)

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

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)	☑ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ 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?	☑ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements speified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ 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?	☐ Yes ☐ No ☐ Yes ☐ 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)?	☑ Yes ☐ 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)?	☐ Yes ☑ 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 Section: Cyanide Narration .	☐ Yes ☑ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☑ 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: Thursday, April 30, 2020

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

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

April 30, 2020

SDG I.D.: GCF57711

SDG Comments

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

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

The client requested volatiles by 624 and semi-volatiles PAHs by 625. The MCP narrative is provided at the request of the client.

504.1

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

Instrument:

CHEM35 03/30/20-1 Chelsey Guerette, Chemist 03/30/20

CF57711 (1X)

The initial calibration (CHEM35/504tcp_0330): 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 524413 (CF57390)

CF57711

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? No.

QC Batch 524541 (Samples: CF57711): -----

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. (Total Cyanide)

Instrument:

LACHAT 03/31/20-1 Eric Geyer, Chemist 03/31/20

CF57711

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 frequencey of one per ten samples.
The continuing calibration blanks (ICB,CCB) had concentrations less than the reporting level.

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MCP Certification Report

April 30, 2020

SDG I.D.: GCF57711

Cyanide Narration

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

QC (Batch Specific):

Batch 524541 (CF55900)

CF57711

All LCS recoveries were within 90 - 110 with the following exceptions: Total Cyanide(89.3%)
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 03/27/20-1 Dustin Harrison, Chemist 03/27/20

CF57711

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 524328 (CF58097)

CF57711

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 03/31/20 07:13 Rick Schweitzer, Chemist 03/31/20

CF57711, CF57712

The method preparation blank, ICB, and CCBs contain all of the acids and reagents as the samples.
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.

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Certification Report

April 30, 2020

SDG I.D.: GCF57711

Mercury Narration

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):

Batch 524404 (CF51083)

CF57711, CF57712

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 03/30/20 11:26 Emily Kolominskaya, Tina Hall, Chemist 03/30/20

CF57711, CF57712

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 524535 (CF58144)

CF57711, CF57712

All LCS recoveries were within 80 - 120 with the following exceptions: None.
All LCSD recoveries were within 80 - 120 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

LACHAT

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

Instrument:

LACHAT 03/27/20-1 Thomas Budz, Chemist 03/27/20

CF57711

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

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MCP Certification Report

April 30, 2020

SDG I.D.: GCF57711

LACHAT

QC (Batch Specific):

Batch 524320 (CF57054)

CF57711

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.

NITROGEN

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

Instrument:

LACHAT 03/31/20-1 Kandi Della Bella, Chemist 03/31/20

CF57711

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 524420 (CF58097)

CF57711

All LCS recoveries were within 85 - 115 with the following exceptions: None.
Additional criteria: LCS acceptance range for waters is 85-115% and for soils is 75-125%. MS acceptance range is 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.

PCB 608 Narration

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

Instrument:

AU-ECD1 03/30/20-1 Saadia Chudary, Chemist 03/30/20

CF57711 (1X)

The initial calibration (WW220AI) RSE for the compound list was less than 15% except for the following compounds: None.
The initial calibration (WW220BI) RSE for the compound list was less than 15% except for the following compounds: None.
The continuing calibration %RSD for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 524342 (CF56925)

CF57711

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

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MCP Certification Report

April 30, 2020

SDG I.D.: GCF57711

PCB 608 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: None.
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.

PHENOLS

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

Instrument:

LACHAT 03/30/20-1

CF57711

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 524399 (CF57711)

CF57711

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? Yes.

Instrument:

CHEM28 04/02/20-2 Adam Werner, Chemist 04/02/20

CF57711 (1X)

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_0327):
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 (CHEM28/0402_31-28_SPLIT_0327) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
99% of target compounds met criteria.

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

April 30, 2020

SDG I.D.: GCF57711

SVOA Narration

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.

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 625

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

Instrument:

CHEM28 04/02/20-1 Adam Werner, Chemist 04/02/20

CF57711 (1X)

Initial Calibration Evaluation (CHEM28/28_SPLIT_0327):
100% of target compounds met criteria.
The following compounds had %RSDs >35%: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM28/0402_31-28_SPLIT_0327) (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 minimum response factors: None.

QC (Batch Specific):

Batch 524671 (CF58991)

CF57711

All LCS recoveries were within 30 - 130 with the following exceptions: None.
All LCSD recoveries were within 30 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
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

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

Instrument:

CHEM23 03/27/20-1 Harry Mullin, Chemist 03/27/20

CF57711 (1X)

Initial Calibration Evaluation (CHEM23/VOA23_032020):

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

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

April 30, 2020

SDG I.D.: GCF57711

VOA Narration

98% of target compounds met criteria.
The following compounds had %RSDs >20%: Bromomethane 33% (20%)
The following compounds did not meet Table 4 recommended minimum response factors: None.
The following compounds did not meet the minimum response factor of 0.05: None.

Continuing Calibration Verification (CHEM23/0327_03-VOA23_032020) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
97% 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 Table 4 recommended minimum response factors: None.
The following compounds did not meet the minimum MCP response factor of 0.05: None.

QC (Batch Specific):

Batch 528044 (CF57711) CHEM23 3/27/2020-1

CF57711(1X)

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.
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-624

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

Instrument:

CHEM23 03/27/20-1 Michael Hahn, Chemist 03/27/20

CF57711 (1X), CF57886 (1X)

Initial Calibration Evaluation (CHEM23/VOA23_032020):
100% of target compounds met criteria.
The following compounds had %RSDs >35%: 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 (CHEM23/0327_03-VOA23_032020):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
99% of target compounds met criteria.
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 524455 (CF57711) CHEM23 3/27/2020-1

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

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

April 30, 2020

SDG I.D.: GCF57711

VOA-624

CF57711(1X), CF57886(1X)

All LCS recoveries were within critiera with the following exceptions: None.
All LCSD recoveries were within critiera with the following exceptions: None.
All LCS/LCSD RPDs were within criteria with the following exceptions: None.
A blank MS/MSD was analyzed with this batch.
Additional VOA Criteria: The 624 recovery criteria for the MS is different than the LCS, which is reported above.

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 03/27/20-1 Michael Hahn, Chemist 03/27/20

CF57711 (1X)

Initial Calibration Evaluation (CHEM23/OXY0320):
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 (CHEM23/0327_03-OXY0320) (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 524464 (CF56899) CHEM23 3/27/2020-1

CF57711(1X)

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.

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Coolant: IPK ☑ ICE ☒ No ☐ Cooler: Yes ☒ No ☐
Temp 9 °C Pg of

Data Delivery/Contact Options:
☐ Fax:
☐ Phone:
☒ Email: Scott.Ollerhead@GZA.com

Customer: GZA GeoEnvironmental
Address: 249 Vanderbilt Ave, Norwood, MA 02062

Project: 174198
Report to: Scott Ollerhead + Alyssa Chadwick
Invoice to:
QUOTE #
Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification
Sampler's Signature: [signature] Date: 3/27

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe OIL=Oil
B=Bulk L=Liquid X = ____________(Other)

Analysis Request: Total Metals Hardness, PAH, GCB PCB, Cyanide, Oil + Grease, EDB, TSS TRC Cl/Tri Cr Hex Cr, VOCs, Ammonia, Phenol

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Total Metals Hardness	PAH	GCB PCB	Cyanide	Oil + Grease	EDB	TSS TRC Cl Tri Cr Hex Cr	VOCs	Ammonia	Phenol	GL Amber 8 oz. w/ H2SO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( )oz	GL Soil container ( )oz	40 ml VOA Vial (3) As is (B) HCl	GL Amber 1000ml (X) As is [ ] H2SO4	PL As is [ ] 250ml (X) 500ml [ ] 1000ml	PL H2SO4 (1) 250ml [ ] 500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
57711	MW-1	W	3/27	11:10	X	X	X	X	X	X	X	X	X	X	1				5	3	B1	1	1	2		
57712	CT-R1	W	3/27	11:45	X																		✓	1		
~~57712~~ 57886 (KT)	TB																									

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	3/27	12:00
GH / TK	[signature]	3/27	14:16

Comments, Special Requirements or Regulations:
~~[illegible]~~ - AC
QA/QC with Report
Okay to run total metals out of NaOH per Scott -KD

Turnaround Time:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☒ Standard
☐ Other
* SURCHARGE APPLIES

RI
☐ (Residential) Direct Exposure
☐ (Comm/Industrial) Direct Exposure
☐ GA Leachability
☐ GB Leachability
☐ GA-GW Objectives
☐ GB-GW Objectives

CT
☐ RCP Cert
☐ GW Protection
☐ SW Protection
☐ GA Mobility
☐ GB Mobility
☐ Residential DEC
☐ I/C DEC
☐ Other

MA
☒ MCP Certification
☒ GW-1 ☐ MWRA eSMART
☐ GW-2
☐ GW-3
☐ S-1 GW-1 ☐ S-1 GW-2 ☐ S-1 GW-3
☐ S-2 GW-1 ☐ S-2 GW-2 ☐ S-2 GW-3
☐ S-3 GW-1 ☐ S-3 GW-2 ☐ S-3 GW-3
☐ SW Protection

State where samples were collected: MA

Data Format
☒ Excel
☒ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist
☐ Full Data Package*
☒ Phoenix Std Report
☐ Other
* SURCHARGE APPLIES

GCF 57711

Lori Bailey

From: Scott Ollerhead <Scott.Ollerhead@gza.com>
Sent: Friday, March 27, 2020 01:39 PM
To: Lori Bailey
Cc: Alyssa Chadwick
Subject: RE: Metals for Project 174198

Hi Lori,

Please run the following metals on both samples:
Antimony, Arsenic, Cadmium, Chromium III and VI, Copper, Lead, Mercury, Nickel, Selenium, Silver, Zinc, Iron

Please call with any questions.

Thanks,
Scott

Scott M. Ollerhead
Contractor Services Division
GZA | 249 Vanderbilt Avenue | Norwood, MA 02062
o: 781.278.5727 | c: 781.603.9880 | scott.ollerhead@gza.com | www.gza.com |

From: Lori Bailey <lori@phoenixlabs.com>
Sent: Friday, March 27, 2020 1:33 PM
To: Scott Ollerhead <Scott.Ollerhead@gza.com>
Subject: Metals for Project 174198
Importance: High

Good afternoon Scott,

Can you please let me know what metals you need for the samples submitted today for the above mentioned project?

Thank you, Lori

Lori Bailey
Client Services Representative
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester, CT 06040
Ph: 1-860-645-1102

GC# 57711

Krystal Delgado

From: Krystal Delgado
Sent: Friday, March 27, 2020 3:34 PM
To: 'Scott.Ollerhead@gza.com'
Subject: 174198

Importance: High

Good Afternoon,

In reference to project mentioned above, for sample ID "CT. R1" we received an NAOH bottle instead of an HNO3. We can still run the analysis if you would like us to proceed.

Please let me know.

Thank you

Krystal Delgado
Phoenix Environmental Laboratories
587 East Middle Tpke.
Manchester, CT 06040
krystald@phoenixlabs.com
PH: 860-645-1102
FX: 860-645-0823

Loreen Fay

From: Loreen Fay
Sent: Tuesday, April 28, 2020 3:14 PM
To: Alyssa Chadwick
Subject: RE: Phthlates on CF57711

Hi Alyssa-
We can add all except for TPH. We would need more sample to run that test. Thanks-Loreen

Loreen Fay
Executive Assistant to the Vice President
Client Services - Project Manager
Phoenix Environmental Laboratories, Inc.
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-3513
Fax: 860-645-0823
www.phoenixlabs.com

From: Alyssa Chadwick [mailto:Alyssa.Chadwick@gza.com]
Sent: Tuesday, April 28, 2020 11:27 AM
To: Loreen Fay
Subject: RE: Phthlates on CF57711

Hi Loreen,

A few more analytes that I was hopeful that you would be able to report based on the data that you have. Please let me know if we can get an updated report to include the following:

Pentachlorophenol
Total petroleum hydrocarbons
Ethanol
tert-Butyl alcohol
tert-Amyl methyl ether

Thank you,

Aly

From: Loreen Fay <loreen@phoenixlabs.com>
Sent: Friday, April 17, 2020 11:56 AM
To: Alyssa Chadwick <Alyssa.Chadwick@gza.com>
Subject: Phthlates on CF57711

Alyssa-

We are able to report the compounds from the PAH run. A revised report will print today, and will be posted to the website upon review. thanks-Loreen

Loreen Fay
Executive Assistant to the Vice President
Client Services - Project Manager
Phoenix Environmental Laboratories, Inc.
587 East Middle Turnpike
Manchester, CT 06040
Ph: 860-645-3513
Fax: 860-645-0823
www.phoenixlabs.com

PHOENIX
Environmental Laboratories, Inc.

Monday, April 06, 2020

Attn: Mr. Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Project ID: 174198
SDG ID: GCF57711
Sample ID#s: CF57711 - CF57712, CF57886

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.

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,

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

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

SDG Comments

April 06, 2020

SDG I.D.: GCF57711

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

April 06, 2020

SDG I.D.: GCF57711

Project ID: 174198

Client Id	Lab Id	Matrix
MW-1	CF57711	WATER
CT-R1	CF57712	WATER
TB	CF57886	WATER

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

Analysis Report

April 06, 2020

FOR: Attn: Mr. Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/27/20	11:10
Location Code:	GZA-MA	Received by:	LB	03/27/20	14:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF57711
Phoenix ID: CF57711

Project ID: 174198
Client ID: MW-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Arsenic	< 0.004	0.004	mg/L	1	03/31/20	EK	SW6010D/E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Chromium	0.005	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Copper	< 0.005	0.005	mg/L	1	03/31/20	EK	SW6010D/E200.7
Iron	9.18	0.010	mg/L	1	03/31/20	EK	SW6010D/E200.7
Hardness (CaCO3)	45.3	0.1	mg/L	1	04/01/20		E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/31/20	RS	SW7470/E245.1
Nickel	0.010	0.001	mg/L	1	03/31/20	TH	SW6010D/E200.7
Lead	< 0.002	0.002	mg/L	1	03/31/20	EK	SW6010D/E200.7
Antimony	< 0.005	0.005	mg/L	1	03/31/20	EK	SW6010D/E200.7
Selenium	< 0.010	0.010	mg/L	1	03/31/20	EK	SW6010D/E200.7
Trivalent Chromium	0.005	0.001	mg/L	1	03/31/20		Calculation
Zinc	0.021	0.004	mg/L	1	03/31/20	EK	SW6010D/E200.7
Chloride	< 3.0	3.0	mg/L	1	03/27/20	TB	SM4500CLE-11
Chlorine Residual	< 0.02	0.02	mg/L	1	03/27/20 18:55	O	SM4500Cl-G-00
Chromium, Hexavalent	< 0.01	0.01	mg/L	1	03/27/20 18:33	O	SM3500CRB-11
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	03/31/20	KDB	E350.1
Oil and Grease by EPA 1664A	< 1.4	1.4	mg/L	1	03/30/20	MSF	EPA 1664
Phenolics	< 0.015	0.015	mg/L	1	03/30/20	MSF	E420.4
Total Cyanide	< 0.010	0.010	mg/L	1	03/31/20	EG	SM 4500 CN-11
Total Suspended Solids	22	5.0	mg/L	1	03/30/20	ARG	SM 2540D-11
Mercury Digestion	Completed				03/30/20	S/RA/LS/R	SW7470/245.1
PCB Extraction	Completed				03/27/20	C	E608.3
Semi-Volatile Extraction	Completed				03/31/20	P/AK	E625.1
Total Metals Digestion	Completed				03/30/20	AG	

Project ID: 174198
Client ID: MW-1

Phoenix I.D.: CF57711

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Polychlorinated Biphenyls							
PCB-1016	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1221	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1232	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1242	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1248	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1254	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1260	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1262	ND	0.048	ug/L	1	03/31/20	SC	E608.3
PCB-1268	ND	0.048	ug/L	1	03/31/20	SC	E608.3
QA/QC Surrogates							
% DCBP	66		%	1	03/31/20	SC	30 - 150 %
% DCBP (Confirmation)	69		%	1	03/31/20	SC	30 - 150 %
% TCMX	66		%	1	03/31/20	SC	30 - 150 %
% TCMX (Confirmation)	64		%	1	03/31/20	SC	30 - 150 %
1,2-Dibromoethane (EDB)	ND	0.01	ug/L	1	03/30/20	CG	E504.1
Acrolein, Acrylonitrile, 2 CEVE							
2-Chloroethyl vinyl ether	ND	5.0	ug/L	1	03/27/20	MH	E624.1 As is
Acrolein	ND	5.0	ug/L	1	03/27/20	MH	E624.1 As is
Acrylonitrile	ND	5.0	ug/L	1	03/27/20	MH	E624.1 As is
Volatiles							
1,1,1-Trichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1,2,2-tetrachloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1,2-Trichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1-Dichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichloropropane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,3-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,4-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Benzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromodichloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromoform	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromomethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Carbon tetrachloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloroform	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/27/20	MH	E624.1
Dibromochloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Ethylbenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
m&p-Xylene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	1	03/27/20	MH	E624.1

Project ID: 174198
Client ID: MW-1

Phoenix I.D.: CF57711

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Methylene chloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1
o-Xylene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Tetrachloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Toluene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/27/20	MH	E624.1
Trichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Trichlorofluoromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Vinyl chloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	102		%	1	03/27/20	MH	70 - 130 %
% Bromofluorobenzene	98		%	1	03/27/20	MH	70 - 130 %
% Dibromofluoromethane	99		%	1	03/27/20	MH	70 - 130 %
% Toluene-d8	112		%	1	03/27/20	MH	70 - 130 %

Semivolatiles, PAH's

2-Methylnaphthalene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Acenaphthene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Acenaphthylene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Anthracene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Benz(a)anthracene	ND	0.05	ug/L	1	04/03/20	WB	E625.1 SIM
Benzo(a)pyrene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Benzo(b)fluoranthene	ND	0.05	ug/L	1	04/03/20	WB	E625.1 SIM
Benzo(ghi)perylene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Benzo(k)fluoranthene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Chrysene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Dibenz(a,h)anthracene	ND	0.02	ug/L	1	04/03/20	WB	E625.1 SIM
Fluoranthene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Fluorene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Naphthalene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
Phenanthrene	ND	0.05	ug/L	1	04/03/20	WB	E625.1 SIM
Pyrene	ND	0.10	ug/L	1	04/03/20	WB	E625.1 SIM
QA/QC Surrogates							
% 2-Fluorobiphenyl	68		%	1	04/03/20	WB	30 - 130 %
% Nitrobenzene-d5	62		%	1	04/03/20	WB	15 - 130 %
% Terphenyl-d14	82		%	1	04/03/20	WB	30 - 130 %

Project ID: 174198
Client ID: MW-1

Phoenix I.D.: CF57711

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

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:

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

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.

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
April 06, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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

Analysis Report

April 06, 2020

FOR: Attn: Mr. Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/27/20	11:10
Location Code:	GZA-MA	Received by:	LB	03/27/20	14:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF57711
Phoenix ID: CF57712

Project ID: 174198
Client ID: CT-R1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.002	0.002	mg/L	1	03/31/20	EK	SW6010D/E200.7
Arsenic	< 0.004	0.004	mg/L	1	03/31/20	EK	SW6010D/E200.7
Cadmium	< 0.001	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Chromium	0.011	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Copper	0.017	0.005	mg/L	1	03/31/20	EK	SW6010D/E200.7
Iron	7.14	0.010	mg/L	1	03/31/20	EK	SW6010D/E200.7
Hardness (CaCO3)	38.3	0.1	mg/L	1	04/01/20		E200.7
Mercury	< 0.0002	0.0002	mg/L	1	03/31/20	RS	SW7470/E245.1
Nickel	0.015	0.001	mg/L	1	03/31/20	EK	SW6010D/E200.7
Lead	0.006	0.002	mg/L	1	03/31/20	EK	SW6010D/E200.7
Antimony	< 0.005	0.005	mg/L	1	03/31/20	EK	SW6010D/E200.7
Selenium	< 0.010	0.010	mg/L	1	03/31/20	EK	SW6010D/E200.7
Zinc	0.037	0.004	mg/L	1	03/31/20	EK	SW6010D/E200.7
Mercury Digestion	Completed				03/30/20	S/RA/LS/R	SW7470/245.1
Total Metals Digestion	Completed				03/30/20	AG	

Project ID: 174198
Client ID: CT-R1

Phoenix I.D.: CF57712

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

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

Comments:

The regulatory hold time for Chlorine is immediately. This Chlorine 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.
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Phyllis Shiller, Laboratory Director

April 06, 2020

Reviewed and Released by: Rashmi Makol, Project Manager

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

Analysis Report

April 06, 2020

FOR: Attn: Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		03/27/20	
Location Code:	GZA-MA	Received by:	SW	03/27/20	14:16
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF57711
Phoenix ID: CF57886

Project ID: 174198
Client ID: TB

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1-Trichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1,2,2-tetrachloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1,2-Trichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1-Dichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,1-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,2-Dichloropropane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,3-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
1,4-Dichlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Benzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromodichloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromoform	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Bromomethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Carbon tetrachloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chlorobenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloroethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloroform	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Chloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	03/27/20	MH	E624.1
Dibromochloromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Ethylbenzene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
m&p-Xylene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	1	03/27/20	MH	E624.1
Methylene chloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1

Project ID: 174198
Client ID: TB

Phoenix I.D.: CF57886

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
o-Xylene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Tetrachloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Toluene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	03/27/20	MH	E624.1
Trichloroethene	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Trichlorofluoromethane	ND	0.50	ug/L	1	03/27/20	MH	E624.1
Vinyl chloride	ND	0.50	ug/L	1	03/27/20	MH	E624.1
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	1	03/27/20	MH	70 - 130 %
% Bromofluorobenzene	99		%	1	03/27/20	MH	70 - 130 %
% Dibromofluoromethane	96		%	1	03/27/20	MH	70 - 130 %
% Toluene-d8	98		%	1	03/27/20	MH	70 - 130 %

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.

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
April 06, 2020
Reviewed and Released by: Rashmi Makol, Project Manager

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

April 06, 2020

QA/QC Data

SDG I.D.: GCF57711

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 524404 (mg/L), QC Sample No: CF51083 (CF57711, CF57712)														
Mercury - Water	BRL	0.0002	<0.0005	<0.0005	NC	89.4			71.5			75 - 125	30	m
Comment:														
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%														
QA/QC Batch 524535 (mg/L), QC Sample No: CF58144 (CF57711, CF57712)														
ICP Metals - Aqueous														
Antimony	BRL	0.005	<0.005	<0.005	NC	104	104	0.0	102			80 - 120	20	
Arsenic	BRL	0.004	0.004	<0.004	NC	102	103	1.0	101			80 - 120	20	
Cadmium	BRL	0.001	<0.001	<0.001	NC	104	105	1.0	101			80 - 120	20	
Chromium	BRL	0.001	0.001	0.001	NC	103	104	1.0	101			80 - 120	20	
Copper	BRL	0.005	<0.005	<0.005	NC	103	102	1.0	100			80 - 120	20	
Iron	BRL	0.010	0.062	0.056	10.2	103	103	0.0	102			80 - 120	20	
Lead	BRL	0.002	<0.002	<0.002	NC	99.0	100	1.0	96.2			80 - 120	20	
Nickel	BRL	0.001	<0.001	<0.001	NC	102	102	0.0	98.4			80 - 120	20	
Selenium	BRL	0.010	<0.010	<0.010	NC	97.3	98.0	0.7	95.5			80 - 120	20	
Silver	BRL	0.001	<0.001	<0.001	NC	99.8	99.5	0.3	96.7			80 - 120	20	
Zinc	BRL	0.004	0.009	0.009	NC	101	101	0.0	98.9			80 - 120	20	
Comment:														
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.														

m = This parameter is outside laboratory MS/MSD specified recovery limits.

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QA/QC Report

April 06, 2020

QA/QC Data

SDG I.D.: GCF57711

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 524541 (mg/L), QC Sample No: CF55900 (CF57711)														
Total Cyanide	BRL	0.010	0.257	0.246	4.40	89.3			101			90 - 110	30	I
Comment:														
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.														
QA/QC Batch 524418 (mg/L), QC Sample No: CF57616 (CF57711)														
Oil and Grease by EPA 1664A	BRL	1.4				98.0	97.0	1.0				85 - 115	20	
Comment:														
Additional: MS acceptance range 75-125%.														
QA/QC Batch 524416 (mg/L), QC Sample No: CF57711 (CF57711)														
Total Suspended Solids	BRL	2.5	22	25	NC	97.0						85 - 115		
QA/QC Batch 524328 (mg/L), QC Sample No: CF58097 (CF57711)														
Chromium, Hexavalent	BRL	0.01	<0.01	<0.01	NC	101			107			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 524320 (mg/L), QC Sample No: CF57054 (CF57711)														
Chloride	BRL	3.0	33.2	32.1	3.40	99.2			104			90 - 110	20	
QA/QC Batch 524420 (mg/L), QC Sample No: CF58097 (CF57711)														
Ammonia as Nitrogen	BRL	0.05	<0.05	<0.05	NC	95.1			97.0			90 - 110	20	
QA/QC Batch 524399 (mg/L), QC Sample No: CF57711 (CF57711)														
Phenolics	BRL	0.015	<0.015	<0.015	NC	96.0			103			90 - 110	20	
QA/QC Batch 524330 (mg/L), QC Sample No: CF57615 (CF57711)														
Chlorine Residual	BRL	0.02	<0.01	<0.02	NC	98.4								

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

Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

April 06, 2020

QA/QC Data

SDG I.D.: GCF57711

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 524413 (ug/L), QC Sample No: CF57390 (CF57711)										
EDB and DBCP Analysis - Water										
1,2-Dibromoethane (EDB)	ND	0.01	100	99	1.0	103	101	2.0	70 - 130	25
QA/QC Batch 524342 (ug/L), QC Sample No: CF56925 (CF57711)										
Polychlorinated Biphenyls - Water										
PCB-1016	ND	0.050	81	82	1.2				50 - 140	20
PCB-1221	ND	0.050							15 - 178	20
PCB-1232	ND	0.050							10 - 200	20
PCB-1242	ND	0.050							39 - 150	20
PCB-1248	ND	0.050							38 - 158	20
PCB-1254	ND	0.050							29 - 140	20
PCB-1260	ND	0.050	91	90	1.1				10 - 140	20
PCB-1262	ND	0.050							40 - 140	20
PCB-1268	ND	0.050							40 - 140	20
% DCBP (Surrogate Rec)	67	%	76	75	1.3				30 - 150	20
% DCBP (Surrogate Rec) (Confirm	68	%	78	79	1.3				30 - 150	20
% TCMX (Surrogate Rec)	67	%	76	73	4.0				30 - 150	20
% TCMX (Surrogate Rec) (Confirm	67	%	76	73	4.0				30 - 150	20
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										
QA/QC Batch 524671 (ug/L), QC Sample No: CF58991 (CF57711)										
Semivolatiles (SIM) - Water										
2-Methylnaphthalene	ND	0.50	70	69	1.4				30 - 130	20
Acenaphthene	ND	0.50	96	95	1.0				60 - 132	48
Acenaphthylene	ND	0.50	90	89	1.1				54 - 126	74
Anthracene	ND	0.50	91	91	0.0				43 - 120	66
Benz(a)anthracene	ND	0.50	95	94	1.1				42 - 133	53
Benzo(a)pyrene	ND	0.50	85	85	0.0				32 - 148	72
Benzo(b)fluoranthene	ND	0.50	93	92	1.1				42 - 140	71
Benzo(ghi)perylene	ND	0.50	93	91	2.2				10 - 195	97
Benzo(k)fluoranthene	ND	0.50	120	119	0.8				25 - 146	63
Chrysene	ND	0.50	96	94	2.1				44 - 140	87
Dibenz(a,h)anthracene	ND	0.50	94	93	1.1				10 - 200	126
Fluoranthene	ND	0.50	91	93	2.2				43 - 121	66
Fluorene	ND	0.50	99	97	2.0				70 - 120	38
Indeno(1,2,3-cd)pyrene	ND	0.50	82	82	0.0				10 - 151	99
Naphthalene	ND	0.50	72	71	1.4				36 - 120	65
Phenanthrene	ND	0.50	85	84	1.2				65 - 120	39
Pyrene	ND	0.50	97	100	3.0				70 - 120	49
% 2-Fluorobiphenyl	64	%	80	80	0.0				30 - 130	20
% Nitrobenzene-d5	59	%	79	81	2.5				15 - 130	20
% Terphenyl-d14	67	%	80	83	3.7				30 - 130	20

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Comment:											
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 524671 (ug/L), QC Sample No: CF58991 (CF57711)											
Semivolatiles - Water											
1,2,4-Trichlorobenzene	ND	3.5	81	78	3.8				57 - 130	50	
1,2-Dichlorobenzene	ND	1.0	78	74	5.3				30 - 130	20	
1,2-Diphenylhydrazine	ND	1.6	90	87	3.4				30 - 130	20	
1,3-Dichlorobenzene	ND	1.0	81	76	6.4				46 - 154	20	
1,4-Dichlorobenzene	ND	1.0	78	74	5.3				30 - 130	20	
2,4,5-Trichlorophenol	ND	1.0	96	94	2.1				30 - 130	20	
2,4,6-Trichlorophenol	ND	1.0	96	92	4.3				52 - 129	58	
2,4-Dichlorophenol	ND	1.0	84	81	3.6				53 - 122	50	
2,4-Dimethylphenol	ND	1.0	86	86	0.0				42 - 120	58	
2,4-Dinitrophenol	ND	1.0	88	84	4.7				10 - 173	132	
2,4-Dinitrotoluene	ND	3.5	101	99	2.0				48 - 127	42	
2,6-Dichlorophenol	ND	10	79	77	2.6				30 - 130	20	
2,6-Dinitrotoluene	ND	3.5	100	96	4.1				68 - 137	48	
2-Chloronaphthalene	ND	3.5	85	83	2.4				65 - 120	24	
2-Chlorophenol	ND	1.0	83	78	6.2				36 - 120	61	
2-Methylnaphthalene	ND	3.5	78	76	2.6				30 - 130	20	
2-Methylphenol (o-cresol)	ND	1.0	87	80	8.4				30 - 130	20	
2-Nitroaniline	ND	3.5	188	184	2.2				30 - 130	20	I
2-Nitrophenol	ND	1.0	90	87	3.4				45 - 167	55	
3&4-Methylphenol (m&p-cresol)	ND	1.0	99	93	6.3				30 - 130	20	
3,3'-Dichlorobenzidine	ND	5.0	72	66	8.7				8 - 213	108	
3-Nitroaniline	ND	5.0	113	104	8.3				30 - 130	20	
4,6-Dinitro-2-methylphenol	ND	1.0	98	97	1.0				30 - 130	20	
4-Bromophenyl phenyl ether	ND	3.5	90	91	1.1				65 - 120	43	
4-Chloro-3-methylphenol	ND	1.0	91	90	1.1				41 - 128	73	
4-Chloroaniline	ND	3.5	78	69	12.2				30 - 130	20	
4-Chlorophenyl phenyl ether	ND	1.0	89	86	3.4				38 - 145	61	
4-Nitroaniline	ND	5.0	97	94	3.1				30 - 130	20	
4-Nitrophenol	ND	1.0	112	113	0.9				13 - 129	131	
Anthracene	ND	1.5	90	89	1.1				43 - 120	66	
Benzidine	ND	4.5	39	72	59.5				30 - 130	20	r
Benzoic acid	ND	10	61	43	34.6				30 - 130	20	r
Benzyl Alcohol	ND	5.0	93	90	3.3				30 - 130	20	
Benzyl butyl phthalate	ND	1.5	100	98	2.0				10 - 140	60	
Bis(2-chloroethoxy)methane	ND	3.5	77	76	1.3				49 - 165	54	
Bis(2-chloroethyl)ether	ND	1.0	72	68	5.7				43 - 126	108	
Bis(2-chloroisopropyl)ether	ND	1.0	65	61	6.3				63 - 139	76	I
Bis(2-ethylhexyl)phthalate	ND	1.5	104	100	3.9				29 - 137	82	
Dibenzofuran	ND	3.5	88	84	4.7				30 - 130	20	
Diethyl phthalate	ND	1.5	98	97	1.0				10 - 120	100	
Dimethylphthalate	ND	1.5	95	92	3.2				10 - 120	183	
Di-n-butylphthalate	ND	1.5	97	97	0.0				8 - 120	47	
Di-n-octylphthalate	ND	1.5	105	102	2.9				19 - 132	69	
Fluoranthene	ND	1.5	92	92	0.0				43 - 121	66	
Fluorene	ND	1.5	92	90	2.2				70 - 120	38	
Hexachloroethane	ND	3.5	80	76	5.1				55 - 120	52	
Isophorone	ND	3.5	81	80	1.2				47 - 180	93	

QA/QC Data

SDG I.D.: GCF57711

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Naphthalene	ND	1.5	78	75	3.9				36 - 120	65
N-Nitrosodi-n-propylamine	ND	3.5	83	78	6.2				14 - 198	87
N-Nitrosodiphenylamine	ND	3.5	81	80	1.2				30 - 130	20
Phenol	ND	1.0	78	73	6.6				17 - 120	64
Pyrene	ND	1.5	95	93	2.1				70 - 120	49
% 2,4,6-Tribromophenol	98	%	111	107	3.7				15 - 130	20
% 2-Fluorobiphenyl	65	%	76	76	0.0				30 - 130	20
% 2-Fluorophenol	57	%	67	62	7.8				10 - 130	20
% Nitrobenzene-d5	65	%	76	71	6.8				15 - 130	20
% Phenol-d5	32	%	70	66	5.9				10 - 130	20
% Terphenyl-d14	82	%	88	89	1.1				30 - 130	20
QA/QC Batch 524455 (ug/L), QC Sample No: CF57711 (CF57711, CF57886)										
Volatiles - Water										
1,1,1-Trichloroethane	ND	1.0	98	99	1.0	113	107	5.5	70 - 130	20
1,1,2,2-Tetrachloroethane	ND	0.50	101	105	3.9	115	114	0.9	60 - 140	20
1,1,2-Trichloroethane	ND	1.0	91	103	12.4	117	105	10.8	70 - 130	20
1,1-Dichloroethane	ND	1.0	98	100	2.0	115	109	5.4	70 - 130	20
1,1-Dichloroethene	ND	1.0	103	104	1.0	120	116	3.4	50 - 150	20
1,2-Dichlorobenzene	ND	1.0	98	102	4.0	114	110	3.6	65 - 135	20
1,2-Dichloroethane	ND	1.0	95	104	9.0	119	107	10.6	70 - 130	20
1,2-Dichloropropane	ND	1.0	92	104	12.2	119	105	12.5	35 - 165	20
1,3-Dichlorobenzene	ND	1.0	103	105	1.9	120	114	5.1	70 - 130	20
1,4-Dichlorobenzene	ND	1.0	97	98	1.0	112	107	4.6	65 - 135	20
2 chlorethyl vinyl ether	ND	1.0	109	122	11.3	140	124	12.1	10 - 200	20
Acrolein	ND	5.0	98	99	1.0	113	111	1.8	70 - 130	20
Acrylonitrile	ND	5.0	98	105	6.9	110	110	0.0	70 - 130	20
Benzene	ND	0.70	101	109	7.6	126	112	11.8	65 - 135	20
Bromodichloromethane	ND	0.50	99	109	9.6	123	113	8.5	65 - 135	20
Bromoform	ND	1.0	110	117	6.2	126	122	3.2	70 - 130	20
Bromomethane	ND	1.0	82	83	1.2	95	93	2.1	15 - 185	20
Carbon tetrachloride	ND	1.0	101	102	1.0	120	113	6.0	70 - 130	20
Chlorobenzene	ND	1.0	98	101	3.0	114	110	3.6	65 - 135	20
Chloroethane	ND	1.0	90	96	6.5	118	109	7.9	40 - 160	20
Chloroform	ND	1.0	98	98	0.0	115	108	6.3	70 - 135	20
Chloromethane	ND	1.0	93	94	1.1	108	100	7.7	10 - 200	20
cis-1,2-Dichloroethene	ND	1.0	99	100	1.0	112	110	1.8	70 - 130	20
cis-1,3-Dichloropropene	ND	0.40	96	106	9.9	120	108	10.5	25 - 175	20
Dibromochloromethane	ND	0.50	108	112	3.6	123	119	3.3	70 - 135	20
Ethylbenzene	ND	1.0	105	106	0.9	120	115	4.3	60 - 140	20
m&p-Xylene	ND	1.0	105	107	1.9	122	116	5.0	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	1.0	95	98	3.1	110	108	1.8	70 - 130	30
Methylene chloride	ND	1.0	87	87	0.0	100	95	5.1	60 - 140	20
o-Xylene	ND	1.0	106	108	1.9	124	117	5.8	70 - 130	30
Tetrachloroethene	ND	1.0	94	100	6.2	117	105	10.8	70 - 130	20
Toluene	ND	1.0	99	109	9.6	125	112	11.0	70 - 130	20
trans-1,2-Dichloroethene	ND	1.0	100	101	1.0	117	111	5.3	70 - 130	20
trans-1,3-Dichloropropene	ND	0.40	100	111	10.4	125	112	11.0	50 - 150	20
Trichloroethene	ND	1.0	96	96	0.0	110	106	3.7	65 - 135	20
Trichlorofluoromethane	ND	1.0	94	95	1.1	112	107	4.6	50 - 150	20
Vinyl chloride	ND	1.0	99	100	1.0	116	109	6.2	10 - 195	20
% 1,2-dichlorobenzene-d4	100	%	101	100	1.0	100	101	1.0	70 - 130	30
% Bromofluorobenzene	98	%	101	102	1.0	102	101	1.0	70 - 130	30

QA/QC Data

SDG I.D.: GCF57711

Parameter	Blank	Blk RL		LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
% Dibromofluoromethane	97	%		97	96	1.0	98	95	3.1	70 - 130	30
% Toluene-d8	102	%		97	104	7.0	107	98	8.8	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
April 06, 2020

Monday, April 06, 2020

Criteria: MA: CAM, GW1

State: MA

Sample Criteria Exceedances Report

GCF57711 - GZA-MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CF57711	$624ADD	Acrylonitrile	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	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 exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence 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: 174198 **RTN:**

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

CF57711, CF57712, CF57886

Matrices: ☐ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☑ Other: WATER, W

CAM Protocol (check all that apply below)

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

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)	☑ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ 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?	☑ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements speified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ 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?	☐ Yes ☐ No ☐ Yes ☐ 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)?	☑ Yes ☐ 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)?	☐ Yes ☑ 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 Section: Cyanide Narration .	☐ Yes ☑ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☑ 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: Monday, April 06, 2020

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

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

April 06, 2020

SDG I.D.: GCF57711

SDG Comments

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

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

The client requested volatiles by 624 and semi-volatiles PAHs by 625. The MCP narrative is provided at the request of the client.

504.1

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

Instrument:

CHEM35 03/30/20-1 Chelsey Guerette, Chemist 03/30/20

CF57711 (1X)

The initial calibration (CHEM35/504tcp_0330): 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 524413 (CF57390)

CF57711

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? No.

QC Batch 524541 (Samples: CF57711): -----

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. (Total Cyanide)

Instrument:

LACHAT 03/31/20-1 Eric Geyer, Chemist 03/31/20

CF57711

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 frequencey of one per ten samples.
The continuing calibration blanks (ICB,CCB) had concentrations less than the reporting level.

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MCP Certification Report

April 06, 2020

SDG I.D.: GCF57711

Cyanide Narration

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

QC (Batch Specific):

Batch 524541 (CF55900)

CF57711

All LCS recoveries were within 90 - 110 with the following exceptions: Total Cyanide(89.3%)
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 03/27/20-1 Dustin Harrison, Chemist 03/27/20

CF57711

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 524328 (CF58097)

CF57711

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 03/31/20 07:13 Rick Schweitzer, Chemist 03/31/20

CF57711, CF57712

The method preparation blank, ICB, and CCBs contain all of the acids and reagents as the samples.
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.

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Certification Report

April 06, 2020

SDG I.D.: GCF57711

Mercury Narration

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):

Batch 524404 (CF51083)

CF57711, CF57712

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 03/30/20 11:26 Emily Kolominskaya, Tina Hall, Chemist 03/30/20

CF57711, CF57712

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 524535 (CF58144)

CF57711, CF57712

All LCS recoveries were within 80 - 120 with the following exceptions: None.
All LCSD recoveries were within 80 - 120 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

LACHAT

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

Instrument:

LACHAT 03/27/20-1 Thomas Budz, Chemist 03/27/20

CF57711

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

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MCP Certification Report

April 06, 2020

SDG I.D.: GCF57711

LACHAT

QC (Batch Specific):

Batch 524320 (CF57054)

CF57711

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.

NITROGEN

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

Instrument:

LACHAT 03/31/20-1 Kandi Della Bella, Chemist 03/31/20

CF57711

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 524420 (CF58097)

CF57711

All LCS recoveries were within 85 - 115 with the following exceptions: None.
Additional criteria: LCS acceptance range for waters is 85-115% and for soils is 75-125%. MS acceptance range is 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.

PCB 608 Narration

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

Instrument:

AU-ECD1 03/30/20-1 Saadia Chudary, Chemist 03/30/20

CF57711 (1X)

The initial calibration (WW220AI) RSE for the compound list was less than 15% except for the following compounds: None.
The initial calibration (WW220BI) RSE for the compound list was less than 15% except for the following compounds: None.
The continuing calibration %RSD for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 524342 (CF56925)

CF57711

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

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MCP Certification Report

April 06, 2020

SDG I.D.: GCF57711

PCB 608 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: None.
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.

PHENOLS

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

Instrument:

LACHAT 03/30/20-1

CF57711

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 524399 (CF57711)

CF57711

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 625

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

Instrument:

CHEM28 04/02/20-1 Adam Werner, Chemist 04/02/20

CF57711 (1X)

Initial Calibration Evaluation (CHEM28/28_SPLIT_0327):
100% of target compounds met criteria.
The following compounds had %RSDs >35%: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM28/0402_31-28_SPLIT_0327) (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 minimum response factors: None.

QC (Batch Specific):

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

April 06, 2020

SDG I.D.: GCF57711

SVOA 625

Batch 524671 (CF58991)

CF57711

All LCS recoveries were within 30 - 130 with the following exceptions: 2-Nitroaniline(188%)
All LCSD recoveries were within 30 - 130 with the following exceptions: 2-Nitroaniline(184%), Bis(2-chloroisopropyl)ether(61%)
All LCS/LCSD RPDs were less than 20% with the following exceptions: Benzidine(59.5%), Benzoic acid(34.6%)
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-624

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

Instrument:

CHEM23 03/27/20-1 Michael Hahn, Chemist 03/27/20

CF57711 (1X), CF57886 (1X)

Initial Calibration Evaluation (CHEM23/VOA23_032020):
100% of target compounds met criteria.
The following compounds had %RSDs >35%: 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 (CHEM23/0327_03-VOA23_032020):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
99% of target compounds met criteria.
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 524455 (CF57711) CHEM23 3/27/2020-1

CF57711(1X), CF57886(1X)

All LCS recoveries were within critiera with the following exceptions: None.
All LCSD recoveries were within critiera with the following exceptions: None.
All LCS/LCSD RPDs were within criteria with the following exceptions: None.
A blank MS/MSD was analyzed with this batch.
Additional VOA Criteria: The 624 recovery criteria for the MS is different than the LCS, which is reported above.

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.

Cooler: Yes ☒ No ☐
Coolant: IPK ☑ ICE ☒ No ☐
Temp 9 °C Pg of

CHAIN OF CUSTODY RECORD

PHOENIX
Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Data Delivery/Contact Options:
☐ Fax:
☐ Phone:
☒ Email: Scott.Ollerhead@GZA.com

Customer: GZA GeoEnvironmental
Address: 249 Vanderbilt Ave
Norwood, MA 02062

Project: 174198
Report to: Scott Ollerhead + Alyssa Chadwick
Invoice to:
QUOTE #
Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification
Sampler's Signature: [signature] Date: 3/27

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe OIL=Oil
B=Bulk L=Liquid X = ____________(Other)

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Total Metals Hardness	PAH	GC8 PCB	Cyanide	Oil + Grease	EDB	TSS	TRC, Cl, Tri Cr, Hex Cr	VOCs	Ammonia Phenol	GL Amber 8 oz. w/H2SO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( )oz	GL Soil container ( )oz	40 ml VOA Vial (2) As is (3) HCl	GL Amber 1000ml (4) As is [ ] H2SO4	PL As is [ ] 250ml (3) 500ml [ ] 1000ml	PL H2SO4 (1) 250ml [ ] 500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
57711	MW-1	W	3/27	11:10	X	X	X	X	X	X	X	X	X	X	1				5	3	3/1	1	1	2		
57712	CT-R1	W	3/27	11:45	X																		1	1		
~~57713~~ 57886 (KT)	TB																									

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	3/27	12:00
GH / TK	[signature]	3/27	14:16

Comments, Special Requirements or Regulations:
~~[illegible]~~ - AC
QA/QC with Report
Okay to run total metals out of NaOH per Scott -KD

Turnaround Time:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☒ Standard
☐ Other
* SURCHARGE APPLIES

RI
☐ (Residential) Direct Exposure
☐ (Comm/Industrial) Direct Exposure
☐ GA Leachability
☐ GB Leachability
☐ GA-GW Objectives
☐ GB-GW Objectives

CT
☐ RCP Cert
☐ GW Protection
☐ SW Protection
☐ GA Mobility
☐ GB Mobility
☐ Residential DEC
☐ I/C DEC
☐ Other

MA
☒ MCP Certification
☒ GW-1 ☐ MWRA eSMART
☐ GW-2
☐ GW-3
☐ S-1 GW-1 ☐ S-1 GW-2 ☐ S-1 GW-3
☐ S-2 GW-1 ☐ S-2 GW-2 ☐ S-2 GW-3
☐ S-3 GW-1 ☐ S-3 GW-2 ☐ S-3 GW-3
☐ SW Protection

State where samples were collected: MA

Data Format
☒ Excel
☒ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist
☐ Full Data Package*
☒ Phoenix Std Report
☐ Other

* SURCHARGE APPLIES

Environmental Laboratories, Inc.
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Analysis Report

April 22, 2020

FOR: Attn: Mr. Scott Ollerhead
GZA GeoEnvironmental Inc
249 Vanderbilt Ave
Norwood, MA 02062

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:		04/21/20	9:30
Location Code:	GZA-MA	Received by:	B	04/21/20	15:22
Rush Request:	24 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCF76485
Phoenix ID: CF76485

Project ID: 174198
Client ID: CTR-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.13	0.05	mg/L	1	04/22/20	KDB/ARG	E350.1

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

Comments:

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
April 22, 2020
Official Report Release To Follow

Sample Criteria Exceedances Report

GCF76485 - GZA-MA

Criteria: MA: CAM, GW1

State: MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Cooler: Yes ☑ No ☐
Coolant: IPK ☑ ICE ☐ No ☐
Temp 1.2°C Pg of

PHOENIX
Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Data Delivery/Contact Options:
☐ Fax:
☐ Phone:
☐ Email: Scott.Ollerhead@GZA.com

Customer: GZA GeoEnvironmental
Address: 249 Vanderbilt Ave
Norwood, MA 02062

Project: 174198
Report to: Scott Ollerhead + Alyssa Chadwick
Invoice to:
QUOTE #

Project P.O:

This section MUST be completed with Bottle Quantities.

Sampler's Signature: [signature] Date: 4/21

Client Sample / Information - Identification

Analysis Request

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe **OIL**=Oil
B=Bulk **L**=Liquid **X** = _____(Other)

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Ammonia	GL Amber 8 oz. w/H3PO4	Soil VOA Vials [ ]methanol [ ] H2O	GL Soil container ( )oz	GL Soil container ( )oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ]250ml [ ]500ml [ ]1000ml	PL H2SO4 [ ]250ml [ ]500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
76485	CTR-2	SW	4/21	9:30	X							1					

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	4-21-20	13:50
[signature]	[signature]	4/21	1520

Comments, Special Requirements or Regulations:
QAQC W. Report.

Turnaround Time:
☑ 1 Day* SMO
☐ 2 Days*
☐ 3 Days*
☑ Standard
☐ Other
* SURCHARGE APPLIES

RI
☐ (Residential) Direct Exposure
☐ (Comm/Industrial) Direct Exposure
☐ GA Leachability
☐ GB Leachability
☐ GA-GW Objectives
☐ GB-GW Objectives

CT
☐ RCP Cert
☐ GW Protection
☐ SW Protection
☐ GA Mobility
☐ GB Mobility
☐ Residential DEC
☐ I/C DEC
☐ Other

MA
☒ MCP Certification
☒ GW-1 ☐ MWRA eSMART
☐ GW-2
☐ GW-3
☐ S-1 GW-1 ☐ S-1 GW-2 ☐ S-1 GW-3
☐ S-2 GW-1 ☐ S-2 GW-2 ☐ S-2 GW-3
☐ S-3 GW-1 ☐ S-3 GW-2 ☐ S-3 GW-3
☐ SW Protection

State where samples were collected: _____

Data Format
☒ Excel
☒ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist
☐ Full Data Package*
☒ Phoenix Std Report
☐ Other
* SURCHARGE APPLIES

APPENDIX C

CALCULATION SHEETS FOR EFFLUENT LIMITATIONS

File No.
April 22, 2020

DILUTION FACTOR CALCULATIONS
NOTICE OF INTENT FOR THE REMEDIATION GENERAL PERMIT
North End Pedestrian Underpass Project, Springfield, Massachusetts

$$DF = \frac{Q_d + Q_s}{Q_d}$$

Where,

DF = Dilution Factor

Q_d = Maximum Flow Rate of the Discharge in million gallons per day (MGD)

Q_s = Receiving Water 7Q10 Flow (MGD) where,

7Q10 = Minimum Flow (MGD) for 7 Consecutive Days with a Recurrence Interval of 10 Years.

Q_d = 694.4 gpm = 1.0 MGD

Q_s = 2,398 cfs = 1,549.86 MGD (7Q10 provided by MassDEP in email dated 4/16/2020)

$$\therefore DF = \frac{Q_d + Q_s}{Q_d} = \frac{1.0 + 1{,}549.86}{1.0} = 1{,}550.86$$

C:\Users\william.davis\Desktop\SPringfield RGP\DF Calculations 694.4 gpm.docx

William Davis

From: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>
Sent: Tuesday, April 28, 2020 2:17 PM
To: William Davis; Little, Shauna
Cc: Scott Ollerhead
Subject: Re: Dilution Factor Calculation, Dilution Factor Table Draft and 7Q10 Approval, North End Pedestrian Underpass Project, Springfield, Massachusetts

Hi Bill,
Your dilution factor calculation is correct and go ahead and round up to 1551. Again, I apologize for the delay. I've been dealing with a new computer with major problems.
Cathy

Cathy Vakalopoulos, Massachusetts Department of Environmental Protection
1 Winter St., Boston, MA 02108, 617-348-4026
Please consider the environment before printing this e-mail

From: William Davis <william.davis@gza.com>
Sent: Wednesday, April 22, 2020 1:23 PM
To: Vakalopoulos, Catherine (DEP); Little, Shauna
Cc: Scott Ollerhead
Subject: Dilution Factor Calculation, Dilution Factor Table Draft and 7Q10 Approval, North End Pedestrian Underpass Project, Springfield, Massachusetts

Hello Catherine,

Per the 2017 RGP issued by EPA, the dilution factor, calculated for the receiving water to which the treated effluent from our construction dewatering project discharges, requires state review and formal approval prior to submission of the NOI to EPA.

The 7Q10 was determined using the 7Q10 provided by Xiaodan Ruan, who calculated the 7Q10 for the location of the proposed discharge on the CT River using the USGS SWToolbox. The 7Q10 of 2,398 cfs was provided to me in an email dated 4/16/2020.

The proposed discharge maximum flow rate is 694.4 GPM or 1 MGD. The average flowrate is expected to be less than this.

Attachments:
1. Dilution Factor Calculation
2. Pdf of the draft effluent limitations table (fillable table from RGP website)

Please let me know if you need any further information to process this request.

Thank you,

Enter number values in green boxes below

Enter values in the units specified

↓

1549.86	Q_R = Enter upstream flow in **MGD**
1	Q_P = Enter discharge flow in **MGD**
0	Downstream 7Q10

Enter a dilution factor, if other than zero

↓

1551

Enter values in the units specified

↓

45.3	C_d = Enter influent hardness in **mg/L** $CaCO_3$
38.3	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

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

↓

7.61	pH in **Standard Units**
3.3	Temperature in **°C**
0	Ammonia in **mg/L**
0	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
11	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
17	Copper in **µg/L**
7140	Iron in **µg/L**
6	Lead in **µg/L**
0	Mercury in **µg/L**
15	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
37	Zinc in **µg/L**

Notes:

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

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

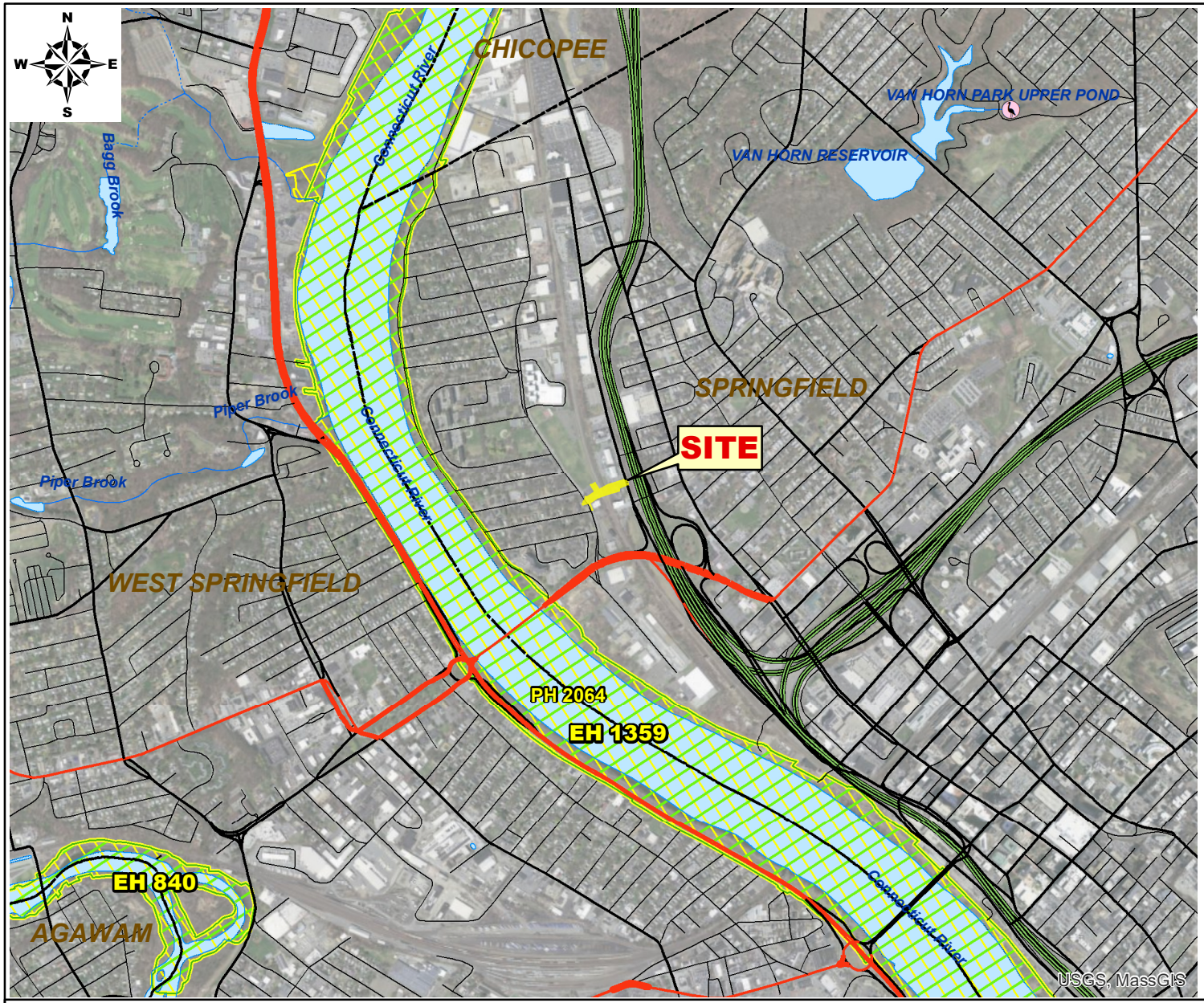
pH, temperature, and ammonia required for all discharges
Hardness required for freshwater
Salinity required for saltwater (estuarine and marine)
Metals required for all discharges if present and if dilution factor is > 1
Enter 0 if non-detect or testing not required

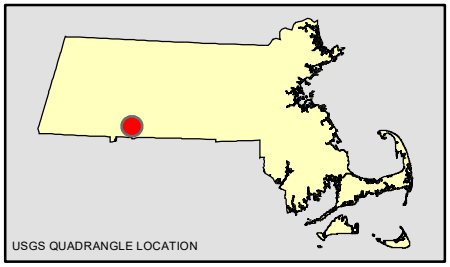
Dilution Factor	1550.9			
	TBEL applies if bolded		WQBEL applies if bolded	
A. Inorganics				
Ammonia	**Report**	mg/L	---	
Chloride	**Report**	µg/L	---	
Total Residual Chlorine	**0.2**	mg/L	17059	µg/L
Total Suspended Solids	**30**	mg/L	---	
Antimony	**206**	µg/L	992550	µg/L
Arsenic	**104**	µg/L	15509	µg/L
Cadmium	**10.2**	µg/L	206.1422	µg/L
Chromium III	**323**	µg/L	43857.4	µg/L
Chromium VI	**323**	µg/L	17733.3	µg/L
Copper	**242**	µg/L	4.1	µg/L
Iron	5000	µg/L	**1000**	µg/L
Lead	**160**	µg/L	0.94	µg/L
Mercury	**0.739**	µg/L	1404.90	µg/L
Nickel	**1450**	µg/L	12674.5	µg/L
Selenium	**235.8**	µg/L	7754.3	µg/L
Silver	**35.1**	µg/L	1126.6	µg/L
Zinc	**420**	µg/L	25064.6	µg/L
Cyanide	**178**	mg/L	8064.5	µg/L
B. Non-Halogenated VOCs				
Total BTEX	**100**	µg/L	---	
Benzene	**5.0**	µg/L	---	
1,4 Dioxane	**200**	µg/L	---	
Acetone	**7970**	µg/L	---	
Phenol	**1,080**	µg/L	465258	µg/L
C. Halogenated VOCs				
Carbon Tetrachloride	**4.4**	µg/L	2481.4	µg/L
1,2 Dichlorobenzene	**600**	µg/L	---	
1,3 Dichlorobenzene	**320**	µg/L	---	
1,4 Dichlorobenzene	**5.0**	µg/L	---	
Total dichlorobenzene	**---**	µg/L	---	
1,1 Dichloroethane	**70**	µg/L	---	
1,2 Dichloroethane	**5.0**	µg/L	---	
1,1 Dichloroethylene	**3.2**	µg/L	---	
Ethylene Dibromide	**0.05**	µg/L	---	
Methylene Chloride	**4.6**	µg/L	---	
1,1,1 Trichloroethane	**200**	µg/L	---	
1,1,2 Trichloroethane	**5.0**	µg/L	---	
Trichloroethylene	**5.0**	µg/L	---	
Tetrachloroethylene	**5.0**	µg/L	5117.8	µg/L
cis-1,2 Dichloroethylene	**70**	µg/L	---	

Vinyl Chloride	**2.0**	µg/L	---	
D. Non-Halogenated SVOCs				
Total Phthalates	190	µg/L	---	µg/L
Diethylhexyl phthalate	**101**	µg/L	3411.9	µg/L
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---	
Benzo(a)anthracene	**1.0**	µg/L	5.8933	µg/L
Benzo(a)pyrene	**1.0**	µg/L	5.8933	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	5.8933	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	5.8933	µg/L
Chrysene	**1.0**	µg/L	5.8933	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	5.8933	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	5.8933	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---	
Naphthalene	**20**	µg/L	---	
E. Halogenated SVOCs				
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---	
Pentachlorophenol	**1.0**	µg/L	---	
F. Fuels Parameters				
Total Petroleum Hydrocarbons	**5.0**	mg/L	---	
Ethanol	**Report**	mg/L	---	
Methyl-tert-Butyl Ether	**70**	µg/L	31017	µg/L
tert-Butyl Alcohol	**120**	µg/L	---	
tert-Amyl Methyl Ether	**90**	µg/L	---	

APPENDIX D

ACEC AND FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS EVALUATION





LEGEND

- NHESP 2008 Estimated Habitats of Rare Wildlife: Use with MA Wetlands Protection Act (310 CMR 10.12)
- NHESP 2008 Priority Habitats of State-Listed Rare Species: Use with MA Wetlands Protection Act (310 CMR 10.12)
- NHESP Vernal Pools: Certified, Potential

Hydrography

- Lake, Pond, Wide River, Impoundment
- Reservoir (with PWSID)
- Tidal Flats, Shoals

Rivers and Streams

- Stream
- Intermittent Stream
- Shoreline

MassDOT (formerly MHD-OTP) Roads

- Limited Access Highway
- Multi-Lane Highway, Unlimited Access
- Other Numbered Highway
- Major Road - Connector
- Minor Street or Road

SOURCE:

Priority and Estimated Habitats have been delineated by the Natural Heritage and Endangered Species Program of the Division of Fisheries and Wildlife. These layers are used for screening Projects and Activities that may impact state-listed rare species and their habitats. Priority and Estimated Habitat maps have been delineated based on the Best Scientific Evidence Available and according to the regulations of the Massachusetts Endangered Species Act (321 CMR 10.12) using documented records of rare species and various spatial layers.

The NHESP data was supplied by MassGIS in September 2017 and December 2018, the MassDOT Roads data was supplied by MassGIS in November 2018 and the Hydrography & Rivers and Streams data was supplied by MassGIS in July 2017.

The Color Ortho Imagery was acquired for the U. S. Geological Survey in April 2008 & April 2009 by Fugro Earthdata, Inc. Ground control points were collected by Dewberry and Davis LLC. and by the Mass Highway Survey Section and was distributed February 20, 2009 & May 28, 2010 (last updated April 20, 2017).

MASS GIS · Natural Heritage & Endangered Species Program · MassWildlife Massachusetts Division of Fisheries & Wildlife · Wayne F. MacCallum, Director · Natural Heritage & Endangered Species

0 1,000 2,000 4,000

SCALE IN FEET

PRIORITY HABITAT AND ESTIMATED HABITAT
NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM
NORTH END PEDESTRIAN PATH UNDER THE CONNECTICUT RIVER LINE
(BRIDGE No. S-24-044)
SPRINGFIELD, MASSACHUSETTS

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

JOB NO. 02.0174198.00

PROJ. MGR.: SMO
DESIGNED BY.: JJS
REVIEWED BY.: BWR
OPERATOR.: EMD
DATE: 05-14-2019

FIGURE NO.

United States Department of the Interior

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

In Reply Refer To: April 23, 2020
Consultation Code: 05E1NE00-2020-SLI-2299
Event Code: 05E1NE00-2020-E-06774
Project Name: 4 Birdie Avenue

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2020-SLI-2299

Event Code: 05E1NE00-2020-E-06774

Project Name: 4 Birdie Avenue

Project Type: DEVELOPMENT

Project Description: Pedestrian underpass project

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.11383352946156N72.60796521971287W

Counties: Hampden, MA

Endangered Species Act Species

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

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

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

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

---

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

Critical habitats

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

APPENDIX E

MACRIS SEARCH RESULTS

Massachusetts Cultural Resource Information System
MACRIS

Results

Get Results in Report Format
PDF Spreadsheet

Below are the results of your search, using the following search criteria:
Town(s): Springfield
Street No: 4
Street Name: Birnie Ave
Resource Type(s): Area, Building, Burial Ground, Object, Structure

For more information about this page and how to use it, click here

No Results Found.

New Search | New Search – Same Town(s) | Previous