Groundwater & Environmental Services, Inc.
1 Park Drive, Suite 8
Westford, MA 01886
T. 800.221.6119

October 29, 2019

Via Electronic Mail: NPDES.Generalpermits@epa.gov; Little.Shauna@epa.gov

Ms. Shauna Little
U.S. Environmental Protection Agency
Remediation General Permit NOI Processing
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, Massachusetts 02109-3912

Re: EPA Remediation General Permit Notice of Intent
Sunoco Station
266 Massachusetts Avenue
Cambridge, Massachusetts 01420
MADEP RTN 3-1559

Ms. Little:

Groundwater & Environmental Services, Inc. (GES), on behalf of Sunoco, LLC (Sunoco), has prepared this EPA Remediation General Permit (RGP) Notice of Intent (NOI) submittal for the above-referenced location (the Site). The RGP NOI submittal is provided as **Attachment A**. The Site property consists of an approximate 0.139 acre (6,079 square feet) lot that includes a single story convenience store building located on the west side of the Site constructed in 1995 as a concrete slab on grade foundation. One (1) 12,000-gallon capacity gasoline underground storage tank (UST) and one (1) 6,000-gallon gasoline UST, are located on the north side of the subject property. Three (3) dispensers located across two (2) dispenser islands are located at the center and east side of the Site. The subject property located in a commercial area is bordered to the northeast/east by Massachusetts Avenue and to the south by Landsdowne Street. A residential apartment building abuts the Site property to the northwest. Novartis Institutes for BioMedical Research is located to the immediate southeast across Landsdowne Street.

Soil and groundwater beneath the Site have been impacted by a historic release of petroleum. The Site property has historically been occupied by an automotive repair facility and/or petroleum service station since 1924. In 1988, the Massachusetts Department of Environmental Protection (MADEP) identified the Site as a Location to be Investigated (LTBI) and assigned LTBI File # 3-1559. In April 1988, MADEP issued a Notice of Responsibility (NOR) to Best Petroleum Company, Inc. (Best). According to a Class A-3 Response Action Outcome (RAO) Statement and Activity and Use Limitation (AUL) filed with MADEP in September 2000 for RTN 3-1559, a total of 1,376 tons of petroleum impacted soil was excavated during UST removal and

replacement activities between October 1994 and September 1995 when the current USTs were installed.

Excavation of petroleum impacted soil is proposed during upcoming UST removal and replacement activities at the Site. It is anticipated that proposed excavation and temporary dewatering and groundwater treatment activities will be initiated at the Site in November 2019 upon receipt of Authorization of the RGP. Proposed remediation activities are being performed at the Site under a Release Abatement Measure (RAM) Plan, in accordance with the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000.

This Notice of Intent is being submitted in order to obtain a permit for the short term (temporary) discharge of treated groundwater to surface water. Based on available information groundwater has been measured at the Site at depths ranging from approximately 9 feet to 11 feet below grade. Therefore, it is anticipated that dewatering activities and corresponding treatment of such using a temporary groundwater treatment system will be necessary to depress the groundwater table at the Site during subsurface excavation activities. A Site Location Map is provided as **Figure 1** and a Site Layout is provided as **Figure 2**. The attached Site Location Map (**Figure 1**) depicts the subject property with respect to surrounding topography and the Site Layout (**Figure 2**) depicts pertinent Site features. The attached MADEP Bureau of Waste Site Cleanup (BWSC) Phase 1 Site Assessment Map provided as **Figure 3** depicts surface water features and sensitive receptors located within an approximate 500 foot radius and half-mile radius of the Site.

SITE CONSTRUCTION DEWATERING RGP HISTORY

An RGP NOI application was submitted to the USEPA for the same UST removal/upgrade project by Corporate Environmental Advisors (CEA) on behalf of Sunoco on July 11, 2018. The RGP was subsequently approved via Authorization #MAG910779 by the USEPA on August 8, 2018. Due to permitting and approval considerations, the project was not executed as planned by Sunoco in the fourth quarter of 2018.

Sunoco then changed consultants from CEA to GES in early 2019. The USEPA notified CEA via email that the RGP cannot be transferred to a different operator; therefore, CEA submitted a Notice of termination for the RGP Authorization #MAG910779 on February 26, 2019. The USEPA subsequently terminated the RGP Authorization #MAG910779 on February 27, 2019.

As described above, Sunoco is intending to move forward with the UST removal and upgrade activities at the Site in 2019. The petroleum infrastructure at the Site (tanks and piping) has been drained and has remained inactive since September 21, 2017. Since September 2017, no petroleum has been dispensed or sold at the property but the convenience store on-Site has remained operational. Therefore, groundwater samples collected from the Site and the surface water on June 20, 2018 associated with the initial RGP NOI application from CEA are still representative of Site groundwater conditions which would be encountered during the dewatering process. No source of impacts to groundwater are currently present at the Site or were historically present at the Site since the June 20, 2018 groundwater sampling event that would have caused a change in observed groundwater conditions. Therefore, as discussed with

and approved by Ms. Shauna Little of the USEPA via telephone on October 28, 2019, GES is submitting this RGP NOI with the same analytical data collected on June 20, 2018. No other changes from the original application regarding discharge catch basin, outfall location, or dewatering treatment equipment have been made from the initial application dated July 11, 2018.

GROUNDWATER TREATMENT SYSTEM DESIGN

The proposed groundwater treatment system to be located on-Site shall consist of an electric submersible pump which will pump groundwater from a temporary dewatering sump or well set within the excavation area to a 21,000-gallon fractation (frac) tank for settling and temporary storage. Recovered groundwater shall be pumped from the frac tank using a submersible pump through bag filters to remove particulates and then through two (2) 2,000-pound capacity liquid phase granular activated carbon adsorption (LGAC) vessels plumbed in series. The treated groundwater will pass through a flow meter and flow totalizer prior to being discharged to a storm drain catch basin located to the immediate northeast along Massachusetts Avenue or a storm drain catch basin located to the immediate southeast along Landsdowne Street.

Information provided by the City of Cambridge Department of Public Works (DPW) indicates that both of these storm drain catch basins are connected to the underground stormwater drainage system beneath Massachusetts Avenue and Memorial Drive roadways and discharges to the Charles River freshwater surface water, located approximately a half-mile southeast of the Site.

A process flow diagram of the proposed groundwater treatment system is provided as **Figure 4**. The proposed treated water discharge location to catch basins adjacent to the Site is shown on **Figure 2** and on **Figure 5**.

The average flow rate of the treated water discharge from the system to the storm drain system is anticipated to be between 50 and 100 gallons per minute (gpm). The pumping capacity of the groundwater treatment system is 100 gpm based upon the capacity of the submersible pumps. The groundwater treatment system shall be inspected, monitored, and sampled by or under the direction of a Grade II Wastewater Treatment Plant Operator as required in accordance with the RGP. Groundwater samples shall be collected from the influent and effluent (treated water) prior to discharge for analysis by a Massachusetts-certified laboratory for contaminants of concern and any additional monitoring parameters required by the RGP. In addition, groundwater samples shall also be collected from the midpoint (between LGAC units) for analysis by a Massachusetts-certified laboratory to further monitor the groundwater treatment system for potential break through of the liquid phase carbon.

GROUNDWATER AND SURFACE WATER PRE-CHARACTERIZATION ANALYSIS

A composite groundwater sample was collected on June 20, 2018 from on-Site monitoring wells MW-1 and MW-2 (which were installed on June 1, 2018) for RGP parameters. The June 2018

samples were submitted to Eurofins Spectrum Analytical (Spectrum) under chain-of-custody protocol and analyzed for select RGP parameters including ammonia, chloride, total suspended solids (TSS), total residual chlorine (TRC), hardness, total metals, cyanide, volatile organic compounds (VOCs), semi-VOCs (SVOCs)/ polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and total petroleum hydrocarbons (TPH) via the corresponding EPA methodologies. Refer to the laboratory analytical report included in **Attachment B** for details of the RGP parameters, EPA methodologies and groundwater analytical results. The temperature of the untreated groundwater (sample GW-RGP) was field measured at 17 degrees Celsius, and pH was field measured at 6.8 standard units (SU). In addition, a surface water sample identified as SW-1 was collected from the receiving water in the Charles River at the storm drain outfall. The surface water sample SW-1 was submitted to Spectrum under chain-of-custody for select RGP parameters including total metals, ammonia, and hardness. The temperature of the surface water was field measured at 24 degrees Celsius, and pH was field measured at 6.9 SU.

The June 20, 2018 groundwater gauging data is summarized on **Table 1** attached. The groundwater analytical results for untreated/ unfiltered groundwater samples collected from monitoring wells MW-1 and MW-2 on June 20, 2018 for RGP parameters are summarized in the enclosed RGP NOI data summary section (**Attachment A**). The June 2018 laboratory analytical results for the untreated groundwater sample (GW-RGP) are compared to the corresponding RGP effluent limitations summarized in the enclosed NOI data summary.

The RGP effluent limitations were obtained from the RGP Table 2 Chemical-Specific Effluent Limitations for Category I – Petroleum Related Site Remediation, found at (https://www.epa.gov/npdes-permits/remediation-general-permit-rgp-massachusetts-new-hampshire). The surface water sample SW-1 analytical results are presented in the laboratory analytical report (**Attachment B**).

Referring to the NOI data summary included in **Attachment A**, the analytical results for the untreated/ unfiltered groundwater sample (GW-RGP) detected TSS, arsenic, copper, hexavalent chromium, total iron, lead, nickel, and total benzene, toluene, ethylbenzene and xylenes (BTEX) concentrations above the corresponding EPA RGP technology-based effluent limitation (TBEL) and/or water quality-based effluent limitation (WQBEL) available for this report. These exceedances of RGP effluent limitations in the untreated groundwater sample (GW-RGP) are most likely attributable to silt in the unfiltered groundwater sample and not representative of actual groundwater (soluble) concentrations. However, it is anticipated that the proposed groundwater treatment system will reduce concentrations of TSS, benzene, total BTEX, total metals (arsenic, copper, lead, nickel and iron), and hexavalent chromium below available RGP effluent limitations in treated groundwater prior to discharge. Based on available information, TSS, benzene, total BTEX, total metals (arsenic, copper, lead, nickel and iron), and/or hexavalent chromium should be subject to monitoring requirements.

RECEIVING WATERS INFORMATION

The receiving water for the treated groundwater discharge is the Charles River freshwater surface water, located approximately one-half mile southeast of the Site. CEA consulted the United States Geological Survey (USGS) StreamStats program (https://streamstats.usgs.gov/ss/) and USGS and MADEP personnel to determine the 7Q10 flow rate at the discharge location. USGS provided the enclosed StreamStats Report for the proposed discharge point (located at 42.35487N, -71.09109W) at the drainage system outfall in the Charles River located to the southeast of the Site in Cambridge, MA. Data obtained from the StreamStats Flow Statistics Report indicates that the calculated 7Q10 flow rate for this area basin is 29.2 cubic feet per second (cfs). A copy of the USGS StreamStats Report is provided in **Attachment C**. The approximate location of the discharge outfall into the Charles River is shown on **Figures 6** and **7**.

RECEIVING WATER CLASSIFICATION

According to 314 CMR 4.06, the Charles River surface water where the proposed drainage system outfall is located is designated as Class B surface water. The Charles River is not an Outstanding Resource Water according information provided by the MADEP.

THREATENED OR ENDANGERED SPECIES OR CRITICAL HABITAT

According to the Massachusetts Geographic Information Systems (MassGIS) and online MassDEP Phase 1 Site Assessment Map (http://maps.massgis.state.ma.us/images/dep/mcp/mcp.htm) and Natural Heritage Endangered Species Program (NHESP) online maps, no Priority Habitat of Rare Species or Estimated Habitats of Rare Wildlife are located within the work area or at the proposed groundwater discharge location. Also, the MassGIS map does not depict any Areas of Critical Environmental Concern on the Site or within one-half mile of the Site. Copies of the MADEP Phase 1 Site Assessment Map (**Figure 3**) is attached and the NHESP maps are provided as **Attachment D**.

As part of the Endangered Species Act eligibility determination CEA contacted the United States Department of the Interior, Fish and Wildlife Services (FWS) and requested a list of threatened and endangered species that may occur in the proposed project location and/or that may be affected by the proposed project. The FWS provided the requested list which indicates that threatened or endangered species were not identified. Therefore, the proposed project discharge meets FWS Criterion A. A copy of the FWS letter is included in **Attachment E**.

REVIEW OF NATIONAL REGISTER OF HISTORIC PLACES

A listing of all Historic Places within the City of Cambridge was obtained from the Massachusetts Cultural Resources Information System (MACRIS) online database (http://mhc-macris.net/) on October 29, 2019. A copy of the MACRIS historic places report is provided as **Attachment F**. The database indicates that numerous historic places are located in the City of

Cambridge. Referring to **Attachment F**, the 250 Massachusetts Avenue property located across Landsdowne Street to the southeast of the Site is a historic property. The 250 Massachusetts Avenue historic property appears to be the closest historic property to the Site. However, the project does not involve the demolition or rehabilitation of any of the historic places identified in the database. Also, historic properties are not affected by the discharge or identified in the path of the discharges regulated by this permit, and are not identified where installation or construction of treatment systems or best management practices to control such discharges are planned.

Should you have any questions regarding this application, please contact Bill Brochu at 800-221-6119, extension 3255.

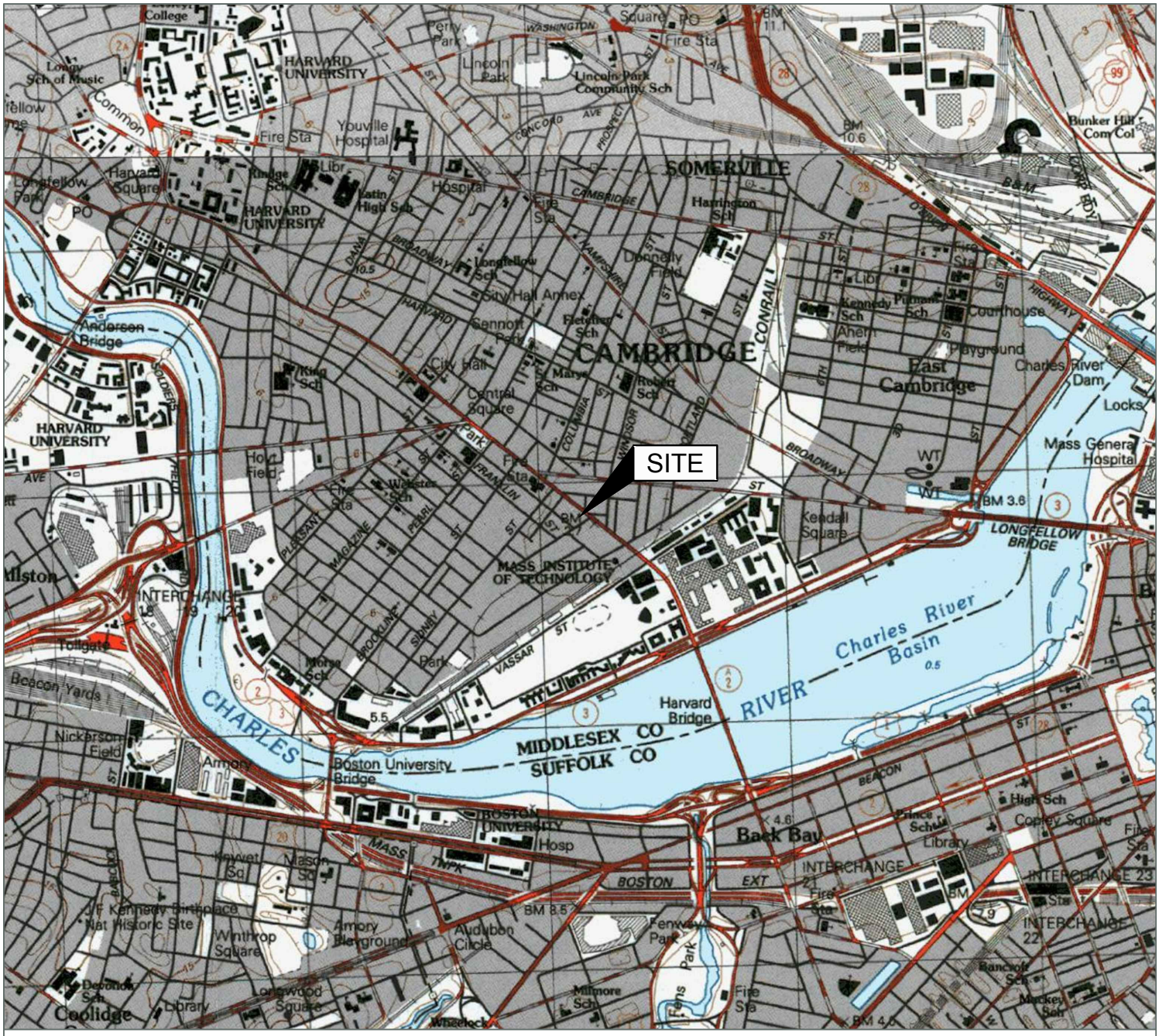
Sincerely,

Groundwater & Environmental Services, Inc.

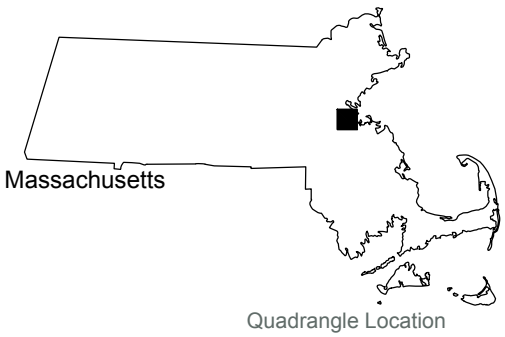
William J. Brochu, PG
Principal Project Manager/Geologist

Genevieve F. Bock, P.E. (New York)
NE Regional Engineering Manager

Figures



Source:
USGS 7.5 Minute Series
Topographic Quadrangle, 1987
Boston South, Massachusetts
Contour Interval = 3 Meters



Quadrangle Location

Site Location Map

Sunoco Station #0407-8069
266 Massachusetts Avenue
Cambridge, Massachusetts

Drawn
W.G.S.
Designed
L.L.E.
Approved
B.J.H.

Date
5/7/19
Figure
1

N

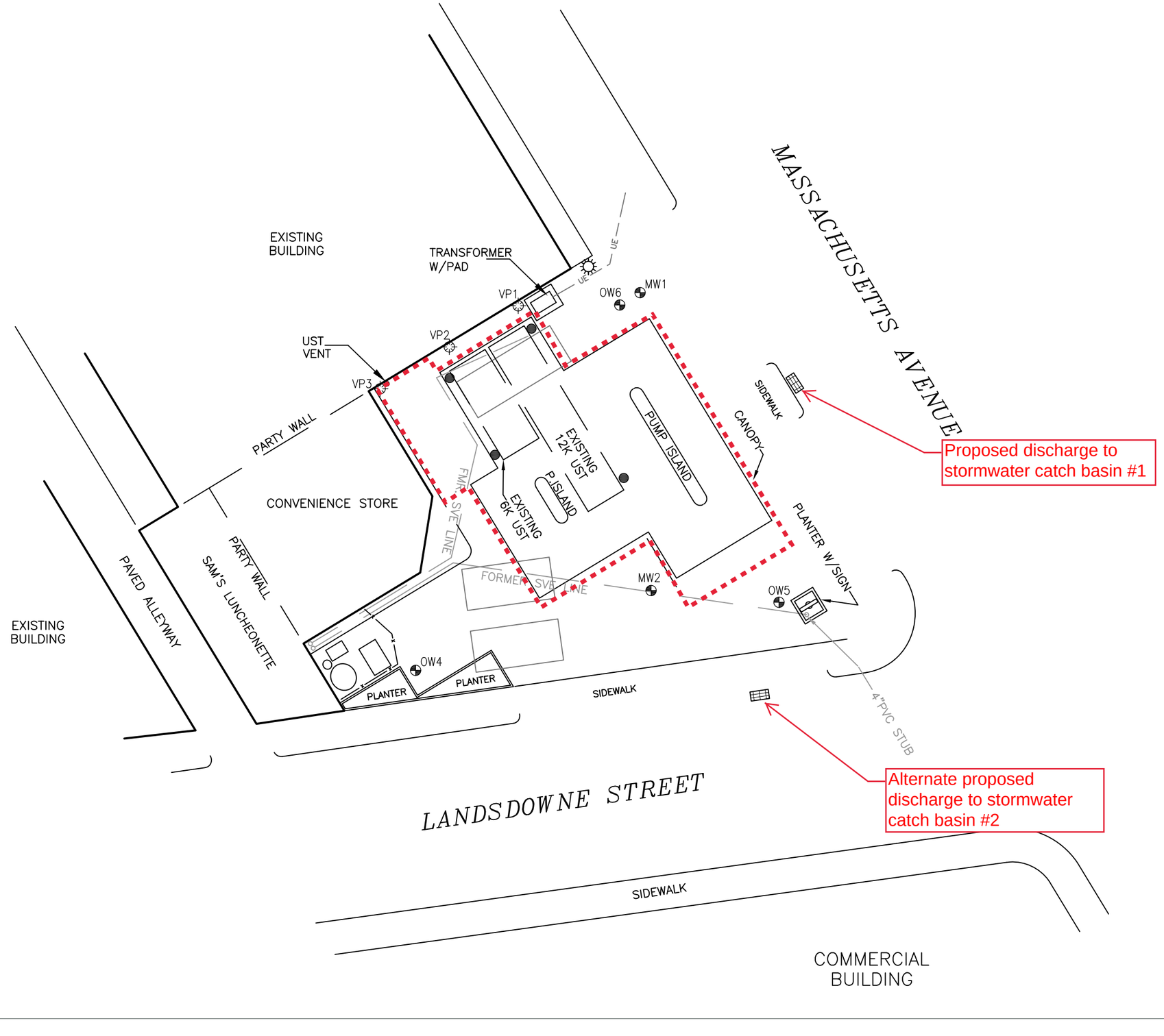
Scale In Feet
0 2000

GES
Groundwater & Environmental Services, Inc.

M:\Graphics\1600-Westford\Sunoco\0407-8069 Cambridge\0407-8069 Cambridge SLM.dwg, SLM, wshea

LEGEND

- LIGHT POLE
- CATCH BASIN
- MONITORING WELL
- TANK FIELD WELL
- SOIL VAPOR EXTRACTION WELL
- PROPOSED LIMITS OF DISTURBANCE DURING CONSTRUCTION ACTIVITIES



Site Map	
Sunoco Station #0407-8069 266 Massachusetts Avenue Cambridge, Massachusetts	
Drawn W.G.S. Designed L.L.E. Approved B.J.H.	Date 5/7/19 Figure 2

Scale In Feet
0 20

Groundwater & Environmental Services, Inc.

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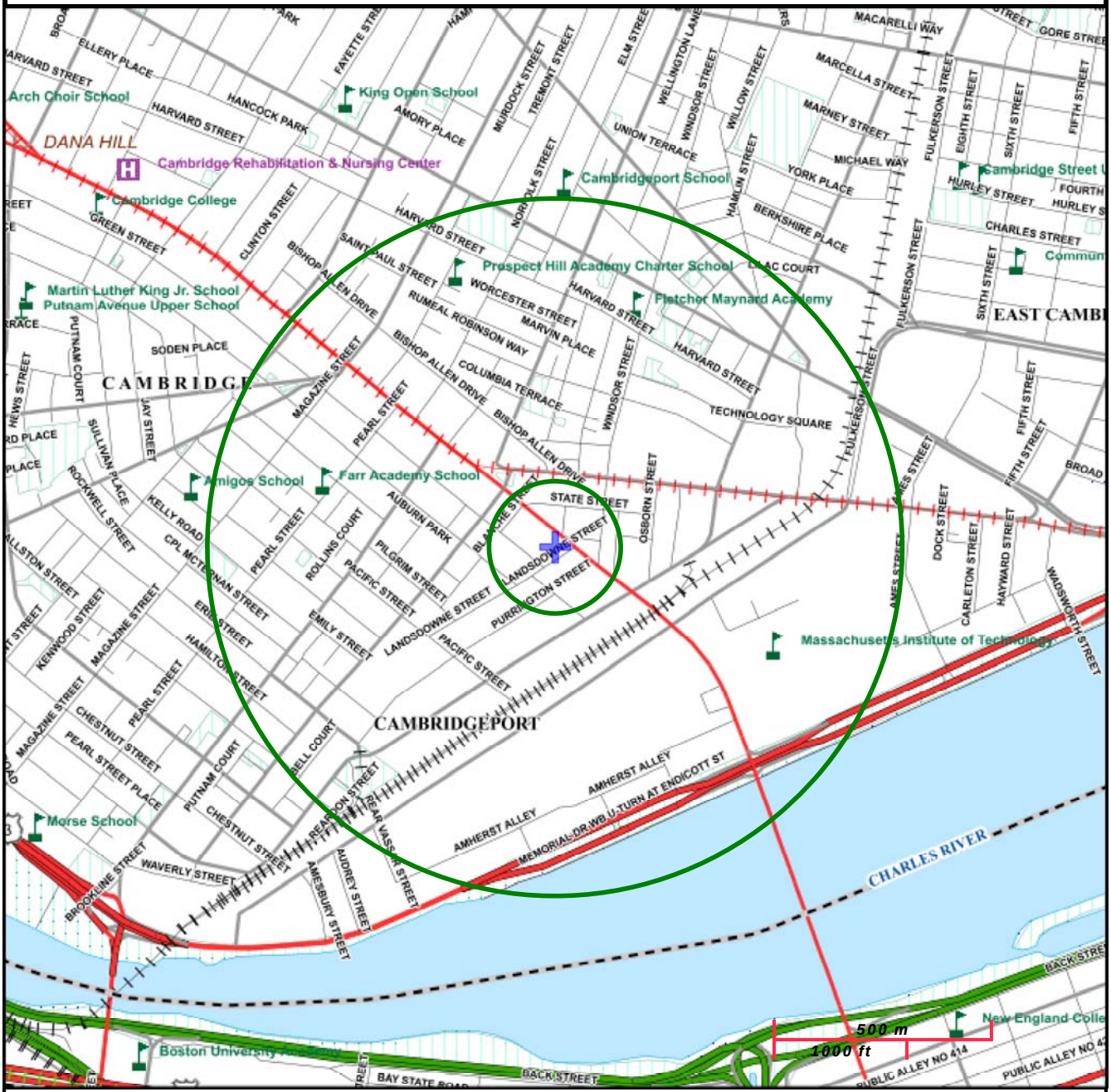
MassDEP - Bureau of Waste Site Cleanup

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

Site Information:
SUNOCO FACILITY / DUNS # 04078069
266 MASSACHUSETTS AVENUE CAMBRIDGE, MA
3-000001559
NAD83 UTM Meters:
4692075mN , 327220mE (Zone: 19)
May 7, 2019

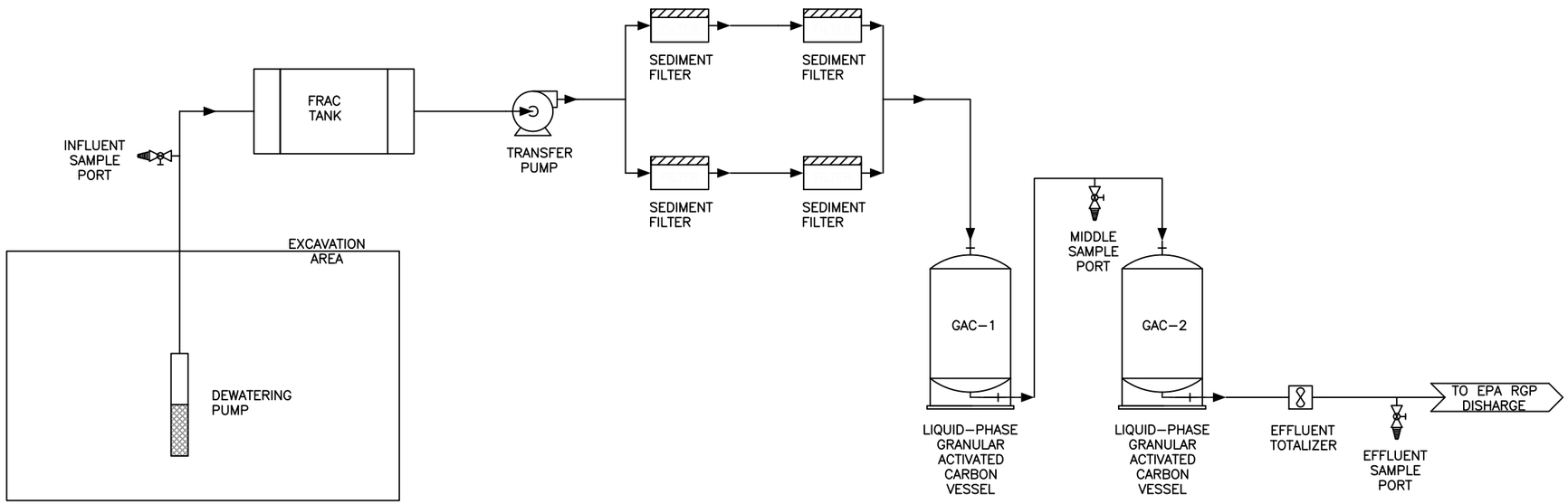
The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: http://www.mass.gov/mgis/.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



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

Figure 3



Process Flow Diagram

Sunoco Station #0407-8069
266 Massachusetts Avenue
Cambridge, Massachusetts

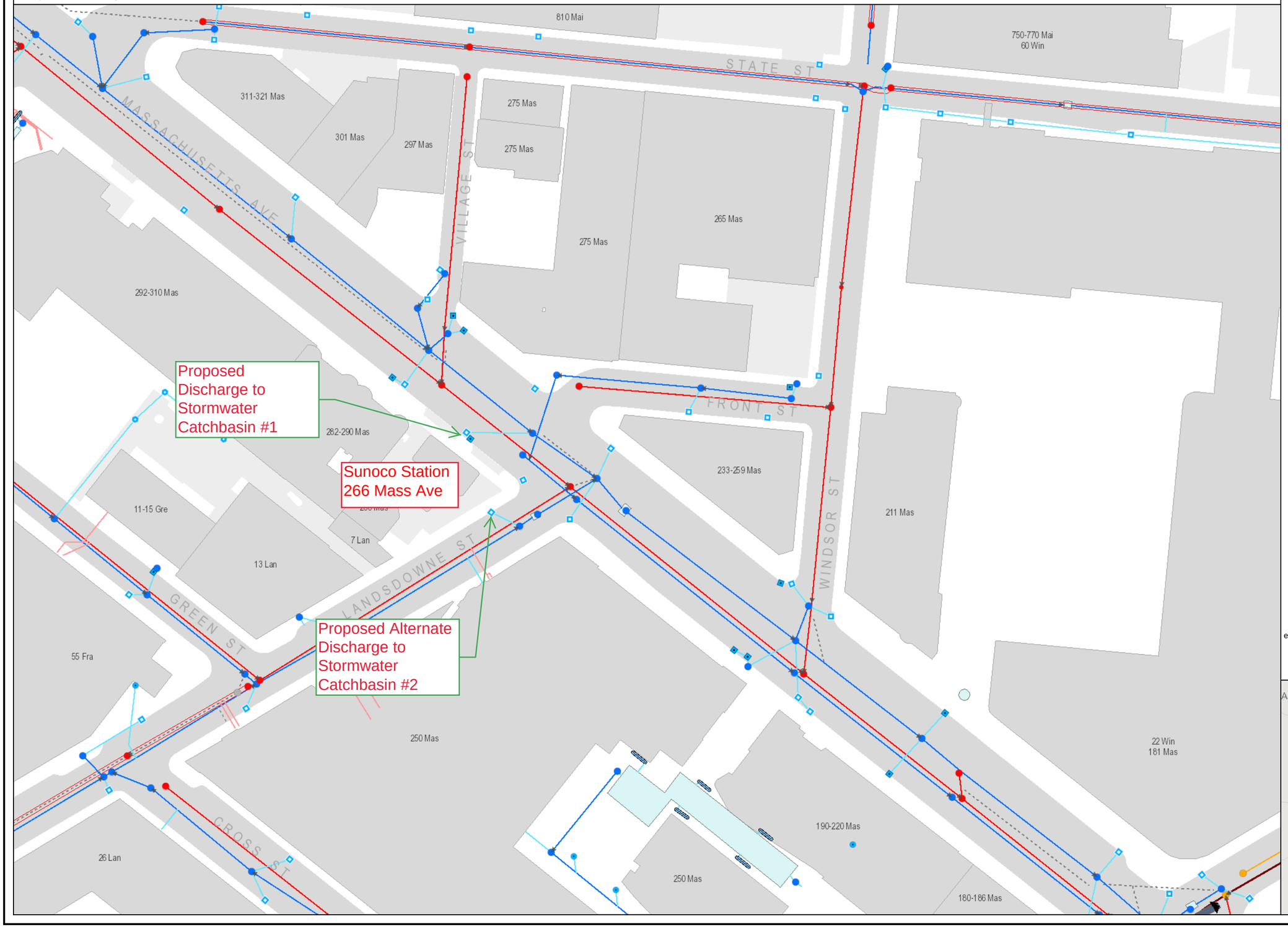
Drawn W.G.S.
Date 10/29/19
Designed
Figure 4
Approved

Not to Scale

Groundwater & Environmental Services, Inc.

City of Cambridge

October 28, 2019



LEGEND

Outfalls
- Stormwater
- Combined Sewer Overflo
- Abandoned

Pumping Structures
- Pump Station
- Lift Station

Manholes
- Stormwater
- Sewage
- Combined Sewage
- Abandoned

Lampholes
- LampHole, Sewage
- LampHole, Storm Runoff

Catchbasins
- Standard Sump
- Drop Inlet
- Area Drain
- Drywell
- Oil/Water Separator
- Abandoned

Trench Drains

Service Laterals
- Combined Wastewater, In
- Stormwater
- Sewage
- Abandoned

Force Mains
- Combined Wastewater
- Sewage
- Storm Runoff

MWRA Mains
- Abandoned
- In Service

Underground Structures
- Stormwater
- Sewage
- Combined Sewage

Zoom Three Paved Surfaces
- Paved Roads
- Other Paved Surface
- Bridges
- Public Footpath

City of Cambridge
Massachusetts

1" = 69 ft

All data is provided for graphic representation only. The City of Cambridge expressly disclaims all warranties of any type, expressed or implied, including, but not limited to, any warranty as to the accuracy of the data, merchantability, or fitness for a particular purpose.

www.cambridgema.gov/gis

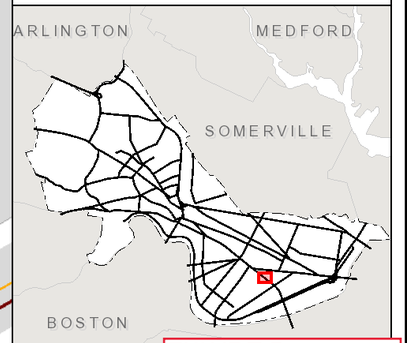


FIGURE 5

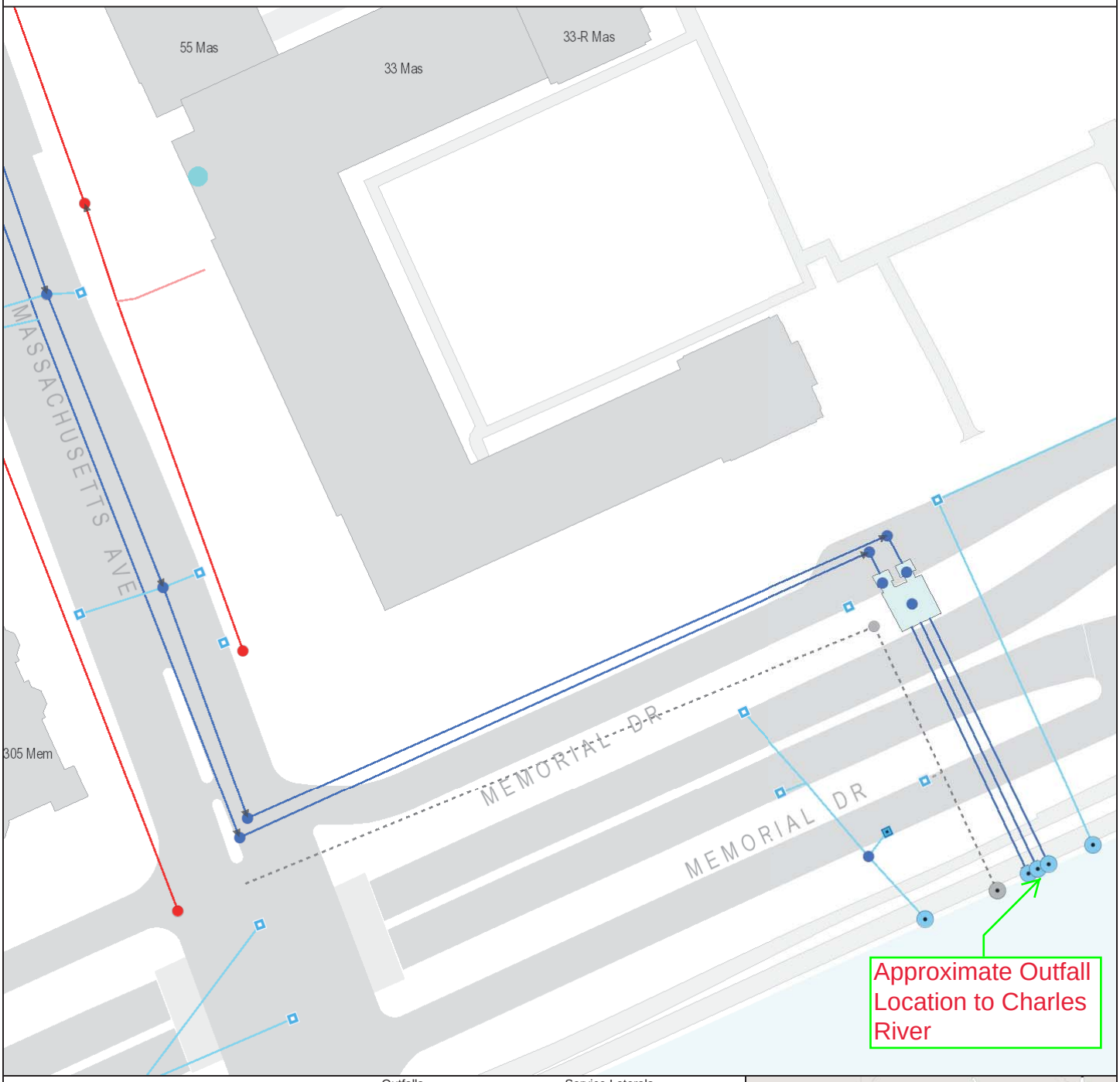
Google Maps 266 Massachusetts Ave

Imagery ©2018 CNES / Airbus, DigitalGlobe, MassGIS, Commonwealth of Massachusetts EOEA, Sanborn, USDA Farm Service Agency, Map data ©2018 Google 500 ft

FIGURE 6

City of Cambridge

October 28, 2019



City of Cambridge
Massachusetts

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Outfalls
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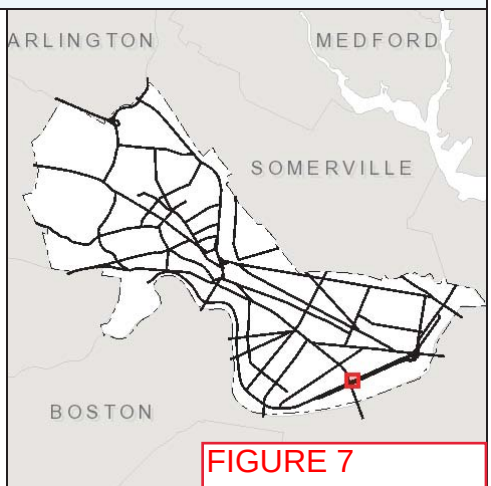


FIGURE 7

Tables

Table 1
Groundwater Gauging Data
Sunoco Station
266 Massachusetts Avenue
Cambridge, MA

Sample ID	Monitoring Date	Casing Elevation (feet)	Depth to NAPL (feet)	Depth to Water (feet)	Total Well Depth (feet)	NAPL Thickness (feet)	Groundwater Elevations (feet)	Comments
MW-1	06/20/18	NA	ND	9.09	14.40			
MW-2	06/20/18	NA	ND	8.78	14.05			
OW-4	06/20/18	NA	ND	9.42	10.70			

ND = non-detect
NA= not available

Enter number values in green boxes below

Enter values in the units specified

↓

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

Enter a dilution factor, if other than zero

↓

132.13

Enter values in the units specified

↓

434	C_d = Enter influent hardness in **mg/L** $CaCO_3$
134	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

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

↓

6.9	pH in **Standard Units**
24	Temperature in **°C**
0.15	Ammonia in **mg/L**
134	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
7.79	Copper in **µg/L**
509	Iron in **µg/L**
2.59	Lead in **µg/L**
0	Mercury in **µg/L**
1.39	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
5.67	Zinc in **µg/L**

Notes:

Freshwater: Q_R equal to the 7Q10; enter alternate Q_R if approved by the State; enter 0 if no dilution factor approved

Saltwater (estuarine and marine): enter Q_R if approved by the State; enter 0 if no entry

Discharge flow is equal to the design flow or 1 MGD, whichever is less

Only if approved by State as the entry for Q_R; leave 0 if no entry

Saltwater (estuarine and marine): only if approved by the State

Leave 0 if no entry

Freshwater only

pH, temperature, and ammonia required for all discharges

Hardness required for freshwater

Salinity required for saltwater (estuarine and marine)

Metals required for all discharges if present and if dilution factor is > 1

Enter 0 if non-detect or testing not required

Enter **influent** concentrations in the units specified

if >1 sample, enter maximum

if >10 samples, may enter 95th percentile

Enter 0 if non-detect or testing not required

↓

40	TRC in **µg/L**
1.51	Ammonia in **mg/L**
0	Antimony in **µg/L**
63.9	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
133	Chromium VI in **µg/L**
112	Copper in **µg/L**
94800	Iron in **µg/L**
246	Lead in **µg/L**
0.22	Mercury in **µg/L**
68.8	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
0	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0.1	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0	Benzo(a)anthracene in **µg/L**
0	Benzo(a)pyrene in **µg/L**
0	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

I. Dilution Factor Calculation Method

A. 7Q10

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

B. Dilution Factor

Calculated as follows: $$Df = \frac{Q_R + Q_P}{Q_P}$$

Q_R = 7Q10 in MGD

Q_P = Discharge flow, in MGD

II. Effluent Limitation Calculation Method

A. Calculate Water Quality Criterion:

Step 1. Downstream hardness, calculated as follows:

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

C_r = Downstream hardness in mg/L

Q_d = Discharge flow in MGD

C_d = Discharge hardness in mg/L

Q_s = Upstream flow (7Q10) in MGD

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

Q_r = Downstream receiving water flow in MGD

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

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

m_c = Pollutant-specific coefficient (m_a for silver)

b_c = Pollutant-specific coefficient (b_a for silver)

ln = Natural logarithm

h = Hardness calculated in Step 1

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

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

B. Calculate WQBEL:

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

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

C_r = Water quality criterion in µg/L

Q_d = Discharge flow in MGD

C_d = WQBEL in µg/L

Q_s = Upstream flow (7Q10) in MGD

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

Q_r = Downstream receiving water flow in MGD

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

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

C_r = Water quality criterion in µg/L

Q_d = Discharge flow in MGD

Q_r = Downstream receiving water flow in MGD

C. Determine if a WQBEL applies:

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

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

C_r = Downstream concentration in µg/L

Q_d = Discharge flow in MGD

C_d = Influent concentration in µg/L

Q_s = Upstream flow (7Q10) in MGD

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

Q_r = Downstream receiving water flow in MGD

The WQBEL applies if:

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

AND

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

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

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

AND

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

Part 2.1.1 of the RGP for that parameter applies.

Dilution Factor	132.0					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	**0.2**	mg/L	1452	µg/L	---	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	84507	µg/L		
Arsenic	**104**	µg/L	1320	µg/L		
Cadmium	**10.2**	µg/L	44.9425	µg/L		
Chromium III	**323**	µg/L	14662.1	µg/L		
Chromium VI	**323**	µg/L	1509.8	µg/L		
Copper	**242**	µg/L	583.9	µg/L		
Iron	**5000**	µg/L	65341	µg/L		
Lead	**160**	µg/L	283.55	µg/L		
Mercury	**0.739**	µg/L	119.61	µg/L		
Nickel	**1450**	µg/L	8767.0	µg/L		
Selenium	**235.8**	µg/L	660.2	µg/L		
Silver	**35.1**	µg/L	850.9	µg/L		
Zinc	**420**	µg/L	19821.1	µg/L		
Cyanide	**178**	mg/L	686.6	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	39613	µg/L		

C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	211.3	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	435.7	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	290.5	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.5018	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.5018	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.5018	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.5018	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.5018	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.5018	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.5018	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			

E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	2641	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

Attachment A – RGP NOI Form

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

A. General site information:

<table>
<tr><td rowspan="3">1. Name of site:
Sunoco Station</td><td colspan="3">Site address: 266 Massachusetts Avenue
Street:</td></tr>
<tr><td>City: Cambridge</td><td>State: MA</td><td>Zip: 01420</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="4">2. Site owner
Site owner is Richard Salinski. However, tanks which are being upgraded are owned by:
Sunoco LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ☐ Private
■ Other; if so, specify: Commercial</td><td colspan="3">Contact Person: Ronald R Carmino Jr.</td></tr>
<tr><td colspan="2">Telephone: 724-787-7482</td><td>Email: ronald.carmino@sunoco.com</td></tr>
<tr><td colspan="3">Mailing address: 399 Pinto Drive
Street:</td></tr>
<tr><td>City: North Huntingdon</td><td>State: PA</td><td>Zip: 15642</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
Groundwater & Environmental Services, Inc.</td><td colspan="3">Contact Person: William Brochu</td></tr>
<tr><td colspan="2">Telephone: 800-22-6119 x3255</td><td>Email: wbrochu@gesonline.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 1 Park Drive, Suite 8</td></tr>
<tr><td>City: Westford</td><td>State: MA</td><td>Zip: 01886</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
(previous canceled Authorization #MAG910779)

NPDES permit is (check all that apply: ■ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
■ MA Chapter 21e; list RTN(s):
MassDEP RTN: 3-1559
☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:
☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Charles River	MA72-38	Class B Surface Water

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. Impairment cause and pollutants: chlorophyll-a, excess algal growth, nutrient/eutrophication biological indicators, total Phosphorus & Secchi disk transparency, taste & odor all TMDL# 33826.

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.	Charles River = 29.2 cfs
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.	DF = 18.87 mgd + 0.144 mgd / 0.144 mgd = 132

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: 6/28/18 - Xiaodan Ruan of Mass DEP confirmed the 7Q10 an dilution factor.

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 See attached laboratory analytical report and receiving water summary table for surface water sample SW-1 collected on 6/20/2018.

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: Historic releases of petroleum from the former underground storage tank (UST) system at the gas station.	
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): Proposed discharge to a catch basin drains into the Charles River surface water located southeast of the site, near the Mass Ave bridge and Memorial Drive. See attached figure for approximate outfall location.	Outfall location(s): (Latitude, Longitude) Approximate outfall location: Latitude: 42 degrees, 21 minutes, 26.73 seconds North Longitude: 71 degrees, 5 minutes, 29.09 seconds West
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Discharge is proposed to a storm drain catch basin that discharges to the Charles River surface water located southeast of the site. ☐ 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	On 6/11/2018 the Cambridge DPW Engineering Department confirmed the storm drainage system outfall location and discharges to the Charles River. A temporary DPW Dewatering Permit will be obtained for the proposed groundwater treatment and discharge to the storm drain system. Discussed with DPW again on 10/29/2019.
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: Authorization to be obtained from the City of Cambridge DPW pending EPA RGP authorization. Discussed with DPW on 10/29/19. Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ■ No Cambridge DPW dewatering discharge permit will be obtained once the RGP is approved.	
Provide the expected start and end dates of discharge(s) (month/year): Proposed for November 18, 2019 through December 31, 2019. Indicate if the discharge is expected to occur over a duration of: ■ less than 12 months ☐ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

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

■ A. Inorganics
■ B. Non-Halogenated Volatile Organic Compounds
■ C. Halogenated Volatile Organic Compounds
■ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
■ F. Fuels Parameters See influent groundwater analytical results for the sample GW-RGP on pages 16 to 20 of the attached laboratory report.</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>

See influent groundwater analytical results for sample "GW-RGP" on pages 16 through 20 of the attached laboratory report

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	1 mg/l	1.51 mg/l		Report mg/L	---
Chloride		✔	1	300	5,960 ug/l	1,220 ug/l		Report µg/l	---
Total Residual Chlorine		✔	1	SM4500	0.006 mg/l	0.040 mg/l		0.2 mg/L	FW= 11 ug/l
Total Suspended Solids		✔	1	SM2540D	4.3 mg/L	2,000 mg/L		30 mg/L	30 mg/l
Antimony	✔		1	200.8	8.18 ug/L	<10 ug/L		206 µg/L	640 ug/l
Arsenic		✔	1	200.8	5.9 ug/L	63.9 ug/L		104 µg/L	FW=10 ug/l
Cadmium	✔		1	200.8	25 ug/L	<25 ug/L		10.2 µg/L	FW= 0.25 ug/l
Chromium III	✔		1	200.8/calc	50 ug/l	<50 ug/l		323 µg/L	FW= 74 ug/l
Chromium VI		✔	1	SM3500	21 ug/l	133 ug/l		323 µg/L	FW= 11 ug/l
Copper		✔	1	200.8	24.3 ug/l	112 ug/l		242 µg/L	FW= 9 ug/l
Iron		✔	1	200.7	20.1 ug/l	94,800 ug/l		5,000 µg/L	FW= 1,000 ug/l
Lead		✔	1	200.8	3.58 ug/l	246 ug/l		160 µg/L	FW= 2.5 ug/l
Mercury		✔	1	245.1	0.14 ug/l	0.22 ug/l		0.739 µg/L	FW= 0.77 ug/l
Nickel		✔	1	200.8	5.15 ug/l	68.8 ug/l		1,450 µg/L	FW= 52 ug/l
Selenium	✔		1	200.8	50 ug/l	<50 ug/l		235.8 µg/L	FW= 5 ug/l
Silver	✔		1	200.8	25 ug/l	<25 ug/l		35.1 µg/L	FW= 3.2 ug/l
Zinc	✔		1	200.8	250 ug.l	<250 ug/l		420 µg/L	FW= 120 ug/l
Cyanide	✔		1	335.4	0.005 mg/l	<0.005 mg/l		178 mg/L	FW= 5.2 ug/l
B. Non-Halogenated VOCs									
Total BTEX		✔	1	624	40 ug/l	1,308.8 ug/l		100 µg/L	---
Benzene		✔	1	624	20 ug/l	23.8 ug/l		5.0 µg/L	---
1,4 Dioxane	✔		1	SIM8260	50 ug/l	<50 ug/l		200 µg/L	---
Acetone	✔		1	624	0.200 mg/l	<0.200 mg/l		7.97 mg/L	---
Phenol	✔		1	625.1	5 ug/l	<5 ug/l		1,080 µg/L	300 ug/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	20 ug/l	<20 ug/l		4.4 µg/L	1.6 ug/l
1,2 Dichlorobenzene	✔		1	624	20 ug/l	<20 ug/l		600 µg/L	---
1,3 Dichlorobenzene	✔		1	624	20 ug/l	<20 ug/l		320 µg/L	---
1,4 Dichlorobenzene	✔		1	624	20 ug/l	<20 ug/l		5.0 µg/L	---
Total dichlorobenzene	✔		1	624	20 ug/l	<20 ug/l		763 µg/L in NH	---
1,1 Dichloroethane	✔		1	624	20 ug/l	<20 ug/l		70 µg/L	---
1,2 Dichloroethane	✔		1	624	20 ug/l	<20 ug/l		5.0 µg/L	---
1,1 Dichloroethylene	✔		1	624	20 ug/l	<20 ug/l		3.2 µg/L	---
Ethylene Dibromide	✔		1	504.1	0.01 ug/l	<0.01 ug/l		0.05 µg/L	---
Methylene Chloride	✔		1	624	200 ug/l	<200 ug/l		4.6 µg/L	---
1,1,1 Trichloroethane	✔		1	624	20 ug/l	<20 ug/l		200 µg/L	---
1,1,2 Trichloroethane	✔		1	624	20 ug/l	<20 ug/l		5.0 µg/L	---
Trichloroethylene	✔		1	624	20 ug/l	<20 ug/l		5.0 µg/L	---
Tetrachloroethylene	✔		1	624	20 ug/l	<20 ug/l		5.0 µg/L	3.3 ug/l
cis-1,2 Dichloroethylene	✔		1	624	20 ug/l	<20 ug/l		70 µg/L	---
Vinyl Chloride	✔		1	624	20 ug/l	<20 ug/l		2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		1	625	5 ug/l	<5 ug/l		190 µg/L	N/A for MA
Diethylhexyl phthalate	✔		1	625	5 ug/l	<5 ug/l		101 µg/L	2.2 ug/l
Total Group I PAHs	✔		1	625	5 ug/l	<5 ug/l		1.0 µg/L	---
Benzo(a)anthracene	✔		1	625	5 ug/l	<5 ug/l		As Total PAHs	0.0038 ug/l
Benzo(a)pyrene	✔		1	625	5 ug/l	<5 ug/l			0.0038 ug/l
Benzo(b)fluoranthene	✔		1	625	5 ug/l	<5 ug/l			0.0038 ug/l
Benzo(k)fluoranthene	✔		1	625	5 ug/l	<5 ug/l			0.0038 ug/l
Chrysene	✔		1	625	5 ug/l	<5 ug/l			0.0038 ug/l
Dibenzo(a,h)anthracene	✔		1	625	5 ug/l	<5 ug/l			0.0038 ug/l
Indeno(1,2,3-cd)pyrene	✔		1	625	5 ug/l	<5 ug/l			0.0038 ug/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
Total Group II PAHs		✔	1	625	5 ug/l	10.2 ug/l		100 µg/L	---
Naphthalene		✔	1	625	5 ug/l	10.2 ug/l		20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		1	608	0.192 ug/l	<0.192 ug/l		0.000064 µg/L	---
Pentachlorophenol	✔		1	625	5 ug/l	<5 ug/l		1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		✔	1	1664B	1 mg/l	3.8 mg/l		5.0 mg/L	---
Ethanol	✔		1	524.2	4 mg/l	<4 mg/l		Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	524.2	10 ug/l	<10 ug/l		70 µg/L	20 ug/l
tert-Butyl Alcohol	✔		1	524.2	200 ug/l	<200 ug/l		120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		1	524.2	10 ug/l	<10 ug/l		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	SM2340	0.664 mg/l	434 mg/l			
field measured pH		✔	1	Field	6.8 SU				
field measured Temperature		✔	1	Field	17 deg. C				

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:

See below written description of the proposed treatment system.

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.

An electric submersible pump will pump groundwater from a temporary excavation dewatering sump to a 21,000 gallon fractation (grac) tank. Recovered groundwater shall pass through bag filters to remove particulates and two 2,000-pound liquid phase granular activated carbon (LGAC) units plumbed in series. The treated groundwater shall be discharged into a nearby storm drain catch basin located in front of the site property. The storm drain discharges to the Charles River freshwater surface water located approximately 0.5 miles to the southeast.

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: The proposed treatment system will also include liquid phase granular activated carbon (LGAC) units and a flow meter/totalizer.

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: Liquid phase granular activated carbon (LGAC) design flow rate of 75 gallons per minute (gpm) & max rate of 100 gpm. Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	
Provide the proposed maximum effluent flow in gpm.	100
Provide the average effluent flow in gpm.	50
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.

Please see attached figures, data tables, laboratory analytical reports and supporting documentation for supplemental information.

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

According to EPA, a copy of a BMPP only needs to be onsite and not included in the NOI submittal to EPA.

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 Best Management Practices Plan (BMPP) has been prepared for the dewatering system/discharge and a copy will be maintained on-site.

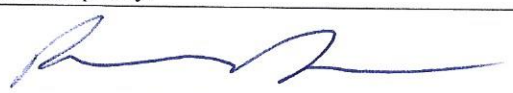
Notification provided to the appropriate State, including a copy of this NOI, if required. Check one: Yes ■ No ☐

Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested. Check one: Yes ■ No ☐
Cambridge DPW was informed of the proposed discharge to the storm drain system on 10/29/2019. Authorization from the DPW (dewatering permit) will be obtained after authorization of the EPA RGP.

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: 10/29/19

Print Name and Title: Ronald R Carmino Jr., Construction Engineer, Sunoco LLC

Attachment B – Laboratory Analytical Report

eurofins | Spectrum Analytical

☐ Final Report
☑ Revised Report

Report Date:
06-Jul-18 14:28

Laboratory Report
SC47844

CEA, Inc.
21 East Main Street, Suite 201
Westborough, MA 01581
Attn: Scott Vandersea

Project: Sunoco - 266 Massachusetts Ave - Cambridge, MA
Project #: 6196-06

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2972/2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00348
USDA # P330-15-00375
Vermont # VT-11393

Authorized by:

Christina White
Technical Director

Christina A. White

Eurofins Spectrum Analytical holds primary certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 45 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Spectrum Analytical, Inc. is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Eurofins Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

Sample Summary

Work Order: SC47844

Project: Sunoco - 266 Massachusetts Ave - Cambridge, MA

Project Number: 6196-06

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC47844-01	GW-RGP	Liquid	20-Jun-18 12:30	20-Jun-18 16:40
SC47844-02	SW-1	Liquid	20-Jun-18 13:15	20-Jun-18 16:40

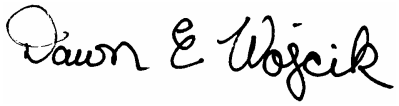
MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.			**Project #:** 6196-06		
Project Location: Sunoco - 266 Massachusetts Ave - Cambridge, MA			**RTN:**		
This form provides certifications for the following data set: SC47844-01 through SC47844-02					
Matrices: Liquid					
CAM Protocol					
✓ 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 VI A	9014 Total Cyanide/PAC CAM VI 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 within method holding times?	✓ 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 specified 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)? 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 are 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?	Yes ✓ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ✓ No

All negative responses are addressed in a case narrative on the cover page of this report.

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.



Dawn E. Wojcik
Laboratory Director
Date: 7/6/2018

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as "<" (less than) the reporting limit in this report.

The samples were received 1.2 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group. If method or program required MS/MSD/Dup were not performed, sufficient sample was not provided to the laboratory.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

Analyses for Total Hardness, pH, and Total Residual Chlorine fall under the state of Pennsylvania code Chapter 252.6 accreditation by rule.

July 6, 2018 Report Revision Case Narrative:

This report has been revised to include analyses added as listed in the appendix at the end of this report.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

EPA 200.8

Duplicates:

1808628-DUP1 *Source: SC47844-02*

The Reporting Limit has been raised to account for matrix interference.

Arsenic
Chromium
Selenium

Samples:

SC47844-01 *GW-RGP*

EPA 200.8

Samples:

SC47844-01 *GW-RGP*

The Reporting Limit has been raised to account for matrix interference.

Antimony
Arsenic
Cadmium
Chromium
Copper
Lead
Nickel
Selenium
Silver
Zinc

SC47844-02 *SW-1*

The Reporting Limit has been raised to account for matrix interference.

Arsenic
Chromium
Selenium

EPA 300.0

Samples:

SC47844-01 *GW-RGP*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride

EPA 524.2

Samples:

S820295-CCV1

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

Ethanol (26.8%)

This affected the following samples:

1808683-BLK1
1808683-BS1
1808683-BSD1
GW-RGP

SC47844-01 *GW-RGP*

Elevated Reporting Limits due to the presence of high levels of non-target analytes; sample may not meet client requested reporting limit for this reason.

EPA 624.1

Calibration:

1806025

EPA 624.1

Calibration:

1806025

Analyte quantified by quadratic equation type calibration.

2-Hexanone (MBK)
4-Methyl-2-pentanone (MIBK)
Bromodichloromethane
Bromoform
Carbon tetrachloride
cis-1,3-Dichloropropene
Dibromochloromethane
Ethylbenzene
m,p-Xylene
o-Xylene
Styrene
trans-1,3-Dichloropropene

This affected the following samples:

1808683-BLK1
1808683-BS1
1808683-BSD1
GW-RGP
S820051-ICV1
S820295-CCV1

Samples:

S820295-CCV1

Analyte percent drift is outside individual acceptance criteria (30), but within overall method allowances.

Trichlorofluoromethane (Freon 11) (32.4%)

This affected the following samples:

1808683-BLK1
1808683-BS1
1808683-BSD1
GW-RGP

SC47844-01 *GW-RGP*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

EPA 625.1

Calibration:

1804057

Analyte quantified by quadratic equation type calibration.

2,4-Dinitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

EPA 625.1

Calibration:

1804057

This affected the following samples:

1808587-BLK1
1808587-BS1
1808587-BSD1
1808951-BLK1
1808951-BLK3
1808951-BS1
1808951-BS3
1808951-BSD1
1808951-BSD3
GW-RGP
S818863-ICV1
S820343-CCV1
S820404-CCV1
S820477-CCV1
S820486-CCV1
S820513-CCV1

Laboratory Control Samples:

1808587 BS/BSD

Benzidine percent recoveries (16/18) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Bis(2-chloroisopropyl)ether percent recoveries (57/55) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

N-Nitrosodimethylamine percent recoveries (46/45) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Pyrene percent recoveries (72/69) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

1808587 BSD

Nitrobenzene RPD 25% (20%) is outside individual acceptance criteria.

1808587-BS1

Acid surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two acid surrogates.

2,4,6-Tribromophenol

Analyte is out of acceptance range in the QC spike but the total number of out of range analytes is within overall method criteria.

Benzidine
Bis(2-chloroisopropyl)ether
N-Nitrosodimethylamine

1808587-BSD1

EPA 625.1

Laboratory Control Samples:

1808587-BSD1

Acid surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two acid surrogates.

2,4,6-Tribromophenol

Analyte is out of acceptance range in the QC spike but the total number of out of range analytes is within overall method criteria.

Benzidine
Bis(2-chloroisopropyl)ether
N-Nitrosodimethylamine
Pyrene

RPD out of acceptance range. The batch is accepted based upon LCS and/or LCSD recovery.

Nitrobenzene

1808951 BS/BSD

1,2-Dichlorobenzene percent recoveries (56/54) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

1,2-Dichlorobenzene percent recoveries (57/56) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

1,3-Dichlorobenzene percent recoveries (53/53) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

1,3-Dichlorobenzene percent recoveries (53/54) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

1,4-Dichlorobenzene percent recoveries (57/56) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

1,4-Dichlorobenzene percent recoveries (59/56) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

2,6-Dinitrotoluene percent recoveries (62/64) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

2,6-Dinitrotoluene percent recoveries (64/64) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

4,6-Dinitro-2-methylphenol percent recoveries (43/40) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

EPA 625.1

Laboratory Control Samples:

1808951 BS/BSD

4,6-Dinitro-2-methylphenol percent recoveries (47/47) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

4-Bromophenyl phenyl ether percent recoveries (51/53) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

4-Bromophenyl phenyl ether percent recoveries (54/53) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Acenaphthene percent recoveries (58/58) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Acenaphthene percent recoveries (59/58) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Benzidine percent recoveries (39/56) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Benzidine percent recoveries (43/43) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Bis(2-chloroethoxy)methane percent recoveries (44/43) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Bis(2-chloroethoxy)methane percent recoveries (46/44) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Bis(2-chloroisopropyl)ether percent recoveries (50/48) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Bis(2-chloroisopropyl)ether percent recoveries (52/48) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Fluorene percent recoveries (52/53) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

N-Nitrosodimethylamine percent recoveries (47/46) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

EPA 625.1

Laboratory Control Samples:

1808951 BS/BSD

N-Nitrosodimethylamine percent recoveries (49/48) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

N-Nitrosodiphenylamine percent recoveries (59/60) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Pentachlorophenol percent recoveries (36/31) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Pentachlorophenol percent recoveries (37/32) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Phenanthrene percent recoveries (59/56) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Phenanthrene percent recoveries (60/58) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Pyrene percent recoveries (52/53) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

Pyrene percent recoveries (57/55) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

GW-RGP

1808951 BSD

2,4-Dinitrophenol RPD 23% (20%) is outside individual acceptance criteria.

Benzidine RPD 34% (20%) is outside individual acceptance criteria.

Samples:

S820343-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Benzidine (29.4%)
Benzo (b) fluoranthene (20.8%)
Hexachlorocyclopentadiene (33.5%)
Nitrobenzene (54.7%)

This affected the following samples:

1808587-BLK1
1808587-BS1
1808587-BSD1

EPA 625.1

Samples:

S820404-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Benzidine (29.4%)
Benzo (b) fluoranthene (20.8%)
Hexachlorocyclopentadiene (33.5%)
Nitrobenzene (54.7%)

This affected the following samples:

GW-RGP

S820477-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Benzidine (21.4%)
Nitrobenzene (39.7%)

This affected the following samples:

1808951-BLK1
1808951-BS1
1808951-BSD1
GW-RGP

S820486-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

3,3´-Dichlorobenzidine (21.9%)
Benzidine (89.8%)
Benzo (b) fluoranthene (22.8%)
Hexachlorocyclopentadiene (38.5%)
Nitrobenzene (49.9%)

This affected the following samples:

1808951-BLK3
1808951-BS3

S820513-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

4-Chlorophenyl phenyl ether (23.8%)
Benzidine (21.9%)
Dibenzo (a,h) anthracene (21.2%)
Diethyl phthalate (20.9%)
Hexachlorocyclopentadiene (31.5%)
Nitrobenzene (36.8%)

This affected the following samples:

1808951-BSD3

SC47844-01 *GW-RGP*

Duplicate analysis confirmed surrogate failure due to matrix effects.

2-Fluorobiphenyl
Terphenyl-dl4

SC47844-01RE1 *GW-RGP*

EPA 625.1

Samples:

SC47844-01RE1 *GW-RGP*

Duplicate analysis confirmed surrogate failure due to matrix effects.

2-Fluorobiphenyl
Terphenyl-dl4

This flag indicates the concentration for this analyte is an estimated value due to exceeding the calibration range or interferences resulting in a biased final concentration.

SM3500-Cr-B (11)/7196A

Samples:

SC47844-01 *GW-RGP*

The Reporting Limit has been raised to account for matrix interference.

Hexavalent Chromium

SC47844-02 *SW-1*

The Reporting Limit has been raised to account for matrix interference.

Hexavalent Chromium

SW846 8260C SIM

Samples:

SC47844-01 *GW-RGP*

Elevated Reporting Limits due to the presence of high levels of non-target analytes; sample may not meet client requested reporting limit for this reason.

Sample Acceptance Check Form

Client:	CEA, Inc. - Westborough, MA
Project:	Sunoco - 266 Massachusetts Ave - Cambridge, MA / 6196-06
Work Order:	SC47844
Sample(s) received on:	6/20/2018

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples cooled on ice upon transfer to laboratory representative?	☑	☐	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☐	☑	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Summary of Hits

Lab ID: SC47844-01 **Client ID:** GW-RGP

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Ammonia as Nitrogen	1.51		1.00	mg/l	E350.1
Phenolics	0.082		0.015	mg/l	E420.4
Non-polar material (SGT-HEM)	3.8		1.0	mg/l	EPA 1664B
Calcium	121		0.200	mg/l	EPA 200.7
Iron	94.8		0.250	mg/l	EPA 200.7
Magnesium	31.8		0.0400	mg/l	EPA 200.7
Arsenic	0.0639	R01, D	0.0500	mg/l	EPA 200.8
Chromium	0.109	R01, D	0.0500	mg/l	EPA 200.8
Copper	0.112	R01, D	0.0250	mg/l	EPA 200.8
Lead	0.246	R01, D	0.0100	mg/l	EPA 200.8
Nickel	0.0688	R01, D	0.0250	mg/l	EPA 200.8
Mercury	0.00022		0.00020	mg/l	EPA 245.1/7470A
Chloride	1220	GS1, D	60.0	mg/l	EPA 300.0
Benzene	23.8	D	20.0	µg/l	EPA 624.1
Ethylbenzene	148	D	20.0	µg/l	EPA 624.1
m,p-Xylene	642	D	40.0	µg/l	EPA 624.1
o-Xylene	150	D	20.0	µg/l	EPA 624.1
Toluene	345	D	20.0	µg/l	EPA 624.1
Naphthalene	15.7	D	9.52	µg/l	EPA 625.1
Hardness	434		0.664	mg/l CaCO3	SM 2340B (11)
Total Suspended Solids	2000		10.0	mg/l	SM2540D (11)
Hexavalent Chromium	0.133	R01, D	0.050	mg/l	SM3500-Cr-B (11)/7196A
Total Residual Chlorine	0.040		0.020	mg/l	SM4500-Cl-G (11)

Lab ID: SC47844-01RE1 **Client ID:** GW-RGP

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Naphthalene	10.2		5.00	µg/l	EPA 625.1

Lab ID: SC47844-02 **Client ID:** SW-1

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Ammonia as Nitrogen	0.15		0.05	mg/l	E350.1
Calcium	29.8		0.200	mg/l	EPA 200.7
Iron	0.509		0.250	mg/l	EPA 200.7
Magnesium	14.6		0.0400	mg/l	EPA 200.7
Copper	0.00779		0.00050	mg/l	EPA 200.8
Lead	0.00259		0.00050	mg/l	EPA 200.8
Nickel	0.00139		0.00050	mg/l	EPA 200.8
Zinc	0.00567		0.00500	mg/l	EPA 200.8
Hardness	134		0.664	mg/l CaCO3	SM 2340B (11)

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
GW-RGP	6196-06	Liquid	20-Jun-18 12:30	20-Jun-18
SC47844-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Purgeable Organic Compounds			R05										
1634-04-4	Methyl tert-butyl ether	< 10.0	D	µg/l	10.0	3.06	20	EPA 524.2	22-Jun-18	22-Jun-18	GMA	1808683	
994-05-8	Tert-amyl methyl ether	< 10.0	D	µg/l	10.0	9.86	20	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 200	D	µg/l	200	71.1	20	"	"	"	"	"	
64-17-5	Ethanol	< 4000	D	µg/l	4000	438	20	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*102*			*80-120 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*109*			*80-120 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*110*			*80-120 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*112*			*80-120 %*			"	"	"	"	"	
Volatile Organic Compounds by GCMS			GS1										
67-64-1	Acetone	< 200	D	µg/l	200	75.2	20	EPA 624.1	"	"	GMA	"	
71-43-2	Benzene	**23.8**	D	µg/l	20.0	6.8	20	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 20.0	D	µg/l	20.0	5.8	20	"	"	"	"	"	X
75-25-2	Bromoform	< 20.0	D	µg/l	20.0	4.8	20	"	"	"	"	"	X
74-83-9	Bromomethane	< 40.0	D	µg/l	40.0	8.9	20	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 200	D	µg/l	200	14.1	20	"	"	"	"	"	
75-15-0	Carbon disulfide	< 100	D	µg/l	100	14.0	20	"	"	"	"	"	
56-23-5	Carbon tetrachloride	< 20.0	D	µg/l	20.0	7.8	20	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 20.0	D	µg/l	20.0	6.0	20	"	"	"	"	"	X
75-00-3	Chloroethane	< 40.0	D	µg/l	40.0	8.1	20	"	"	"	"	"	X
67-66-3	Chloroform	< 20.0	D	µg/l	20.0	5.7	20	"	"	"	"	"	X
74-87-3	Chloromethane	< 40.0	D	µg/l	40.0	7.2	20	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 20.0	D	µg/l	20.0	5.8	20	"	"	"	"	"	X
74-95-3	Dibromomethane	< 20.0	D	µg/l	20.0	5.4	20	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	< 20.0	D	µg/l	20.0	4.9	20	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 20.0	D	µg/l	20.0	6.0	20	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 20.0	D	µg/l	20.0	5.4	20	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 20.0	D	µg/l	20.0	5.8	20	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 20.0	D	µg/l	20.0	3.6	20	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 20.0	D	µg/l	20.0	6.3	20	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 20.0	D	µg/l	20.0	7.9	20	"	"	"	"	"	
156-60-5	trans-1,2-Dichloroethene	< 20.0	D	µg/l	20.0	7.6	20	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 20.0	D	µg/l	20.0	5.8	20	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 20.0	D	µg/l	20.0	6.6	20	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 20.0	D	µg/l	20.0	6.1	20	"	"	"	"	"	X
100-41-4	Ethylbenzene	**148**	D	µg/l	20.0	6.3	20	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 200	D	µg/l	200	12.7	20	"	"	"	"	"	
1634-04-4	Methyl tert-butyl ether	< 20.0	D	µg/l	20.0	5.9	20	"	"	"	"	"	
108-10-1	4-Methyl-2-pentanone (MIBK)	< 200	D	µg/l	200	7.1	20	"	"	"	"	"	
75-09-2	Methylene chloride	< 200	D	µg/l	200	7.7	20	"	"	"	"	"	X
100-42-5	Styrene	< 20.0	D	µg/l	20.0	6.6	20	"	"	"	"	"	
79-34-5	1,1,2,2-Tetrachloroethane	< 20.0	D	µg/l	20.0	5.1	20	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 20.0	D	µg/l	20.0	6.2	20	"	"	"	"	"	X
108-88-3	Toluene	**345**	D	µg/l	20.0	5.8	20	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
GW-RGP	6196-06	Liquid	20-Jun-18 12:30	20-Jun-18
SC47844-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by GCMS			GS1										
71-55-6	1,1,1-Trichloroethane	< 20.0	D	µg/l	20.0	4.9	20	EPA 624.1	22-Jun-18	22-Jun-18	GMA	1808683	X
79-00-5	1,1,2-Trichloroethane	< 20.0	D	µg/l	20.0	6.2	20	"	"	"	"	"	X
79-01-6	Trichloroethene	< 20.0	D	µg/l	20.0	7.1	20	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 20.0	D	µg/l	20.0	5.5	20	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 20.0	D	µg/l	20.0	8.0	20	"	"	"	"	"	X
179601-23-1	m,p-Xylene	**642**	D	µg/l	40.0	9.5	20	"	"	"	"	"	X
95-47-6	o-Xylene	**150**	D	µg/l	20.0	8.2	20	"	"	"	"	"	X
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*102*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*109*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*110*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*112*			*70-130 %*			"	"	"	"	"	
1,4-Dioxane by SW846 8260 SIM Prepared by method SW846 5030 Water MS			R05										
123-91-1	1,4-Dioxane	< 50.0	D	µg/l	50.0	9.04	20	SW846 8260C SIM	03-Jul-18	03-Jul-18	GMA	1809223	
Surrogate recoveries:													
17647-74-4	*1,4-Dioxane-d8*	*85*			*70-130 %*			"	"	"	"	"	
460-00-4	*4-Bromofluorobenzene*	*111*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*100*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*129*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*124*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
83-32-9	Acenaphthene	< 4.76		µg/l	4.76	0.658	1	EPA 625.1	21-Jun-18	25-Jun-18	MSL	1808587	X
208-96-8	Acenaphthylene	< 9.52	D	µg/l	9.52	1.30	2	"	"	"	"	"	X
120-12-7	Anthracene	< 9.52	D	µg/l	9.52	1.16	2	"	"	"	"	"	X
92-87-5	Benzidine	< 19.0	D	µg/l	19.0	2.19	2	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 9.52	D	µg/l	9.52	1.02	2	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 9.52	D	µg/l	9.52	1.07	2	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 9.52	D	µg/l	9.52	0.832	2	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 9.52	D	µg/l	9.52	1.01	2	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 9.52	D	µg/l	9.52	0.914	2	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 9.52	D	µg/l	9.52	1.27	2	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 9.52	D	µg/l	9.52	1.40	2	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 9.52	D	µg/l	9.52	1.48	2	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 9.52	D	µg/l	9.52	1.22	2	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 9.52	D	µg/l	9.52	1.15	2	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 9.52	D	µg/l	9.52	0.834	2	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 9.52	D	µg/l	9.52	0.954	2	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 9.52	D	µg/l	9.52	1.12	2	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 9.52	D	µg/l	9.52	1.42	2	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
GW-RGP	6196-06	Liquid	20-Jun-18 12:30	20-Jun-18
SC47844-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
7005-72-3	4-Chlorophenyl phenyl ether	< 9.52	D	µg/l	9.52	1.15	2	EPA 625.1	21-Jun-18	25-Jun-18	MSL	1808587	X
218-01-9	Chrysene	< 9.52	D	µg/l	9.52	1.01	2	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 9.52	D	µg/l	9.52	0.857	2	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 9.52	D	µg/l	9.52	1.07	2	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 9.52	D	µg/l	9.52	1.23	2	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 9.52	D	µg/l	9.52	1.17	2	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 9.52	D	µg/l	9.52	3.79	2	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 9.52	D	µg/l	9.52	1.01	2	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 9.52	D	µg/l	9.52	1.19	2	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 9.52	D	µg/l	9.52	1.44	2	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 9.52	D	µg/l	9.52	1.24	2	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 9.52	D	µg/l	9.52	0.870	2	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 9.52	D	µg/l	9.52	0.608	2	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 9.52	D	µg/l	9.52	1.07	2	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 9.52	D	µg/l	9.52	1.28	2	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 9.52	D	µg/l	9.52	1.13	2	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 9.52	D	µg/l	9.52	0.773	2	"	"	"	"	"	X
206-44-0	Fluoranthene	< 9.52	D	µg/l	9.52	1.22	2	"	"	"	"	"	X
86-73-7	Fluorene	< 9.52	D	µg/l	9.52	1.17	2	"	"	"	"	"	X
118-74-1	Hexachlorobenzene	< 9.52	D	µg/l	9.52	1.09	2	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 9.52	D	µg/l	9.52	0.739	2	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 9.52	D	µg/l	9.52	1.97	2	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 9.52	D	µg/l	9.52	1.22	2	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 9.52	D	µg/l	9.52	1.10	2	"	"	"	"	"	X
78-59-1	Isophorone	< 9.52	D	µg/l	9.52	1.12	2	"	"	"	"	"	X
91-20-3	Naphthalene	15.7	D	µg/l	9.52	1.30	2	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 9.52	D	µg/l	9.52	1.31	2	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 9.52	D	µg/l	9.52	0.886	2	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 9.52	D	µg/l	9.52	1.60	2	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 9.52	D	µg/l	9.52	1.28	2	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 9.52	D	µg/l	9.52	1.10	2	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 9.52	D	µg/l	9.52	1.24	2	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 9.52	D	µg/l	9.52	0.710	2	"	"	"	"	"	X
85-01-8	Phenanthrene	< 9.52	D	µg/l	9.52	1.12	2	"	"	"	"	"	X
108-95-2	Phenol	< 9.52	D	µg/l	9.52	1.23	2	"	"	"	"	"	X
129-00-0	Pyrene	< 9.52	D	µg/l	9.52	1.16	2	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 9.52	D	µg/l	9.52	1.31	2	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 9.52	D	µg/l	9.52	0.987	2	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*12*	SDUP		*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*21*			*15-110 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*30*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*15*			*15-110 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*19*	SDUP		*30-130 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
GW-RGP	6196-06	Liquid	20-Jun-18 12:30	20-Jun-18
SC47844-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
118-79-6	*2,4,6-Tribromophenol*	*34*			*15-110 %*			EPA 625.1	21-Jun-18	25-Jun-18	MSL	1808587	
Re-analysis of Semivolatile Organic Compounds			E										
83-32-9	Acenaphthene	< 5.00		µg/l	5.00	0.691	1	EPA 625.1	27-Jun-18	28-Jun-18	MSL	1808951	X
208-96-8	Acenaphthylene	< 5.00		µg/l	5.00	0.683	1	"	"	"	"	"	X
120-12-7	Anthracene	< 5.00		µg/l	5.00	0.608	1	"	"	"	"	"	X
92-87-5	Benzidine	< 10.0		µg/l	10.0	1.15	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 5.00		µg/l	5.00	0.536	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 5.00		µg/l	5.00	0.562	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 5.00		µg/l	5.00	0.437	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 5.00		µg/l	5.00	0.530	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 5.00		µg/l	5.00	0.480	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 5.00		µg/l	5.00	0.666	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 5.00		µg/l	5.00	0.734	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 5.00		µg/l	5.00	0.778	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 5.00		µg/l	5.00	0.638	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 5.00		µg/l	5.00	0.602	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 5.00		µg/l	5.00	0.438	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 5.00		µg/l	5.00	0.501	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 5.00		µg/l	5.00	0.590	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 5.00		µg/l	5.00	0.748	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 5.00		µg/l	5.00	0.603	1	"	"	"	"	"	X
218-01-9	Chrysene	< 5.00		µg/l	5.00	0.532	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00	0.450	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 5.00		µg/l	5.00	0.562	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 5.00		µg/l	5.00	0.647	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 5.00		µg/l	5.00	0.614	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 5.00		µg/l	5.00	1.99	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 5.00		µg/l	5.00	0.530	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 5.00		µg/l	5.00	0.623	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 5.00		µg/l	5.00	0.758	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 5.00		µg/l	5.00	0.653	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 5.00		µg/l	5.00	0.457	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 5.00		µg/l	5.00	0.319	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 5.00		µg/l	5.00	0.561	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 5.00		µg/l	5.00	0.673	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 5.00		µg/l	5.00	0.593	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 5.00		µg/l	5.00	0.406	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 5.00		µg/l	5.00	0.638	1	"	"	"	"	"	X
86-73-7	Fluorene	< 5.00		µg/l	5.00	0.612	1	"	"	"	"	"	X
118-74-1	Hexachlorobenzene	< 5.00		µg/l	5.00	0.571	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 5.00		µg/l	5.00	0.388	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
GW-RGP	6196-06	Liquid	20-Jun-18 12:30	20-Jun-18
SC47844-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Re-analysis of Semivolatile Organic Compounds			E										
77-47-4	Hexachlorocyclopentadiene	< 5.00		µg/l	5.00	1.04	1	EPA 625.1	27-Jun-18	28-Jun-18	MSL	1808951	X
67-72-1	Hexachloroethane	< 5.00		µg/l	5.00	0.639	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00	0.580	1	"	"	"	"	"	X
78-59-1	Isophorone	< 5.00		µg/l	5.00	0.586	1	"	"	"	"	"	X
91-20-3	Naphthalene	10.2		µg/l	5.00	0.685	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 5.00		µg/l	5.00	0.690	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 5.00		µg/l	5.00	0.465	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 5.00		µg/l	5.00	0.838	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 5.00		µg/l	5.00	0.673	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 5.00		µg/l	5.00	0.578	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 5.00		µg/l	5.00	0.651	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 5.00		µg/l	5.00	0.373	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 5.00		µg/l	5.00	0.586	1	"	"	"	"	"	X
108-95-2	Phenol	< 5.00		µg/l	5.00	0.645	1	"	"	"	"	"	X
129-00-0	Pyrene	< 5.00		µg/l	5.00	0.610	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 5.00		µg/l	5.00	0.687	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 5.00		µg/l	5.00	0.518	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*22*	SDUP		*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*20*			*15-110 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*34*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*18*			*15-110 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*25*	SDUP		*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*28*			*15-110 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
12674-11-2	Aroclor-1016	< 0.192		µg/l	0.192	0.100	1	EPA 608.3	21-Jun-18	28-Jun-18	TA/	1808590	X
11104-28-2	Aroclor-1221	< 0.192		µg/l	0.192	0.111	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 0.192		µg/l	0.192	0.107	1	"	"	"	"	"	X
53469-21-9	Aroclor-1242	< 0.192		µg/l	0.192	0.103	1	"	"	"	"	"	X
12672-29-6	Aroclor-1248	< 0.192		µg/l	0.192	0.131	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 0.192		µg/l	0.192	0.112	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 0.192		µg/l	0.192	0.0818	1	"	"	"	"	"	X
Surrogate recoveries:													
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr)*	*140*			*30-150 %*			"	"	"	"	"	
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr) [2C]*	*140*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr)*	*75*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*75*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													
Prepared by method General Preparation SVOC													
	Non-polar material (SGT-HEM)	3.8		mg/l	1.0	0.9	1	EPA 1664B	22-Jun-18	25-Jun-18	SC	1808724	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
GW-RGP SC47844-01	6196-06	Liquid	20-Jun-18 12:30	20-Jun-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 200/6000 Series Methods													
Prepared by method General Prep-Metal													
	Preservation	**Field Preserved; pH<2 confirmed**		N/A			1	EPA 200/6000 methods	21-Jun-18		JS	1808651	
Total Metals by EPA 200 Series Methods													
7440-22-4	Silver	< 0.0250	R01, D	mg/l	0.0250	0.00975	50	EPA 200.8	21-Jun-18	28-Jun-18	TBC	1808628	X
7440-38-2	Arsenic	**0.0639**	R01, D	mg/l	0.0500	0.00590	100	"	"	28-Jun-18	"	"	X
7440-70-2	Calcium	**121**		mg/l	0.200	0.0679	1	EPA 200.7	"	28-Jun-18	SJR/TBC	1808632	X
7440-43-9	Cadmium	< 0.0250	R01, D	mg/l	0.0250	0.00875	50	EPA 200.8	"	28-Jun-18	TBC	1808628	X
7440-47-3	Chromium	**0.109**	R01, D	mg/l	0.0500	0.0138	100	"	"	28-Jun-18	"	"	X
7440-50-8	Copper	**0.112**	R01, D	mg/l	0.0250	0.0243	50	"	"	28-Jun-18	"	"	X
7439-89-6	Iron	**94.8**		mg/l	0.250	0.0201	1	EPA 200.7	"	26-Jun-18	SJR/TBC	1808632	X
7439-97-6	Mercury	**0.00022**		mg/l	0.00020	0.00014	1	EPA 245.1/7470A	"	26-Jun-18	TBC	1808633	X
7439-95-4	Magnesium	**31.8**		mg/l	0.0400	0.0147	1	EPA 200.7	"	28-Jun-18	SJR/TBC	1808632	X
7440-02-0	Nickel	**0.0688**	R01, D	mg/l	0.0250	0.00515	50	EPA 200.8	"	28-Jun-18	TBC	1808628	X
7439-92-1	Lead	**0.246**	R01, D	mg/l	0.0100	0.00358	20	"	"	28-Jun-18	"	"	X
7440-36-0	Antimony	< 0.0100	R01, D	mg/l	0.0100	0.00818	20	"	"	"	"	"	X
7782-49-2	Selenium	< 0.0500	R01, D	mg/l	0.0500	0.0149	100	"	"	28-Jun-18	"	"	X
7440-66-6	Zinc	< 0.250	R01, D	mg/l	0.250	0.0494	50	"	"	28-Jun-18	"	"	X
General Chemistry Parameters													
16065-83-1	Trivalent Chromium	< 0.0500		mg/l	0.0500	0.0053	1	Calculation	21-Jun-18	29-Jun-18	TBC	1808628	
	Hardness	**434**	HD	mg/l CaCO3	0.664	0.230	1	SM 2340B (11)	"	28-Jun-18	SJR/TBC	[CALC]	
7782-50-5	Total Residual Chlorine	**0.040**	CIHT	mg/l	0.020	0.006	1	SM4500-Cl-G (11)	22-Jun-18 11:46	22-Jun-18 13:08	RLT	1808693	X
16887-00-6	Chloride	**1,220**	GS1, D	mg/l	60.0	5.96	60	EPA 300.0	21-Jun-18	21-Jun-18	TN	1808650	X
18540-29-9	Hexavalent Chromium	**0.133**	R01, D	mg/l	0.050	0.021	10	SM3500-Cr-B (11)/7196A	20-Jun-18 18:22	20-Jun-18 19:00	TN	1808581	
57-12-5	Cyanide (total)	< 0.00500		mg/l	0.00500	0.00470	1	EPA 335.4 / SW846 9012B	22-Jun-18	22-Jun-18	RLT	1808692	X
	Total Suspended Solids	**2,000**	LIV	mg/l	10.0	4.3	1	SM2540D (11)	21-Jun-18	22-Jun-18	CMB	1808636	X
Subcontracted Analyses													
Prepared by method 436030													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
7664-41-7	Ammonia as Nitrogen	**1.51**		mg/l	1.00	1.00	20	E350.1	20-Jun-18 12:30	26-Jun-18 12:48	M-CT007	436030A	
Prepared by method 436006													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
64743-03-9	Phenolics	**0.082**		mg/l	0.015	0.015	1	E420.4	25-Jun-18	26-Jun-18 08:57	M-CT007	436006A	
Prepared by method 436137													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
106-93-4	1,2-Dibromoethane (EDB)	< 0.01		ug/l	0.01	0.01	1	E504.1	"	26-Jun-18 18:36	M-CT007	436137A	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SW-1 SC47844-02	6196-06	Liquid	20-Jun-18 13:15	20-Jun-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 200/6000 Series Methods													
Prepared by method General Prep-Metal													
	Preservation	**Field Preserved; pH<2 confirmed**		N/A			1	EPA 200/6000 methods	21-Jun-18		JS	1808651	
Total Metals by EPA 200 Series Methods													
7440-22-4	Silver	< 0.00050		mg/l	0.00050	0.00020	1	EPA 200.8	21-Jun-18	28-Jun-18	TBC	1808628	X
7440-38-2	Arsenic	< 0.00250	R01, D	mg/l	0.00250	0.00030	5	"	"	29-Jun-18	"	"	X
7440-70-2	Calcium	**29.8**		mg/l	0.200	0.0679	1	EPA 200.7	"	28-Jun-18	SJR/TBC	1808632	X
7440-43-9	Cadmium	< 0.00050		mg/l	0.00050	0.00018	1	EPA 200.8	"	28-Jun-18	TBC	1808628	X
7440-47-3	Chromium	< 0.00250	R01, D	mg/l	0.00250	0.00069	5	"	"	29-Jun-18	"	"	X
7440-50-8	Copper	**0.00779**		mg/l	0.00050	0.00049	1	"	"	28-Jun-18	"	"	X
7439-89-6	Iron	**0.509**		mg/l	0.250	0.0201	1	EPA 200.7	"	26-Jun-18	SJR/TBC	1808632	X
7439-97-6	Mercury	< 0.00020		mg/l	0.00020	0.00014	1	EPA 245.1/7470A	"	26-Jun-18	TBC	1808633	X
7439-95-4	Magnesium	**14.6**		mg/l	0.0400	0.0147	1	EPA 200.7	"	28-Jun-18	SJR/TBC	1808632	X
7440-02-0	Nickel	**0.00139**		mg/l	0.00050	0.00010	1	EPA 200.8	"	28-Jun-18	TBC	1808628	X
7439-92-1	Lead	**0.00259**		mg/l	0.00050	0.00018	1	"	"	"	"	"	X
7440-36-0	Antimony	< 0.00050		mg/l	0.00050	0.00041	1	"	"	"	"	"	X
7782-49-2	Selenium	< 0.00250	R01, D	mg/l	0.00250	0.00074	5	"	"	29-Jun-18	"	"	X
7440-66-6	Zinc	**0.00567**		mg/l	0.00500	0.00099	1	"	"	28-Jun-18	"	"	X
General Chemistry Parameters													
16065-83-1	Trivalent Chromium	< 0.0100		mg/l	0.0100	0.0053	1	Calculation	21-Jun-18	29-Jun-18	TBC	1808628	
	Hardness	**134**	HD	mg/l CaCO3	0.664	0.230	1	SM 2340B (11)	"	28-Jun-18	SJR/TBC	[CALC]	
18540-29-9	Hexavalent Chromium	< 0.050	R01, D	mg/l	0.050	0.021	10	SM3500-Cr-B (11)/7196A	20-Jun-18 18:22	20-Jun-18 19:00	TN	1808581	
	pH	**7.34**	pH	pH Units			1	ASTM D 1293-99B	20-Jun-18 17:30	20-Jun-18 18:00	BD	1808579	X
Subcontracted Analyses													
Prepared by method 436030													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
7664-41-7	Ammonia as Nitrogen	**0.15**		mg/l	0.05	0.05	1	E350.1	20-Jun-18 13:15	26-Jun-18 12:49	M-CT007	436030A	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 524.2										
Batch 1808683 - SW846 5030 Water MS										
Blank (1808683-BLK1)						Prepared & Analyzed: 22-Jun-18				
Methyl tert-butyl ether	< 0.50		µg/l	0.50						
Tert-amyl methyl ether	< 0.50		µg/l	0.50						
Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0						
Ethanol	< 200		µg/l	200						
Surrogate: 4-Bromofluorobenzene	*47.7*		µg/l		*50.0*		*95*	*80-120*		
Surrogate: Toluene-d8	*53.3*		µg/l		*50.0*		*107*	*80-120*		
Surrogate: 1,2-Dichloroethane-d4	*58.3*		µg/l		*50.0*		*117*	*80-120*		
Surrogate: Dibromofluoromethane	*59.5*		µg/l		*50.0*		*119*	*80-120*		
LCS (1808683-BS1)						Prepared & Analyzed: 22-Jun-18				
Methyl tert-butyl ether	**20.7**		µg/l		20.0		103	80-120		
Tert-amyl methyl ether	**22.7**		µg/l		20.0		114	70-130		
Tert-Butanol / butyl alcohol	**206**		µg/l		200		103	70-130		
Ethanol	**514**		µg/l		400		128	70-130		
Surrogate: 4-Bromofluorobenzene	*54.2*		µg/l		*50.0*		*108*	*80-120*		
Surrogate: Toluene-d8	*52.5*		µg/l		*50.0*		*105*	*80-120*		
Surrogate: 1,2-Dichloroethane-d4	*51.4*		µg/l		*50.0*		*103*	*80-120*		
Surrogate: Dibromofluoromethane	*55.0*		µg/l		*50.0*		*110*	*80-120*		
LCS Dup (1808683-BSD1)						Prepared & Analyzed: 22-Jun-18				
Methyl tert-butyl ether	**21.3**		µg/l		20.0		106	80-120	3	20
Tert-amyl methyl ether	**23.1**		µg/l		20.0		116	70-130	2	30
Tert-Butanol / butyl alcohol	**212**		µg/l		200		106	70-130	3	30
Ethanol	**503**		µg/l		400		126	70-130	2	20
Surrogate: 4-Bromofluorobenzene	*54.6*		µg/l		*50.0*		*109*	*80-120*		
Surrogate: Toluene-d8	*55.6*		µg/l		*50.0*		*111*	*80-120*		
Surrogate: 1,2-Dichloroethane-d4	*53.3*		µg/l		*50.0*		*107*	*80-120*		
Surrogate: Dibromofluoromethane	*56.9*		µg/l		*50.0*		*114*	*80-120*		
EPA 624.1										
Batch 1808683 - SW846 5030 Water MS										
Blank (1808683-BLK1)						Prepared & Analyzed: 22-Jun-18				
Acetone	< 10.0		µg/l	10.0						
Benzene	< 1.0		µg/l	1.0						
Bromodichloromethane	< 1.0		µg/l	1.0						
Bromoform	< 1.0		µg/l	1.0						
Bromomethane	< 2.0		µg/l	2.0						
2-Butanone (MEK)	< 10.0		µg/l	10.0						
Carbon disulfide	< 5.0		µg/l	5.0						
Carbon tetrachloride	< 1.0		µg/l	1.0						
Chlorobenzene	< 1.0		µg/l	1.0						
Chloroethane	< 2.0		µg/l	2.0						
Chloroform	< 1.0		µg/l	1.0						
Chloromethane	< 2.0		µg/l	2.0						
Dibromochloromethane	< 1.0		µg/l	1.0						
Dibromomethane	< 1.0		µg/l	1.0						
1,2-Dichlorobenzene	< 1.0		µg/l	1.0						
1,3-Dichlorobenzene	< 1.0		µg/l	1.0						
1,4-Dichlorobenzene	< 1.0		µg/l	1.0						
1,1-Dichloroethane	< 1.0		µg/l	1.0						
1,2-Dichloroethane	< 1.0		µg/l	1.0						
1,1-Dichloroethene	< 1.0		µg/l	1.0						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 624.1										
Batch 1808683 - SW846 5030 Water MS										
Blank (1808683-BLK1)					Prepared & Analyzed: 22-Jun-18					
cis-1,2-Dichloroethene	< 1.0		µg/l	1.0						
trans-1,2-Dichloroethene	< 1.0		µg/l	1.0						
1,2-Dichloropropane	< 1.0		µg/l	1.0						
cis-1,3-Dichloropropene	< 1.0		µg/l	1.0						
trans-1,3-Dichloropropene	< 1.0		µg/l	1.0						
Ethylbenzene	< 1.0		µg/l	1.0						
2-Hexanone (MBK)	< 10.0		µg/l	10.0						
Methyl tert-butyl ether	< 1.0		µg/l	1.0						
4-Methyl-2-pentanone (MIBK)	< 10.0		µg/l	10.0						
Methylene chloride	< 10.0		µg/l	10.0						
Styrene	< 1.0		µg/l	1.0						
1,1,2,2-Tetrachloroethane	< 1.0		µg/l	1.0						
Tetrachloroethene	< 1.0		µg/l	1.0						
Toluene	< 1.0		µg/l	1.0						
1,1,1-Trichloroethane	< 1.0		µg/l	1.0						
1,1,2-Trichloroethane	< 1.0		µg/l	1.0						
Trichloroethene	< 1.0		µg/l	1.0						
Trichlorofluoromethane (Freon 11)	< 1.0		µg/l	1.0						
Vinyl chloride	< 1.0		µg/l	1.0						
m,p-Xylene	< 2.0		µg/l	2.0						
o-Xylene	< 1.0		µg/l	1.0						
Surrogate: 4-Bromofluorobenzene	*47.7*		µg/l		*50.0*		*95*	*70-130*		
Surrogate: Toluene-d8	*53.3*		µg/l		*50.0*		*107*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*58.3*		µg/l		*50.0*		*117*	*70-130*		
Surrogate: Dibromofluoromethane	*59.5*		µg/l		*50.0*		*119*	*70-130*		
LCS (1808683-BS1)					Prepared & Analyzed: 22-Jun-18					
Acetone	**24.4**		µg/l		20.0		122	60-140		
Benzene	**23.0**		µg/l		20.0		115	65-135		
Bromodichloromethane	**22.2**		µg/l		20.0		111	65-135		
Bromoform	**21.2**		µg/l		20.0		106	70-130		
Bromomethane	**20.7**		µg/l		20.0		104	15-185		
2-Butanone (MEK)	**22.5**		µg/l		20.0		112	70-130		
Carbon disulfide	**23.2**		µg/l		20.0		116	70-130		
Carbon tetrachloride	**23.9**		µg/l		20.0		120	70-130		
Chlorobenzene	**20.5**		µg/l		20.0		103	65-135		
Chloroethane	**23.3**		µg/l		20.0		116	40-160		
Chloroform	**22.4**		µg/l		20.0		112	70-135		
Chloromethane	**21.2**		µg/l		20.0		106	2-205		
Dibromochloromethane	**22.9**		µg/l		20.0		115	70-135		
Dibromomethane	**21.6**		µg/l		20.0		108	70-130		
1,2-Dichlorobenzene	**19.8**		µg/l		20.0		99	65-135		
1,3-Dichlorobenzene	**24.0**		µg/l		20.0		120	70-130		
1,4-Dichlorobenzene	**18.7**		µg/l		20.0		94	65-135		
1,1-Dichloroethane	**23.2**		µg/l		20.0		116	70-130		
1,2-Dichloroethane	**22.3**		µg/l		20.0		111	70-130		
1,1-Dichloroethene	**25.7**		µg/l		20.0		128	50-150		
cis-1,2-Dichloroethene	**23.7**		µg/l		20.0		118	70-130		
trans-1,2-Dichloroethene	**23.8**		µg/l		20.0		119	70-130		
1,2-Dichloropropane	**20.5**		µg/l		20.0		103	35-165		
cis-1,3-Dichloropropene	**20.4**		µg/l		20.0		102	25-175		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 624.1										
Batch 1808683 - SW846 5030 Water MS										
LCS (1808683-BS1)					Prepared & Analyzed: 22-Jun-18					
trans-1,3-Dichloropropene	**21.1**		µg/l		20.0		106	50-150		
Ethylbenzene	**20.5**		µg/l		20.0		102	60-140		
2-Hexanone (MBK)	**21.1**		µg/l		20.0		106	70-130		
Methyl tert-butyl ether	**20.7**		µg/l		20.0		103	70-130		
4-Methyl-2-pentanone (MIBK)	**21.3**		µg/l		20.0		106	70-130		
Methylene chloride	**22.9**		µg/l		20.0		115	60-140		
Styrene	**20.0**		µg/l		20.0		100	70-130		
1,1,2,2-Tetrachloroethane	**20.1**		µg/l		20.0		100	60-140		
Tetrachloroethene	**22.9**		µg/l		20.0		114	70-130		
Toluene	**23.0**		µg/l		20.0		115	70-130		
1,1,1-Trichloroethane	**22.3**		µg/l		20.0		111	70-130		
1,1,2-Trichloroethane	**21.9**		µg/l		20.0		110	70-130		
Trichloroethene	**22.7**		µg/l		20.0		114	65-135		
Trichlorofluoromethane (Freon 11)	**26.2**		µg/l		20.0		131	50-150		
Vinyl chloride	**25.1**		µg/l		20.0		125	5-195		
m,p-Xylene	**20.3**		µg/l		20.0		101	70-130		
o-Xylene	**21.1**		µg/l		20.0		106	70-130		
Surrogate: 4-Bromofluorobenzene	*54.2*		µg/l		*50.0*		*108*	*70-130*		
Surrogate: Toluene-d8	*52.5*		µg/l		*50.0*		*105*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*51.4*		µg/l		*50.0*		*103*	*70-130*		
Surrogate: Dibromofluoromethane	*55.0*		µg/l		*50.0*		*110*	*70-130*		
LCS Dup (1808683-BSD1)					Prepared & Analyzed: 22-Jun-18					
Acetone	**25.4**		µg/l		20.0		127	60-140	4	30
Benzene	**22.6**		µg/l		20.0		113	65-135	2	30
Bromodichloromethane	**22.7**		µg/l		20.0		113	65-135	2	30
Bromoform	**20.3**		µg/l		20.0		102	70-130	4	30
Bromomethane	**21.0**		µg/l		20.0		105	15-185	2	30
2-Butanone (MEK)	**23.0**		µg/l		20.0		115	70-130	2	30
Carbon disulfide	**22.6**		µg/l		20.0		113	70-130	3	30
Carbon tetrachloride	**22.5**		µg/l		20.0		112	70-130	6	30
Chlorobenzene	**19.2**		µg/l		20.0		96	65-135	7	30
Chloroethane	**22.9**		µg/l		20.0		114	40-160	2	30
Chloroform	**22.3**		µg/l		20.0		111	70-135	0.5	30
Chloromethane	**20.6**		µg/l		20.0		103	2-205	3	30
Dibromochloromethane	**23.4**		µg/l		20.0		117	70-135	2	30
Dibromomethane	**21.7**		µg/l		20.0		108	70-130	0.6	30
1,2-Dichlorobenzene	**19.2**		µg/l		20.0		96	65-135	3	30
1,3-Dichlorobenzene	**22.6**		µg/l		20.0		113	70-130	6	30
1,4-Dichlorobenzene	**17.8**		µg/l		20.0		89	65-135	5	30
1,1-Dichloroethane	**23.5**		µg/l		20.0		117	70-130	1	30
1,2-Dichloroethane	**22.8**		µg/l		20.0		114	70-130	2	30
1,1-Dichloroethene	**25.8**		µg/l		20.0		129	50-150	0.5	30
cis-1,2-Dichloroethene	**22.9**		µg/l		20.0		114	70-130	3	30
trans-1,2-Dichloroethene	**23.7**		µg/l		20.0		118	70-130	0.3	30
1,2-Dichloropropane	**20.1**		µg/l		20.0		101	35-165	2	30
cis-1,3-Dichloropropene	**20.7**		µg/l		20.0		103	25-175	1	30
trans-1,3-Dichloropropene	**21.2**		µg/l		20.0		106	50-150	0.3	30
Ethylbenzene	**18.6**		µg/l		20.0		93	60-140	9	30
2-Hexanone (MBK)	**21.9**		µg/l		20.0		109	70-130	4	30
Methyl tert-butyl ether	**21.3**		µg/l		20.0		106	70-130	3	30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 624.1										
Batch 1808683 - SW846 5030 Water MS										
LCS Dup (1808683-BSD1)					Prepared & Analyzed: 22-Jun-18					
4-Methyl-2-pentanone (MIBK)	**21.5**		µg/l		20.0		107	70-130	1	30
Methylene chloride	**23.0**		µg/l		20.0		115	60-140	0.04	30
Styrene	**18.9**		µg/l		20.0		94	70-130	6	30
1,1,2,2-Tetrachloroethane	**20.1**		µg/l		20.0		101	60-140	0.2	30
Tetrachloroethene	**22.3**		µg/l		20.0		112	70-130	2	30
Toluene	**22.8**		µg/l		20.0		114	70-130	1	30
1,1,1-Trichloroethane	**21.9**		µg/l		20.0		109	70-130	2	30
1,1,2-Trichloroethane	**22.2**		µg/l		20.0		111	70-130	1	30
Trichloroethene	**22.2**		µg/l		20.0		111	65-135	2	30
Trichlorofluoromethane (Freon 11)	**25.4**		µg/l		20.0		127	50-150	3	30
Vinyl chloride	**25.7**		µg/l		20.0		129	5-195	3	30
m,p-Xylene	**19.4**		µg/l		20.0		97	70-130	4	30
o-Xylene	**20.1**		µg/l		20.0		100	70-130	5	30
Surrogate: 4-Bromofluorobenzene	*54.6*		µg/l		*50.0*		*109*	*70-130*		
Surrogate: Toluene-d8	*55.6*		µg/l		*50.0*		*111*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*53.3*		µg/l		*50.0*		*107*	*70-130*		
Surrogate: Dibromofluoromethane	*56.9*		µg/l		*50.0*		*114*	*70-130*		
SW846 8260C SIM										
Batch 1809223 - SW846 5030 Water MS										
Blank (1809223-BLK1)					Prepared & Analyzed: 03-Jul-18					
1,4-Dioxane	< 2.50		µg/l	2.50						
Surrogate: 1,4-Dioxane-d8	*39.0*		µg/l		*50.0*		*78*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*50.2*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*48.3*		µg/l		*50.0*		*97*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*56.1*		µg/l		*50.0*		*112*	*70-130*		
Surrogate: Dibromofluoromethane	*60.4*		µg/l		*50.0*		*121*	*70-130*		
LCS (1809223-BS1)					Prepared & Analyzed: 03-Jul-18					
1,4-Dioxane	**4.1**		µg/l		5.00		81	70-130		
Surrogate: 1,4-Dioxane-d8	*39.3*		µg/l		*50.0*		*79*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*50.4*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: Toluene-d8	*47.6*		µg/l		*50.0*		*95*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*63.4*		µg/l		*50.0*		*127*	*70-130*		
Surrogate: Dibromofluoromethane	*64.6*		µg/l		*50.0*		*129*	*70-130*		
LCS Dup (1809223-BSD1)					Prepared & Analyzed: 03-Jul-18					
1,4-Dioxane	**4.0**		µg/l		5.00		81	70-130	0.2	20
Surrogate: 1,4-Dioxane-d8	*36.7*		µg/l		*50.0*		*73*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*50.2*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*47.8*		µg/l		*50.0*		*96*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*64.7*		µg/l		*50.0*		*129*	*70-130*		
Surrogate: Dibromofluoromethane	*65.0*		µg/l		*50.0*		*130*	*70-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808587 - SW846 3510C										
Blank (1808587-BLK1)					Prepared: 21-Jun-18 Analyzed: 25-Jun-18					
Acenaphthene	< 5.00		µg/l	5.00						
Acenaphthylene	< 5.00		µg/l	5.00						
Anthracene	< 5.00		µg/l	5.00						
Benzidine	< 10.0		µg/l	10.0						
Benzo (a) anthracene	< 5.00		µg/l	5.00						
Benzo (a) pyrene	< 5.00		µg/l	5.00						
Benzo (b) fluoranthene	< 5.00		µg/l	5.00						
Benzo (g,h,i) perylene	< 5.00		µg/l	5.00						
Benzo (k) fluoranthene	< 5.00		µg/l	5.00						
Bis(2-chloroethoxy)methane	< 5.00		µg/l	5.00						
Bis(2-chloroethyl)ether	< 5.00		µg/l	5.00						
Bis(2-chloroisopropyl)ether	< 5.00		µg/l	5.00						
Bis(2-ethylhexyl)phthalate	< 5.00		µg/l	5.00						
4-Bromophenyl phenyl ether	< 5.00		µg/l	5.00						
Butyl benzyl phthalate	< 5.00		µg/l	5.00						
4-Chloro-3-methylphenol	< 5.00		µg/l	5.00						
2-Chloronaphthalene	< 5.00		µg/l	5.00						
2-Chlorophenol	< 5.00		µg/l	5.00						
4-Chlorophenyl phenyl ether	< 5.00		µg/l	5.00						
Chrysene	< 5.00		µg/l	5.00						
Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00						
1,2-Dichlorobenzene	< 5.00		µg/l	5.00						
1,3-Dichlorobenzene	< 5.00		µg/l	5.00						
1,4-Dichlorobenzene	< 5.00		µg/l	5.00						
3,3´-Dichlorobenzidine	< 5.00		µg/l	5.00						
2,4-Dichlorophenol	< 5.00		µg/l	5.00						
Diethyl phthalate	< 5.00		µg/l	5.00						
Dimethyl phthalate	< 5.00		µg/l	5.00						
2,4-Dimethylphenol	< 5.00		µg/l	5.00						
Di-n-butyl phthalate	< 5.00		µg/l	5.00						
4,6-Dinitro-2-methylphenol	< 5.00		µg/l	5.00						
2,4-Dinitrophenol	< 5.00		µg/l	5.00						
2,4-Dinitrotoluene	< 5.00		µg/l	5.00						
2,6-Dinitrotoluene	< 5.00		µg/l	5.00						
Di-n-octyl phthalate	< 5.00		µg/l	5.00						
Fluoranthene	< 5.00		µg/l	5.00						
Fluorene	< 5.00		µg/l	5.00						
Hexachlorobenzene	< 5.00		µg/l	5.00						
Hexachlorobutadiene	< 5.00		µg/l	5.00						
Hexachlorocyclopentadiene	< 5.00		µg/l	5.00						
Hexachloroethane	< 5.00		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00						
Isophorone	< 5.00		µg/l	5.00						
Naphthalene	< 5.00		µg/l	5.00						
Nitrobenzene	< 5.00		µg/l	5.00						
2-Nitrophenol	< 5.00		µg/l	5.00						
4-Nitrophenol	< 5.00		µg/l	5.00						
N-Nitrosodimethylamine	< 5.00		µg/l	5.00						
N-Nitrosodi-n-propylamine	< 5.00		µg/l	5.00						
N-Nitrosodiphenylamine	< 5.00		µg/l	5.00						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808587 - SW846 3510C										
Blank (1808587-BLK1)					Prepared: 21-Jun-18 Analyzed: 25-Jun-18					
Pentachlorophenol	< 5.00		µg/l	5.00						
Phenanthrene	< 5.00		µg/l	5.00						
Phenol	< 5.00		µg/l	5.00						
Pyrene	< 5.00		µg/l	5.00						
1,2,4-Trichlorobenzene	< 5.00		µg/l	5.00						
2,4,6-Trichlorophenol	< 5.00		µg/l	5.00						
Surrogate: 2-Fluorobiphenyl	*28.2*		µg/l		*50.0*		*56*	*30-130*		
Surrogate: 2-Fluorophenol	*28.2*		µg/l		*50.0*		*56*	*15-110*		
Surrogate: Nitrobenzene-d5	*29.7*		µg/l		*50.0*		*59*	*30-130*		
Surrogate: Phenol-d5	*23.0*		µg/l		*50.0*		*46*	*15-110*		
Surrogate: Terphenyl-dl4	*32.8*		µg/l		*50.0*		*66*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*33.4*		µg/l		*50.0*		*67*	*15-110*		
LCS (1808587-BS1)					Prepared: 21-Jun-18 Analyzed: 25-Jun-18					
Acenaphthene	**36.4**		µg/l	5.05	50.5		72	60-132		
Acenaphthylene	**34.6**		µg/l	5.05	50.5		68	54-126		
Anthracene	**34.4**		µg/l	5.05	50.5		68	43-120		
Benzidine	**8.22**	QC6	µg/l	10.1	50.5		16	60-140		
Benzo (a) anthracene	**38.5**		µg/l	5.05	50.5		76	42-133		
Benzo (a) pyrene	**38.3**		µg/l	5.05	50.5		76	32-148		
Benzo (b) fluoranthene	**45.6**		µg/l	5.05	50.5		90	42-140		
Benzo (g,h,i) perylene	**38.9**		µg/l	5.05	50.5		77	1-195		
Benzo (k) fluoranthene	**31.6**		µg/l	5.05	50.5		63	25-145		
Bis(2-chloroethoxy)methane	**26.7**		µg/l	5.05	50.5		53	49-165		
Bis(2-chloroethyl)ether	**25.1**		µg/l	5.05	50.5		50	43-126		
Bis(2-chloroisopropyl)ether	**28.7**	QC6	µg/l	5.05	50.5		57	63-139		
Bis(2-ethylhexyl)phthalate	**33.8**		µg/l	5.05	50.5		67	29-137		
4-Bromophenyl phenyl ether	**35.1**		µg/l	5.05	50.5		70	65-120		
Butyl benzyl phthalate	**35.4**		µg/l	5.05	50.5		70	1-140		
4-Chloro-3-methylphenol	**35.5**		µg/l	5.05	50.5		70	41-128		
2-Chloronaphthalene	**41.8**		µg/l	5.05	50.5		83	65-120		
2-Chlorophenol	**34.5**		µg/l	5.05	50.5		68	36-120		
4-Chlorophenyl phenyl ether	**40.3**		µg/l	5.05	50.5		80	38-145		
Chrysene	**40.2**		µg/l	5.05	50.5		80	44-140		
Dibenzo (a,h) anthracene	**42.8**		µg/l	5.05	50.5		85	1-200		
1,2-Dichlorobenzene	**36.8**		µg/l	5.05	50.5		73	60-140		
1,3-Dichlorobenzene	**36.1**		µg/l	5.05	50.5		71	60-140		
1,4-Dichlorobenzene	**38.5**		µg/l	5.05	50.5		76	60-140		
3,3´-Dichlorobenzidine	**54.1**		µg/l	5.05	50.5		107	8-213		
2,4-Dichlorophenol	**37.8**		µg/l	5.05	50.5		75	53-122		
Diethyl phthalate	**36.4**		µg/l	5.05	50.5		72	1-120		
Dimethyl phthalate	**32.3**		µg/l	5.05	50.5		64	1-120		
2,4-Dimethylphenol	**32.8**		µg/l	5.05	50.5		65	42-120		
Di-n-butyl phthalate	**40.9**		µg/l	5.05	50.5		81	8-120		
4,6-Dinitro-2-methylphenol	**34.6**		µg/l	5.05	50.5		69	53-130		
2,4-Dinitrophenol	**23.6**		µg/l	5.05	50.5		47	1-173		
2,4-Dinitrotoluene	**38.4**		µg/l	5.05	50.5		76	48-127		
2,6-Dinitrotoluene	**38.1**		µg/l	5.05	50.5		75	68-137		
Di-n-octyl phthalate	**37.4**		µg/l	5.05	50.5		74	19-132		
Fluoranthene	**42.2**		µg/l	5.05	50.5		84	43-121		
Fluorene	**35.3**		µg/l	5.05	50.5		70	70-120		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808587 - SW846 3510C										
LCS (1808587-BS1)					Prepared: 21-Jun-18 Analyzed: 25-Jun-18					
Hexachlorobenzene	**51.2**		µg/l	5.05	50.5		101	8-142		
Hexachlorobutadiene	**38.0**		µg/l	5.05	50.5		75	38-120		
Hexachlorocyclopentadiene	**52.6**		µg/l	5.05	50.5		104	60-140		
Hexachloroethane	**40.4**		µg/l	5.05	50.5		80	55-120		
Indeno (1,2,3-cd) pyrene	**41.1**		µg/l	5.05	50.5		81	1-151		
Isophorone	**32.2**		µg/l	5.05	50.5		64	47-180		
Naphthalene	**33.5**		µg/l	5.05	50.5		66	36-120		
Nitrobenzene	**49.6**		µg/l	5.05	50.5		98	54-158		
2-Nitrophenol	**33.3**		µg/l	5.05	50.5		66	45-167		
4-Nitrophenol	**17.8**		µg/l	5.05	50.5		35	13-129		
N-Nitrosodimethylamine	**23.1**	QC6	µg/l	5.05	50.5		46	60-140		
N-Nitrosodi-n-propylamine	**32.2**		µg/l	5.05	50.5		64	14-198		
N-Nitrosodiphenylamine	**44.3**		µg/l	5.05	50.5		88	60-140		
Pentachlorophenol	**30.2**		µg/l	5.05	50.5		60	38-152		
Phenanthrene	**40.2**		µg/l	5.05	50.5		80	65-120		
Phenol	**15.1**		µg/l	5.05	50.5		30	17-120		
Pyrene	**36.6**		µg/l	5.05	50.5		72	70-120		
1,2,4-Trichlorobenzene	**42.2**		µg/l	5.05	50.5		84	57-130		
2,4,6-Trichlorophenol	**36.9**		µg/l	5.05	50.5		73	52-129		
Surrogate: 2-Fluorobiphenyl	*44.5*		µg/l		*50.5*		*88*	*30-130*		
Surrogate: 2-Fluorophenol	*27.5*		µg/l		*50.5*		*54*	*15-110*		
Surrogate: Nitrobenzene-d5	*48.4*		µg/l		*50.5*		*96*	*30-130*		
Surrogate: Phenol-d5	*23.7*		µg/l		*50.5*		*47*	*15-110*		
Surrogate: Terphenyl-dl4	*54.5*		µg/l		*50.5*		*108*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*61.1*	SAC	µg/l		*50.5*		*121*	*15-110*		
LCS Dup (1808587-BSD1)					Prepared: 21-Jun-18 Analyzed: 25-Jun-18					
Acenaphthene	**38.9**		µg/l	5.00	50.0		78	60-132	7	20
Acenaphthylene	**36.7**		µg/l	5.00	50.0		73	54-126	6	20
Anthracene	**32.9**		µg/l	5.00	50.0		66	43-120	4	20
Benzidine	**9.20**	QC6	µg/l	10.0	50.0		18	60-140	11	20
Benzo (a) anthracene	**38.7**		µg/l	5.00	50.0		77	42-133	0.4	20
Benzo (a) pyrene	**37.8**		µg/l	5.00	50.0		76	32-148	1	20
Benzo (b) fluoranthene	**45.4**		µg/l	5.00	50.0		91	42-140	0.4	20
Benzo (g,h,i) perylene	**38.5**		µg/l	5.00	50.0		77	1-195	1	20
Benzo (k) fluoranthene	**31.8**		µg/l	5.00	50.0		64	25-145	0.6	20
Bis(2-chloroethoxy)methane	**24.9**		µg/l	5.00	50.0		50	49-165	7	20
Bis(2-chloroethyl)ether	**25.3**		µg/l	5.00	50.0		51	43-126	1	20
Bis(2-chloroisopropyl)ether	**27.7**	QC6	µg/l	5.00	50.0		55	63-139	4	20
Bis(2-ethylhexyl)phthalate	**35.3**		µg/l	5.00	50.0		71	29-137	4	20
4-Bromophenyl phenyl ether	**34.9**		µg/l	5.00	50.0		70	65-120	0.7	20
Butyl benzyl phthalate	**34.4**		µg/l	5.00	50.0		69	1-140	3	20
4-Chloro-3-methylphenol	**37.3**		µg/l	5.00	50.0		75	41-128	5	20
2-Chloronaphthalene	**47.0**		µg/l	5.00	50.0		94	65-120	12	20
2-Chlorophenol	**35.6**		µg/l	5.00	50.0		71	36-120	3	20
4-Chlorophenyl phenyl ether	**39.4**		µg/l	5.00	50.0		79	38-145	2	20
Chrysene	**38.1**		µg/l	5.00	50.0		76	44-140	5	20
Dibenzo (a,h) anthracene	**42.5**		µg/l	5.00	50.0		85	1-200	0.7	20
1,2-Dichlorobenzene	**36.6**		µg/l	5.00	50.0		73	60-140	0.4	20
1,3-Dichlorobenzene	**35.9**		µg/l	5.00	50.0		72	60-140	0.5	20
1,4-Dichlorobenzene	**38.6**		µg/l	5.00	50.0		77	60-140	0.2	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808587 - SW846 3510C										
LCS Dup (1808587-BSD1)					Prepared: 21-Jun-18 Analyzed: 25-Jun-18					
3,3´-Dichlorobenzidine	**52.8**		µg/l	5.00	50.0		106	8-213	2	20
2,4-Dichlorophenol	**34.7**		µg/l	5.00	50.0		69	53-122	8	20
Diethyl phthalate	**35.6**		µg/l	5.00	50.0		71	1-120	2	20
Dimethyl phthalate	**34.2**		µg/l	5.00	50.0		68	1-120	6	20
2,4-Dimethylphenol	**31.9**		µg/l	5.00	50.0		64	42-120	3	20
Di-n-butyl phthalate	**36.1**		µg/l	5.00	50.0		72	8-120	12	20
4,6-Dinitro-2-methylphenol	**35.1**		µg/l	5.00	50.0		70	53-130	1	20
2,4-Dinitrophenol	**25.2**		µg/l	5.00	50.0		50	1-173	6	20
2,4-Dinitrotoluene	**39.9**		µg/l	5.00	50.0		80	48-127	4	20
2,6-Dinitrotoluene	**37.8**		µg/l	5.00	50.0		76	68-137	0.6	20
Di-n-octyl phthalate	**36.7**		µg/l	5.00	50.0		73	19-132	2	20
Fluoranthene	**37.4**		µg/l	5.00	50.0		75	43-121	12	20
Fluorene	**34.8**		µg/l	5.00	50.0		70	70-120	1	20
Hexachlorobenzene	**45.6**		µg/l	5.00	50.0		91	8-142	12	20
Hexachlorobutadiene	**39.9**		µg/l	5.00	50.0		80	38-120	5	20
Hexachlorocyclopentadiene	**57.8**		µg/l	5.00	50.0		116	60-140	9	20
Hexachloroethane	**40.3**		µg/l	5.00	50.0		81	55-120	0.08	20
Indeno (1,2,3-cd) pyrene	**40.7**		µg/l	5.00	50.0		81	1-151	1	20
Isophorone	**30.0**		µg/l	5.00	50.0		60	47-180	7	20
Naphthalene	**34.6**		µg/l	5.00	50.0		69	36-120	3	20
Nitrobenzene	**38.6**	QR9	µg/l	5.00	50.0		77	54-158	25	20
2-Nitrophenol	**29.8**		µg/l	5.00	50.0		60	45-167	11	20
4-Nitrophenol	**20.0**		µg/l	5.00	50.0		40	13-129	12	20
N-Nitrosodimethylamine	**22.7**	QC6	µg/l	5.00	50.0		45	60-140	2	20
N-Nitrosodi-n-propylamine	**31.1**		µg/l	5.00	50.0		62	14-198	3	20
N-Nitrosodiphenylamine	**43.6**		µg/l	5.00	50.0		87	60-140	2	20
Pentachlorophenol	**28.8**		µg/l	5.00	50.0		58	38-152	5	20
Phenanthrene	**41.1**		µg/l	5.00	50.0		82	65-120	2	20
Phenol	**15.7**		µg/l	5.00	50.0		31	17-120	4	20
Pyrene	**34.3**	QC6	µg/l	5.00	50.0		69	70-120	6	20
1,2,4-Trichlorobenzene	**38.8**		µg/l	5.00	50.0		78	57-130	8	20
2,4,6-Trichlorophenol	**39.8**		µg/l	5.00	50.0		80	52-129	8	20
Surrogate: 2-Fluorobiphenyl	*49.9*		µg/l		*50.0*		*100*	*30-130*		
Surrogate: 2-Fluorophenol	*26.6*		µg/l		*50.0*		*53*	*15-110*		
Surrogate: Nitrobenzene-d5	*48.6*		µg/l		*50.0*		*97*	*30-130*		
Surrogate: Phenol-d5	*24.3*		µg/l		*50.0*		*49*	*15-110*		
Surrogate: Terphenyl-dl4	*52.4*		µg/l		*50.0*		*105*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*58.6*	SAC	µg/l		*50.0*		*117*	*15-110*		
Batch 1808951 - SW846 3510C										
Blank (1808951-BLK1)					Prepared: 27-Jun-18 Analyzed: 28-Jun-18					
Acenaphthene	< 5.00		µg/l	5.00						
Acenaphthylene	< 5.00		µg/l	5.00						
Anthracene	< 5.00		µg/l	5.00						
Benzidine	< 10.0		µg/l	10.0						
Benzo (a) anthracene	< 5.00		µg/l	5.00						
Benzo (a) pyrene	< 5.00		µg/l	5.00						
Benzo (b) fluoranthene	< 5.00		µg/l	5.00						
Benzo (g,h,i) perylene	< 5.00		µg/l	5.00						
Benzo (k) fluoranthene	< 5.00		µg/l	5.00						
Bis(2-chloroethoxy)methane	< 5.00		µg/l	5.00						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808951 - SW846 3510C										
Blank (1808951-BLK1)					Prepared: 27-Jun-18 Analyzed: 28-Jun-18					
Bis(2-chloroethyl)ether	< 5.00		µg/l	5.00						
Bis(2-chloroisopropyl)ether	< 5.00		µg/l	5.00						
Bis(2-ethylhexyl)phthalate	< 5.00		µg/l	5.00						
4-Bromophenyl phenyl ether	< 5.00		µg/l	5.00						
Butyl benzyl phthalate	< 5.00		µg/l	5.00						
4-Chloro-3-methylphenol	< 5.00		µg/l	5.00						
2-Chloronaphthalene	< 5.00		µg/l	5.00						
2-Chlorophenol	< 5.00		µg/l	5.00						
4-Chlorophenyl phenyl ether	< 5.00		µg/l	5.00						
Chrysene	< 5.00		µg/l	5.00						
Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00						
1,2-Dichlorobenzene	< 5.00		µg/l	5.00						
1,3-Dichlorobenzene	< 5.00		µg/l	5.00						
1,4-Dichlorobenzene	< 5.00		µg/l	5.00						
3,3´-Dichlorobenzidine	< 5.00		µg/l	5.00						
2,4-Dichlorophenol	< 5.00		µg/l	5.00						
Diethyl phthalate	< 5.00		µg/l	5.00						
Dimethyl phthalate	< 5.00		µg/l	5.00						
2,4-Dimethylphenol	< 5.00		µg/l	5.00						
Di-n-butyl phthalate	< 5.00		µg/l	5.00						
4,6-Dinitro-2-methylphenol	< 5.00		µg/l	5.00						
2,4-Dinitrophenol	< 5.00		µg/l	5.00						
2,4-Dinitrotoluene	< 5.00		µg/l	5.00						
2,6-Dinitrotoluene	< 5.00		µg/l	5.00						
Di-n-octyl phthalate	< 5.00		µg/l	5.00						
Fluoranthene	< 5.00		µg/l	5.00						
Fluorene	< 5.00		µg/l	5.00						
Hexachlorobenzene	< 5.00		µg/l	5.00						
Hexachlorobutadiene	< 5.00		µg/l	5.00						
Hexachlorocyclopentadiene	< 5.00		µg/l	5.00						
Hexachloroethane	< 5.00		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00						
Isophorone	< 5.00		µg/l	5.00						
Naphthalene	< 5.00		µg/l	5.00						
Nitrobenzene	< 5.00		µg/l	5.00						
2-Nitrophenol	< 5.00		µg/l	5.00						
4-Nitrophenol	< 5.00		µg/l	5.00						
N-Nitrosodimethylamine	< 5.00		µg/l	5.00						
N-Nitrosodi-n-propylamine	< 5.00		µg/l	5.00						
N-Nitrosodiphenylamine	< 5.00		µg/l	5.00						
Pentachlorophenol	< 5.00		µg/l	5.00						
Phenanthrene	< 5.00		µg/l	5.00						
Phenol	< 5.00		µg/l	5.00						
Pyrene	< 5.00		µg/l	5.00						
1,2,4-Trichlorobenzene	< 5.00		µg/l	5.00						
2,4,6-Trichlorophenol	< 5.00		µg/l	5.00						
Surrogate: 2-Fluorobiphenyl	*23.5*		µg/l		*50.0*		*47*	*30-130*		
Surrogate: 2-Fluorophenol	*18.0*		µg/l		*50.0*		*36*	*15-110*		
Surrogate: Nitrobenzene-d5	*25.2*		µg/l		*50.0*		*50*	*30-130*		
Surrogate: Phenol-d5	*11.6*		µg/l		*50.0*		*23*	*15-110*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808951 - SW846 3510C										
Blank (1808951-BLK1)						Prepared: 27-Jun-18 Analyzed: 28-Jun-18				
Surrogate: Terphenyl-dl4	*31.6*		µg/l		*50.0*		*63*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*24.6*		µg/l		*50.0*		*49*	*15-110*		
Blank (1808951-BLK3)						Prepared: 27-Jun-18 Analyzed: 28-Jun-18				
Acenaphthene	< 5.00		µg/l	5.00						
Acenaphthylene	< 5.00		µg/l	5.00						
Anthracene	< 5.00		µg/l	5.00						
Benzidine	< 10.0		µg/l	10.0						
Benzo (a) anthracene	< 5.00		µg/l	5.00						
Benzo (a) pyrene	< 5.00		µg/l	5.00						
Benzo (b) fluoranthene	< 5.00		µg/l	5.00						
Benzo (g,h,i) perylene	< 5.00		µg/l	5.00						
Benzo (k) fluoranthene	< 5.00		µg/l	5.00						
Bis(2-chloroethoxy)methane	< 5.00		µg/l	5.00						
Bis(2-chloroethyl)ether	< 5.00		µg/l	5.00						
Bis(2-chloroisopropyl)ether	< 5.00		µg/l	5.00						
Bis(2-ethylhexyl)phthalate	< 5.00		µg/l	5.00						
4-Bromophenyl phenyl ether	< 5.00		µg/l	5.00						
Butyl benzyl phthalate	< 5.00		µg/l	5.00						
4-Chloro-3-methylphenol	< 5.00		µg/l	5.00						
2-Chloronaphthalene	< 5.00		µg/l	5.00						
2-Chlorophenol	< 5.00		µg/l	5.00						
4-Chlorophenyl phenyl ether	< 5.00		µg/l	5.00						
Chrysene	< 5.00		µg/l	5.00						
Dibenzo (a,h) anthracene	< 5.00		µg/l	5.00						
1,2-Dichlorobenzene	< 5.00		µg/l	5.00						
1,3-Dichlorobenzene	< 5.00		µg/l	5.00						
1,4-Dichlorobenzene	< 5.00		µg/l	5.00						
3,3´-Dichlorobenzidine	< 5.00		µg/l	5.00						
2,4-Dichlorophenol	< 5.00		µg/l	5.00						
Diethyl phthalate	< 5.00		µg/l	5.00						
Dimethyl phthalate	< 5.00		µg/l	5.00						
2,4-Dimethylphenol	< 5.00		µg/l	5.00						
Di-n-butyl phthalate	< 5.00		µg/l	5.00						
4,6-Dinitro-2-methylphenol	< 5.00		µg/l	5.00						
2,4-Dinitrophenol	< 5.00		µg/l	5.00						
2,4-Dinitrotoluene	< 5.00		µg/l	5.00						
2,6-Dinitrotoluene	< 5.00		µg/l	5.00						
Di-n-octyl phthalate	< 5.00		µg/l	5.00						
Fluoranthene	< 5.00		µg/l	5.00						
Fluorene	< 5.00		µg/l	5.00						
Hexachlorobenzene	< 5.00		µg/l	5.00						
Hexachlorobutadiene	< 5.00		µg/l	5.00						
Hexachlorocyclopentadiene	< 5.00		µg/l	5.00						
Hexachloroethane	< 5.00		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	< 5.00		µg/l	5.00						
Isophorone	< 5.00		µg/l	5.00						
Naphthalene	< 5.00		µg/l	5.00						
Nitrobenzene	< 5.00		µg/l	5.00						
2-Nitrophenol	< 5.00		µg/l	5.00						
4-Nitrophenol	< 5.00		µg/l	5.00						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808951 - SW846 3510C										
Blank (1808951-BLK3)					Prepared: 27-Jun-18 Analyzed: 28-Jun-18					
N-Nitrosodimethylamine	< 5.00		µg/l	5.00						
N-Nitrosodi-n-propylamine	< 5.00		µg/l	5.00						
N-Nitrosodiphenylamine	< 5.00		µg/l	5.00						
Pentachlorophenol	< 5.00		µg/l	5.00						
Phenanthrene	< 5.00		µg/l	5.00						
Phenol	< 5.00		µg/l	5.00						
Pyrene	< 5.00		µg/l	5.00						
1,2,4-Trichlorobenzene	< 5.00		µg/l	5.00						
2,4,6-Trichlorophenol	< 5.00		µg/l	5.00						
Surrogate: 2-Fluorobiphenyl	*22.5*		µg/l		*50.0*		*45*	*30-130*		
Surrogate: 2-Fluorophenol	*18.2*		µg/l		*50.0*		*36*	*15-110*		
Surrogate: Nitrobenzene-d5	*25.3*		µg/l		*50.0*		*51*	*30-130*		
Surrogate: Phenol-d5	*12.3*		µg/l		*50.0*		*25*	*15-110*		
Surrogate: Terphenyl-dl4	*34.6*		µg/l		*50.0*		*69*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*25.8*		µg/l		*50.0*		*52*	*15-110*		
LCS (1808951-BS1)					Prepared: 27-Jun-18 Analyzed: 28-Jun-18					
Acenaphthene	**29.2**		µg/l	5.00	50.0		58	60-132		
Acenaphthylene	**28.3**		µg/l	5.00	50.0		57	54-126		
Anthracene	**28.1**		µg/l	5.00	50.0		56	43-120		
Benzidine	**19.3**		µg/l	10.0	50.0		39	60-140		
Benzo (a) anthracene	**30.7**		µg/l	5.00	50.0		61	42-133		
Benzo (a) pyrene	**32.0**		µg/l	5.00	50.0		64	32-148		
Benzo (b) fluoranthene	**33.5**		µg/l	5.00	50.0		67	42-140		
Benzo (g,h,i) perylene	**34.1**		µg/l	5.00	50.0		68	1-195		
Benzo (k) fluoranthene	**32.1**		µg/l	5.00	50.0		64	25-145		
Bis(2-chloroethoxy)methane	**23.0**		µg/l	5.00	50.0		46	49-165		
Bis(2-chloroethyl)ether	**23.3**		µg/l	5.00	50.0		47	43-126		
Bis(2-chloroisopropyl)ether	**26.0**		µg/l	5.00	50.0		52	63-139		
Bis(2-ethylhexyl)phthalate	**29.7**		µg/l	5.00	50.0		59	29-137		
4-Bromophenyl phenyl ether	**26.9**		µg/l	5.00	50.0		54	65-120		
Butyl benzyl phthalate	**27.4**		µg/l	5.00	50.0		55	1-140		
4-Chloro-3-methylphenol	**32.2**		µg/l	5.00	50.0		64	41-128		
2-Chloronaphthalene	**33.6**		µg/l	5.00	50.0		67	65-120		
2-Chlorophenol	**28.6**		µg/l	5.00	50.0		57	36-120		
4-Chlorophenyl phenyl ether	**30.8**		µg/l	5.00	50.0		62	38-145		
Chrysene	**30.0**		µg/l	5.00	50.0		60	44-140		
Dibenzo (a,h) anthracene	**36.8**		µg/l	5.00	50.0		74	1-200		
1,2-Dichlorobenzene	**28.4**		µg/l	5.00	50.0		57	60-140		
1,3-Dichlorobenzene	**26.5**		µg/l	5.00	50.0		53	60-140		
1,4-Dichlorobenzene	**29.3**		µg/l	5.00	50.0		59	60-140		
3,3´-Dichlorobenzidine	**39.0**		µg/l	5.00	50.0		78	8-213		
2,4-Dichlorophenol	**28.5**		µg/l	5.00	50.0		57	53-122		
Diethyl phthalate	**30.1**		µg/l	5.00	50.0		60	1-120		
Dimethyl phthalate	**27.6**		µg/l	5.00	50.0		55	1-120		
2,4-Dimethylphenol	**27.8**		µg/l	5.00	50.0		56	42-120		
Di-n-butyl phthalate	**28.4**		µg/l	5.00	50.0		57	8-120		
4,6-Dinitro-2-methylphenol	**21.3**		µg/l	5.00	50.0		43	53-130		
2,4-Dinitrophenol	**18.5**		µg/l	5.00	50.0		37	1-173		
2,4-Dinitrotoluene	**31.3**		µg/l	5.00	50.0		63	48-127		
2,6-Dinitrotoluene	**30.9**		µg/l	5.00	50.0		62	68-137		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808951 - SW846 3510C										
LCS (1808951-BS1)						Prepared: 27-Jun-18 Analyzed: 28-Jun-18				
Di-n-octyl phthalate	**31.5**		µg/l	5.00	50.0		63	19-132		
Fluoranthene	**30.3**		µg/l	5.00	50.0		61	43-121		
Fluorene	**26.1**		µg/l	5.00	50.0		52	70-120		
Hexachlorobenzene	**35.9**		µg/l	5.00	50.0		72	8-142		
Hexachlorobutadiene	**31.1**		µg/l	5.00	50.0		62	38-120		
Hexachlorocyclopentadiene	**39.1**		µg/l	5.00	50.0		78	60-140		
Hexachloroethane	**30.6**		µg/l	5.00	50.0		61	55-120		
Indeno (1,2,3-cd) pyrene	**32.6**		µg/l	5.00	50.0		65	1-151		
Isophorone	**27.2**		µg/l	5.00	50.0		54	47-180		
Naphthalene	**25.9**		µg/l	5.00	50.0		52	36-120		
Nitrobenzene	**42.7**		µg/l	5.00	50.0		85	54-158		
2-Nitrophenol	**26.4**		µg/l	5.00	50.0		53	45-167		
4-Nitrophenol	**15.2**		µg/l	5.00	50.0		30	13-129		
N-Nitrosodimethylamine	**23.4**		µg/l	5.00	50.0		47	60-140		
N-Nitrosodi-n-propylamine	**28.7**		µg/l	5.00	50.0		57	14-198		
N-Nitrosodiphenylamine	**32.3**		µg/l	5.00	50.0		65	60-140		
Pentachlorophenol	**18.0**		µg/l	5.00	50.0		36	38-152		
Phenanthrene	**29.8**		µg/l	5.00	50.0		60	65-120		
Phenol	**16.1**		µg/l	5.00	50.0		32	17-120		
Pyrene	**28.5**		µg/l	5.00	50.0		57	70-120		
1,2,4-Trichlorobenzene	**30.4**		µg/l	5.00	50.0		61	57-130		
2,4,6-Trichlorophenol	**29.8**		µg/l	5.00	50.0		60	52-129		
Surrogate: 2-Fluorobiphenyl	*25.1*		µg/l		*50.0*		*50*	*30-130*		
Surrogate: 2-Fluorophenol	*22.5*		µg/l		*50.0*		*45*	*15-110*		
Surrogate: Nitrobenzene-d5	*30.8*		µg/l		*50.0*		*62*	*30-130*		
Surrogate: Phenol-d5	*20.6*		µg/l		*50.0*		*41*	*15-110*		
Surrogate: Terphenyl-dl4	*22.3*		µg/l		*50.0*		*45*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*34.4*		µg/l		*50.0*		*69*	*15-110*		
LCS (1808951-BS3)						Prepared: 27-Jun-18 Analyzed: 28-Jun-18				
Acenaphthene	**29.3**		µg/l	5.00	50.0		59	60-132		
Acenaphthylene	**29.0**		µg/l	5.00	50.0		58	54-126		
Anthracene	**27.5**		µg/l	5.00	50.0		55	43-120		
Benzidine	**21.6**		µg/l	10.0	50.0		43	60-140		
Benzo (a) anthracene	**30.0**		µg/l	5.00	50.0		60	42-133		
Benzo (a) pyrene	**33.3**		µg/l	5.00	50.0		67	32-148		
Benzo (b) fluoranthene	**35.9**		µg/l	5.00	50.0		72	42-140		
Benzo (g,h,i) perylene	**35.5**		µg/l	5.00	50.0		71	1-195		
Benzo (k) fluoranthene	**29.7**		µg/l	5.00	50.0		59	25-145		
Bis(2-chloroethoxy)methane	**22.1**		µg/l	5.00	50.0		44	49-165		
Bis(2-chloroethyl)ether	**23.1**		µg/l	5.00	50.0		46	43-126		
Bis(2-chloroisopropyl)ether	**25.0**		µg/l	5.00	50.0		50	63-139		
Bis(2-ethylhexyl)phthalate	**28.9**		µg/l	5.00	50.0		58	29-137		
4-Bromophenyl phenyl ether	**25.5**		µg/l	5.00	50.0		51	65-120		
Butyl benzyl phthalate	**26.8**		µg/l	5.00	50.0		54	1-140		
4-Chloro-3-methylphenol	**30.6**		µg/l	5.00	50.0		61	41-128		
2-Chloronaphthalene	**32.6**		µg/l	5.00	50.0		65	65-120		
2-Chlorophenol	**28.3**		µg/l	5.00	50.0		57	36-120		
4-Chlorophenyl phenyl ether	**29.9**		µg/l	5.00	50.0		60	38-145		
Chrysene	**31.1**		µg/l	5.00	50.0		62	44-140		
Dibenzo (a,h) anthracene	**37.6**		µg/l	5.00	50.0		75	1-200		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808951 - SW846 3510C										
LCS (1808951-BS3)					Prepared: 27-Jun-18 Analyzed: 28-Jun-18					
1,2-Dichlorobenzene	**28.1**		µg/l	5.00	50.0		56	60-140		
1,3-Dichlorobenzene	**26.6**		µg/l	5.00	50.0		53	60-140		
1,4-Dichlorobenzene	**28.4**		µg/l	5.00	50.0		57	60-140		
3,3´-Dichlorobenzidine	**41.6**		µg/l	5.00	50.0		83	8-213		
2,4-Dichlorophenol	**28.8**		µg/l	5.00	50.0		58	53-122		
Diethyl phthalate	**29.5**		µg/l	5.00	50.0		59	1-120		
Dimethyl phthalate	**28.2**		µg/l	5.00	50.0		56	1-120		
2,4-Dimethylphenol	**27.3**		µg/l	5.00	50.0		55	42-120		
Di-n-butyl phthalate	**26.3**		µg/l	5.00	50.0		53	8-120		
4,6-Dinitro-2-methylphenol	**23.4**		µg/l	5.00	50.0		47	53-130		
2,4-Dinitrophenol	**21.3**		µg/l	5.00	50.0		43	1-173		
2,4-Dinitrotoluene	**31.1**		µg/l	5.00	50.0		62	48-127		
2,6-Dinitrotoluene	**32.0**		µg/l	5.00	50.0		64	68-137		
Di-n-octyl phthalate	**31.8**		µg/l	5.00	50.0		64	19-132		
Fluoranthene	**27.6**		µg/l	5.00	50.0		55	43-121		
Fluorene	**26.0**		µg/l	5.00	50.0		52	70-120		
Hexachlorobenzene	**32.0**		µg/l	5.00	50.0		64	8-142		
Hexachlorobutadiene	**28.8**		µg/l	5.00	50.0		58	38-120		
Hexachlorocyclopentadiene	**42.2**		µg/l	5.00	50.0		84	60-140		
Hexachloroethane	**29.0**		µg/l	5.00	50.0		58	55-120		
Indeno (1,2,3-cd) pyrene	**35.5**		µg/l	5.00	50.0		71	1-151		
Isophorone	**25.8**		µg/l	5.00	50.0		52	47-180		
Naphthalene	**25.8**		µg/l	5.00	50.0		52	36-120		
Nitrobenzene	**42.9**		µg/l	5.00	50.0		86	54-158		
2-Nitrophenol	**26.4**		µg/l	5.00	50.0		53	45-167		
4-Nitrophenol	**16.3**		µg/l	5.00	50.0		33	13-129		
N-Nitrosodimethylamine	**24.6**		µg/l	5.00	50.0		49	60-140		
N-Nitrosodi-n-propylamine	**27.0**		µg/l	5.00	50.0		54	14-198		
N-Nitrosodiphenylamine	**29.4**		µg/l	5.00	50.0		59	60-140		
Pentachlorophenol	**18.7**		µg/l	5.00	50.0		37	38-152		
Phenanthrene	**29.3**		µg/l	5.00	50.0		59	65-120		
Phenol	**15.8**		µg/l	5.00	50.0		32	17-120		
Pyrene	**26.0**		µg/l	5.00	50.0		52	70-120		
1,2,4-Trichlorobenzene	**30.6**		µg/l	5.00	50.0		61	57-130		
2,4,6-Trichlorophenol	**29.5**		µg/l	5.00	50.0		59	52-129		
Surrogate: 2-Fluorobiphenyl	*24.7*		µg/l		*50.0*		*49*	*30-130*		
Surrogate: 2-Fluorophenol	*21.4*		µg/l		*50.0*		*43*	*15-110*		
Surrogate: Nitrobenzene-d5	*29.9*		µg/l		*50.0*		*60*	*30-130*		
Surrogate: Phenol-d5	*19.8*		µg/l		*50.0*		*40*	*15-110*		
Surrogate: Terphenyl-dl4	*20.5*		µg/l		*50.0*		*41*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*31.5*		µg/l		*50.0*		*63*	*15-110*		
LCS Dup (1808951-BSD1)					Prepared: 27-Jun-18 Analyzed: 28-Jun-18					
Acenaphthene	**28.0**		µg/l	4.85	48.5		58	60-132	4	20
Acenaphthylene	**27.6**		µg/l	4.85	48.5		57	54-126	3	20
Anthracene	**26.6**		µg/l	4.85	48.5		55	43-120	5	20
Benzidine	**27.3**		µg/l	9.71	48.5		56	60-140	34	20
Benzo (a) anthracene	**28.9**		µg/l	4.85	48.5		60	42-133	6	20
Benzo (a) pyrene	**30.7**		µg/l	4.85	48.5		63	32-148	4	20
Benzo (b) fluoranthene	**31.4**		µg/l	4.85	48.5		65	42-140	7	20
Benzo (g,h,i) perylene	**30.1**		µg/l	4.85	48.5		62	1-195	12	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808951 - SW846 3510C										
LCS Dup (1808951-BSD1)					Prepared: 27-Jun-18 Analyzed: 28-Jun-18					
Benzo (k) fluoranthene	**27.2**		µg/l	4.85	48.5		56	25-145	16	20
Bis(2-chloroethoxy)methane	**21.3**		µg/l	4.85	48.5		44	49-165	8	20
Bis(2-chloroethyl)ether	**22.3**		µg/l	4.85	48.5		46	43-126	4	20
Bis(2-chloroisopropyl)ether	**23.3**		µg/l	4.85	48.5		48	63-139	11	20
Bis(2-ethylhexyl)phthalate	**27.8**		µg/l	4.85	48.5		57	29-137	7	20
4-Bromophenyl phenyl ether	**25.5**		µg/l	4.85	48.5		53	65-120	5	20
Butyl benzyl phthalate	**26.4**		µg/l	4.85	48.5		54	1-140	4	20
4-Chloro-3-methylphenol	**28.1**		µg/l	4.85	48.5		58	41-128	14	20
2-Chloronaphthalene	**32.1**		µg/l	4.85	48.5		66	65-120	5	20
2-Chlorophenol	**25.5**		µg/l	4.85	48.5		53	36-120	11	20
4-Chlorophenyl phenyl ether	**29.3**		µg/l	4.85	48.5		60	38-145	5	20
Chrysene	**28.5**		µg/l	4.85	48.5		59	44-140	5	20
Dibenzo (a,h) anthracene	**30.6**		µg/l	4.85	48.5		63	1-200	18	20
1,2-Dichlorobenzene	**27.2**		µg/l	4.85	48.5		56	60-140	4	20
1,3-Dichlorobenzene	**25.9**		µg/l	4.85	48.5		53	60-140	2	20
1,4-Dichlorobenzene	**27.1**		µg/l	4.85	48.5		56	60-140	8	20
3,3´-Dichlorobenzidine	**37.7**		µg/l	4.85	48.5		78	8-213	3	20
2,4-Dichlorophenol	**27.1**		µg/l	4.85	48.5		56	53-122	5	20
Diethyl phthalate	**29.8**		µg/l	4.85	48.5		61	1-120	1	20
Dimethyl phthalate	**27.2**		µg/l	4.85	48.5		56	1-120	1	20
2,4-Dimethylphenol	**25.7**		µg/l	4.85	48.5		53	42-120	8	20
Di-n-butyl phthalate	**26.9**		µg/l	4.85	48.5		55	8-120	6	20
4,6-Dinitro-2-methylphenol	**19.2**		µg/l	4.85	48.5		40	53-130	10	20
2,4-Dinitrophenol	**14.6**		µg/l	4.85	48.5		30	1-173	23	20
2,4-Dinitrotoluene	**30.8**		µg/l	4.85	48.5		63	48-127	2	20
2,6-Dinitrotoluene	**31.1**		µg/l	4.85	48.5		64	68-137	0.8	20
Di-n-octyl phthalate	**29.1**		µg/l	4.85	48.5		60	19-132	8	20
Fluoranthene	**27.1**		µg/l	4.85	48.5		56	43-121	11	20
Fluorene	**25.8**		µg/l	4.85	48.5		53	70-120	1	20
Hexachlorobenzene	**32.4**		µg/l	4.85	48.5		67	8-142	10	20
Hexachlorobutadiene	**27.9**		µg/l	4.85	48.5		58	38-120	11	20
Hexachlorocyclopentadiene	**34.2**		µg/l	4.85	48.5		70	60-140	13	20
Hexachloroethane	**27.1**		µg/l	4.85	48.5		56	55-120	12	20
Indeno (1,2,3-cd) pyrene	**27.8**		µg/l	4.85	48.5		57	1-151	16	20
Isophorone	**23.8**		µg/l	4.85	48.5		49	47-180	13	20
Naphthalene	**24.4**		µg/l	4.85	48.5		50	36-120	6	20
Nitrobenzene	**36.8**		µg/l	4.85	48.5		76	54-158	15	20
2-Nitrophenol	**22.8**		µg/l	4.85	48.5		47	45-167	15	20
4-Nitrophenol	**14.2**		µg/l	4.85	48.5		29	13-129	7	20
N-Nitrosodimethylamine	**22.4**		µg/l	4.85	48.5		46	60-140	4	20
N-Nitrosodi-n-propylamine	**25.4**		µg/l	4.85	48.5		52	14-198	12	20
N-Nitrosodiphenylamine	**30.4**		µg/l	4.85	48.5		63	60-140	6	20
Pentachlorophenol	**15.3**		µg/l	4.85	48.5		31	38-152	17	20
Phenanthrene	**28.1**		µg/l	4.85	48.5		58	65-120	6	20
Phenol	**14.8**		µg/l	4.85	48.5		30	17-120	8	20
Pyrene	**26.8**		µg/l	4.85	48.5		55	70-120	6	20
1,2,4-Trichlorobenzene	**29.5**		µg/l	4.85	48.5		61	57-130	3	20
2,4,6-Trichlorophenol	**28.3**		µg/l	4.85	48.5		58	52-129	5	20
Surrogate: 2-Fluorobiphenyl	*24.3*		µg/l		*48.5*		*50*	*30-130*		
Surrogate: 2-Fluorophenol	*19.7*		µg/l		*48.5*		*41*	*15-110*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808951 - SW846 3510C										
LCS Dup (1808951-BSD1)					Prepared: 27-Jun-18 Analyzed: 28-Jun-18					
Surrogate: Nitrobenzene-d5	*25.2*		µg/l		*48.5*		*52*	*30-130*		
Surrogate: Phenol-d5	*18.3*		µg/l		*48.5*		*38*	*15-110*		
Surrogate: Terphenyl-dl4	*20.7*		µg/l		*48.5*		*43*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*31.1*		µg/l		*48.5*		*64*	*15-110*		
LCS Dup (1808951-BSD3)					Prepared: 27-Jun-18 Analyzed: 29-Jun-18					
Acenaphthene	**28.2**		µg/l	4.85	48.5		58	60-132	4	20
Acenaphthylene	**27.5**		µg/l	4.85	48.5		57	54-126	5	20
Anthracene	**27.0**		µg/l	4.85	48.5		56	43-120	2	20
Benzidine	**21.0**		µg/l	9.71	48.5		43	60-140	3	20
Benzo (a) anthracene	**28.4**		µg/l	4.85	48.5		58	42-133	6	20
Benzo (a) pyrene	**30.7**		µg/l	4.85	48.5		63	32-148	8	20
Benzo (b) fluoranthene	**30.1**		µg/l	4.85	48.5		62	42-140	17	20
Benzo (g,h,i) perylene	**30.7**		µg/l	4.85	48.5		63	1-195	14	20
Benzo (k) fluoranthene	**33.1**		µg/l	4.85	48.5		68	25-145	11	20
Bis(2-chloroethoxy)methane	**21.0**		µg/l	4.85	48.5		43	49-165	5	20
Bis(2-chloroethyl)ether	**22.2**		µg/l	4.85	48.5		46	43-126	4	20
Bis(2-chloroisopropyl)ether	**23.2**		µg/l	4.85	48.5		48	63-139	7	20
Bis(2-ethylhexyl)phthalate	**28.3**		µg/l	4.85	48.5		58	29-137	2	20
4-Bromophenyl phenyl ether	**25.5**		µg/l	4.85	48.5		53	65-120	0.1	20
Butyl benzyl phthalate	**26.0**		µg/l	4.85	48.5		54	1-140	3	20
4-Chloro-3-methylphenol	**29.1**		µg/l	4.85	48.5		60	41-128	5	20
2-Chloronaphthalene	**32.0**		µg/l	4.85	48.5		66	65-120	2	20
2-Chlorophenol	**26.4**		µg/l	4.85	48.5		54	36-120	7	20
4-Chlorophenyl phenyl ether	**29.9**		µg/l	4.85	48.5		62	38-145	0.02	20
Chrysene	**29.2**		µg/l	4.85	48.5		60	44-140	6	20
Dibenzo (a,h) anthracene	**33.0**		µg/l	4.85	48.5		68	1-200	13	20
1,2-Dichlorobenzene	**26.1**		µg/l	4.85	48.5		54	60-140	7	20
1,3-Dichlorobenzene	**26.0**		µg/l	4.85	48.5		54	60-140	2	20
1,4-Dichlorobenzene	**27.3**		µg/l	4.85	48.5		56	60-140	4	20
3,3´-Dichlorobenzidine	**38.8**		µg/l	4.85	48.5		80	8-213	7	20
2,4-Dichlorophenol	**27.3**		µg/l	4.85	48.5		56	53-122	5	20
Diethyl phthalate	**29.7**		µg/l	4.85	48.5		61	1-120	0.8	20
Dimethyl phthalate	**27.4**		µg/l	4.85	48.5		57	1-120	3	20
2,4-Dimethylphenol	**26.1**		µg/l	4.85	48.5		54	42-120	5	20
Di-n-butyl phthalate	**27.9**		µg/l	4.85	48.5		58	8-120	6	20
4,6-Dinitro-2-methylphenol	**23.0**		µg/l	4.85	48.5		47	53-130	2	20
2,4-Dinitrophenol	**17.8**		µg/l	4.85	48.5		37	1-173	18	20
2,4-Dinitrotoluene	**30.2**		µg/l	4.85	48.5		62	48-127	3	20
2,6-Dinitrotoluene	**30.9**		µg/l	4.85	48.5		64	68-137	4	20
Di-n-octyl phthalate	**30.4**		µg/l	4.85	48.5		63	19-132	4	20
Fluoranthene	**29.6**		µg/l	4.85	48.5		61	43-121	7	20
Fluorene	**25.8**		µg/l	4.85	48.5		53	70-120	0.4	20
Hexachlorobenzene	**34.1**		µg/l	4.85	48.5		70	8-142	7	20
Hexachlorobutadiene	**28.4**		µg/l	4.85	48.5		59	38-120	1	20
Hexachlorocyclopentadiene	**37.7**		µg/l	4.85	48.5		78	60-140	11	20
Hexachloroethane	**28.2**		µg/l	4.85	48.5		58	55-120	3	20
Indeno (1,2,3-cd) pyrene	**30.6**		µg/l	4.85	48.5		63	1-151	15	20
Isophorone	**25.3**		µg/l	4.85	48.5		52	47-180	2	20
Naphthalene	**24.7**		µg/l	4.85	48.5		51	36-120	4	20
Nitrobenzene	**40.8**		µg/l	4.85	48.5		84	54-158	5	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 625.1										
Batch 1808951 - SW846 3510C										
LCS Dup (1808951-BSD3)					Prepared: 27-Jun-18 Analyzed: 29-Jun-18					
2-Nitrophenol	**25.0**		µg/l	4.85	48.5		51	45-167	5	20
4-Nitrophenol	**14.6**		µg/l	4.85	48.5		30	13-129	11	20
N-Nitrosodimethylamine	**23.5**		µg/l	4.85	48.5		48	60-140	5	20
N-Nitrosodi-n-propylamine	**25.6**		µg/l	4.85	48.5		53	14-198	5	20
N-Nitrosodiphenylamine	**29.2**		µg/l	4.85	48.5		60	60-140	0.6	20
Pentachlorophenol	**15.6**		µg/l	4.85	48.5		32	38-152	19	20
Phenanthrene	**27.2**		µg/l	4.85	48.5		56	65-120	7	20
Phenol	**14.8**		µg/l	4.85	48.5		30	17-120	7	20
Pyrene	**25.8**		µg/l	4.85	48.5		53	70-120	1	20
1,2,4-Trichlorobenzene	**29.4**		µg/l	4.85	48.5		61	57-130	4	20
2,4,6-Trichlorophenol	**28.6**		µg/l	4.85	48.5		59	52-129	3	20
Surrogate: 2-Fluorobiphenyl	*24.1*		µg/l		*48.5*		*50*	*30-130*		
Surrogate: 2-Fluorophenol	*20.3*		µg/l		*48.5*		*42*	*15-110*		
Surrogate: Nitrobenzene-d5	*30.3*		µg/l		*48.5*		*62*	*30-130*		
Surrogate: Phenol-d5	*18.8*		µg/l		*48.5*		*39*	*15-110*		
Surrogate: Terphenyl-dl4	*20.2*		µg/l		*48.5*		*42*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*32.3*		µg/l		*48.5*		*66*	*15-110*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 608.3										
Batch 1808590 - SW846 3510C										
Blank (1808590-BLK1)						Prepared: 21-Jun-18 Analyzed: 28-Jun-18				
Aroclor-1016	< 0.206		µg/l	0.206						
Aroclor-1016 [2C]	< 0.206		µg/l	0.206						
Aroclor-1221	< 0.206		µg/l	0.206						
Aroclor-1221 [2C]	< 0.206		µg/l	0.206						
Aroclor-1232	< 0.206		µg/l	0.206						
Aroclor-1232 [2C]	< 0.206		µg/l	0.206						
Aroclor-1242	< 0.206		µg/l	0.206						
Aroclor-1242 [2C]	< 0.206		µg/l	0.206						
Aroclor-1248	< 0.206		µg/l	0.206						
Aroclor-1248 [2C]	< 0.206		µg/l	0.206						
Aroclor-1254	< 0.206		µg/l	0.206						
Aroclor-1254 [2C]	< 0.206		µg/l	0.206						
Aroclor-1260	< 0.206		µg/l	0.206						
Aroclor-1260 [2C]	< 0.206		µg/l	0.206						
Aroclor-1262	< 0.206		µg/l	0.206						
Aroclor-1262 [2C]	< 0.206		µg/l	0.206						
Aroclor-1268	< 0.206		µg/l	0.206						
Aroclor-1268 [2C]	< 0.206		µg/l	0.206						
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.289*		µg/l		*0.206*		*140*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.299*		µg/l		*0.206*		*145*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.247*		µg/l		*0.206*		*120*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.278*		µg/l		*0.206*		*135*	*30-150*		
LCS (1808590-BS1)						Prepared: 21-Jun-18 Analyzed: 28-Jun-18				
Aroclor-1016	**1.71**		µg/l	0.206	2.58		66	40-140		
Aroclor-1016 [2C]	**1.63**		µg/l	0.206	2.58		63	40-140		
Aroclor-1260	**1.43**		µg/l	0.206	2.58		56	40-140		
Aroclor-1260 [2C]	**1.44**		µg/l	0.206	2.58		56	40-140		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.268*		µg/l		*0.206*		*130*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.268*		µg/l		*0.206*		*130*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.227*		µg/l		*0.206*		*110*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.247*		µg/l		*0.206*		*120*	*30-150*		
LCS Dup (1808590-BSD1)						Prepared: 21-Jun-18 Analyzed: 28-Jun-18				
Aroclor-1016	**1.48**		µg/l	0.206	2.58		58	40-140	14	20
Aroclor-1016 [2C]	**1.59**		µg/l	0.206	2.58		62	40-140	3	20
Aroclor-1260	**1.40**		µg/l	0.206	2.58		54	40-140	2	20
Aroclor-1260 [2C]	**1.41**		µg/l	0.206	2.58		55	40-140	2	20
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.258*		µg/l		*0.206*		*125*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.268*		µg/l		*0.206*		*130*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.237*		µg/l		*0.206*		*115*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.247*		µg/l		*0.206*		*120*	*30-150*		

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 1664B										
Batch 1808724 - General Preparation SVOC										
Blank (1808724-BLK1)						Prepared: 22-Jun-18 Analyzed: 25-Jun-18				
Non-polar material (SGT-HEM)	< 1.0		mg/l	1.0						
LCS (1808724-BS1)						Prepared: 22-Jun-18 Analyzed: 25-Jun-18				
Non-polar material (SGT-HEM)	**29.6**		mg/l	1.0	41.0		72	64-132		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 200.7										
Batch 1808632 - EPA 200 Series										
Blank (1808632-BLK1)						Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Iron	< 0.250		mg/l	0.250						
Magnesium	< 0.0400		mg/l	0.0400						
Calcium	< 0.200		mg/l	0.200						
LCS (1808632-BS1)						Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Iron	**2.61**		mg/l	0.250	2.50		104	85-115		
Calcium	**12.3**		mg/l	0.200	12.5		98	85-115		
Magnesium	**2.66**		mg/l	0.0400	2.50		106	85-115		
Duplicate (1808632-DUP1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Iron	**0.497**		mg/l	0.250		0.509			2	20
Calcium	**30.3**		mg/l	0.200		29.8			1	20
Magnesium	**14.8**		mg/l	0.0400		14.6			2	20
Matrix Spike (1808632-MS1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Iron	**3.19**		mg/l	0.250	2.50	0.509	107	70-130		
Magnesium	**17.8**		mg/l	0.0400	2.50	14.6	130	70-130		
Calcium	**43.3**		mg/l	0.200	12.5	29.8	108	70-130		
Post Spike (1808632-PS1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Iron	**2.98**		mg/l	0.250	2.50	0.509	99	85-115		
Calcium	**41.4**		mg/l	0.200	12.5	29.8	92	85-115		
Magnesium	**17.0**		mg/l	0.0400	2.50	14.6	98	85-115		
EPA 200.8										
Batch 1808628 - EPA 200 Series										
Blank (1808628-BLK1)						Prepared: 21-Jun-18 Analyzed: 28-Jun-18				
Selenium	< 0.00050		mg/l	0.00050						
Zinc	< 0.00500		mg/l	0.00500						
Antimony	< 0.00050		mg/l	0.00050						
Lead	< 0.00050		mg/l	0.00050						
Arsenic	< 0.00050		mg/l	0.00050						
Silver	< 0.00050		mg/l	0.00050						
Chromium	< 0.00050		mg/l	0.00050						
Copper	< 0.00050		mg/l	0.00050						
Cadmium	< 0.00050		mg/l	0.00050						
Nickel	< 0.00050		mg/l	0.00050						
LCS (1808628-BS1)						Prepared: 21-Jun-18 Analyzed: 28-Jun-18				
Zinc	**0.110**	D	mg/l	0.0500	0.100		110	85-115		
Antimony	**0.0989**	D	mg/l	0.00500	0.100		99	85-115		
Selenium	**0.539**	D	mg/l	0.00500	0.500		108	85-115		
Lead	**0.0873**	D	mg/l	0.00500	0.100		87	85-115		
Chromium	**0.105**	D	mg/l	0.00500	0.100		105	85-115		
Arsenic	**0.101**	D	mg/l	0.00500	0.100		101	85-115		
Silver	**0.0969**	D	mg/l	0.00500	0.100		97	85-115		
Cadmium	**0.0974**	D	mg/l	0.00500	0.100		97	85-115		
Copper	**0.0987**	D	mg/l	0.00500	0.100		99	85-115		
Nickel	**0.0981**	D	mg/l	0.00500	0.100		98	85-115		
Duplicate (1808628-DUP1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 29-Jun-18				
Antimony	< 0.00050		mg/l	0.00050		0.00044				20
Zinc	**0.00495**	J	mg/l	0.00500		0.00567			13	20
Selenium	**0.00080**	J,R01, D	mg/l	0.00250		0.00083			3	20
Lead	**0.00287**		mg/l	0.00050		0.00259			10	20
Chromium	< 0.00250	R01, D	mg/l	0.00250		BRL				20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 200.8										
Batch 1808628 - EPA 200 Series										
Duplicate (1808628-DUP1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 29-Jun-18				
Arsenic	< 0.00250	R01, D	mg/l	0.00250		BRL				20
Nickel	**0.00131**		mg/l	0.00050		0.00139			6	20
Copper	**0.00727**		mg/l	0.00050		0.00779			7	20
Cadmium	< 0.00050		mg/l	0.00050		BRL				20
Silver	< 0.00050		mg/l	0.00050		BRL				20
Matrix Spike (1808628-MS1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 28-Jun-18				
Selenium	**0.544**	D	mg/l	0.00500	0.500	BRL	109	70-130		
Lead	**0.0935**	D	mg/l	0.00500	0.100	0.00259	91	70-130		
Antimony	**0.101**	D	mg/l	0.00500	0.100	BRL	101	70-130		
Zinc	**0.119**	D	mg/l	0.0500	0.100	BRL	119	70-130		
Silver	**0.0959**	D	mg/l	0.00500	0.100	BRL	96	70-130		
Cadmium	**0.0973**	D	mg/l	0.00500	0.100	BRL	97	70-130		
Copper	**0.108**	D	mg/l	0.00500	0.100	0.00779	100	70-130		
Nickel	**0.100**	D	mg/l	0.00500	0.100	0.00139	99	70-130		
Chromium	**0.106**	D	mg/l	0.00500	0.100	BRL	106	70-130		
Arsenic	**0.102**	D	mg/l	0.00500	0.100	BRL	102	70-130		
Post Spike (1808628-PS1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 28-Jun-18				
Selenium	**0.557**	D	mg/l	0.00500	0.500	BRL	111	85-115		
Zinc	**0.487**	QM9, D	mg/l	0.0500	0.100	BRL	487	85-115		
Antimony	**0.106**	D	mg/l	0.00500	0.100	BRL	106	85-115		
Lead	**0.0985**	D	mg/l	0.00500	0.100	0.00259	96	85-115		
Copper	**0.125**	QM9, D	mg/l	0.00500	0.100	0.00779	117	85-115		
Cadmium	**0.104**	D	mg/l	0.00500	0.100	BRL	104	85-115		
Nickel	**0.287**	QM9, D	mg/l	0.00500	0.100	0.00139	286	85-115		
Arsenic	**0.105**	D	mg/l	0.00500	0.100	BRL	105	85-115		
Chromium	**0.108**	D	mg/l	0.00500	0.100	BRL	108	85-115		
Silver	**0.104**	D	mg/l	0.00500	0.100	BRL	104	85-115		
EPA 245.1/7470A										
Batch 1808633 - EPA200/SW7000 Series										
Blank (1808633-BLK1)						Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Mercury	< 0.00020		mg/l	0.00020						
LCS (1808633-BS1)						Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Mercury	**0.00443**		mg/l	0.00020	0.00500		89	85-115		
Duplicate (1808633-DUP1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Mercury	< 0.00020		mg/l	0.00020		BRL				20
Matrix Spike (1808633-MS1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Mercury	**0.00475**		mg/l	0.00020	0.00500	BRL	95	80-120		
Post Spike (1808633-PS1)			**Source: SC47844-02**			Prepared: 21-Jun-18 Analyzed: 26-Jun-18				
Mercury	**0.00490**		mg/l	0.00020	0.00500	BRL	98	85-115		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ASTM D 1293-99B										
Batch 1808579 - General Preparation										
Duplicate (1808579-DUP1)			**Source: SC47844-02**			Prepared & Analyzed: 20-Jun-18				
pH	**7.34**		pH Units			7.34			0	5
Reference (1808579-SRM1)						Prepared & Analyzed: 20-Jun-18				
pH	**6.00**		pH Units		6.00		100	97.5-102.5		
Reference (1808579-SRM2)						Prepared & Analyzed: 20-Jun-18				
pH	**6.03**		pH Units		6.00		100	97.5-102.5		
EPA 300.0										
Batch 1808650 - General Preparation										
Blank (1808650-BLK1)						Prepared & Analyzed: 21-Jun-18				
Chloride	< 1.00		mg/l	1.00						
LCS (1808650-BS1)						Prepared & Analyzed: 21-Jun-18				
Chloride	**19.9**		mg/l	1.00	20.0		99	90-110		
Reference (1808650-SRM1)						Prepared & Analyzed: 21-Jun-18				
Chloride	**25.0**		mg/l	1.00	25.0		100	90-110		
EPA 335.4 / SW846 9012B										
Batch 1808692 - General Preparation										
Blank (1808692-BLK1)						Prepared & Analyzed: 22-Jun-18				
Cyanide (total)	< 0.00500		mg/l	0.00500						
LCS (1808692-BS1)						Prepared & Analyzed: 22-Jun-18				
Cyanide (total)	**0.243**		mg/l	0.00500	0.250		97	90-110		
Reference (1808692-SRM1)						Prepared & Analyzed: 22-Jun-18				
Cyanide (total)	**0.354**		mg/l	0.00500	0.347		102	76-122		
SM2540D (11)										
Batch 1808636 - General Preparation										
Blank (1808636-BLK1)						Prepared: 21-Jun-18 Analyzed: 22-Jun-18				
Total Suspended Solids	< 0.5		mg/l	0.5						
LCS (1808636-BS1)						Prepared: 21-Jun-18 Analyzed: 22-Jun-18				
Total Suspended Solids	**98.0**		mg/l	10.0	100		98	90-110		
SM3500-Cr-B (11)/7196A										
Batch 1808581 - General Preparation										
Blank (1808581-BLK1)						Prepared & Analyzed: 20-Jun-18				
Hexavalent Chromium	< 0.005		mg/l	0.005						
LCS (1808581-BS1)						Prepared & Analyzed: 20-Jun-18				
Hexavalent Chromium	**0.049**		mg/l	0.005	0.0500		98	90-111		
Reference (1808581-SRM1)						Prepared & Analyzed: 20-Jun-18				
Hexavalent Chromium	**0.026**		mg/l	0.005	0.0250		103	85-115		
SM4500-Cl-G (11)										
Batch 1808693 - General Preparation										
Blank (1808693-BLK1)						Prepared & Analyzed: 22-Jun-18				
Total Residual Chlorine	< 0.020		mg/l	0.020						
LCS (1808693-BS1)						Prepared & Analyzed: 22-Jun-18				
Total Residual Chlorine	**0.048**		mg/l	0.020	0.0500		95	90-110		
Reference (1808693-SRM1)						Prepared & Analyzed: 22-Jun-18				
Total Residual Chlorine	**0.088**		mg/l	0.020	0.0910		96	96-115		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
E350.1										
Batch 436030A - 436030										
BLK (CA76405-BLK)						Prepared: 25-Jun-18 Analyzed: 26-Jun-18				
Ammonia as Nitrogen	< 0.05		mg/l	0.05				-		
DUP (CA76405-DUP)			**Source: SC47844-02**			Prepared: 25-Jun-18 Analyzed: 26-Jun-18				
Ammonia as Nitrogen	**0.15**		mg/l	0.05				-	NC	20
LCS (CA76405-LCS)						Prepared: 25-Jun-18 Analyzed: 26-Jun-18				
Ammonia as Nitrogen	**3.800**		mg/l	0.05	3.74		102	90-110		20
MS (CA76405-MS)			**Source: SC47844-02**			Prepared: 25-Jun-18 Analyzed: 26-Jun-18				
Ammonia as Nitrogen	**2.150**		mg/l	0.05	2		100	90-110		20
E420.4										
Batch 436006A - 436006										
BLK (CA76127-BLK)						Prepared: 25-Jun-18 Analyzed: 26-Jun-18				
Phenolics	< 0.015		mg/l	0.015				-		
DUP (CA76127-DUP)			**Source: CA76127**			Prepared: 25-Jun-18 Analyzed: 26-Jun-18				
Phenolics	< 0.015		mg/l	0.015				-	NC	20
LCS (CA76127-LCS)						Prepared: 25-Jun-18 Analyzed: 26-Jun-18				
Phenolics	**0.2430**		mg/l	0.015	0.25		97.2	90-110		20
MS (CA76127-MS)			**Source: CA76127**			Prepared: 25-Jun-18 Analyzed: 26-Jun-18				
Phenolics	**0.1820**		mg/l	0.015	)00000298		91.0	90-110		20

Notes and Definitions

D	Data reported from a dilution
E	This flag indicates the concentration for this analyte is an estimated value due to exceeding the calibration range or interferences resulting in a biased final concentration.
GS1	Sample dilution required for high concentration of target analytes to be within the instrument calibration range.
QC6	Analyte is out of acceptance range in the QC spike but the total number of out of range analytes is within overall method criteria.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
QR2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QR9	RPD out of acceptance range. The batch is accepted based upon LCS and/or LCSD recovery.
R01	The Reporting Limit has been raised to account for matrix interference.
R05	Elevated Reporting Limits due to the presence of high levels of non-target analytes; sample may not meet client requested reporting limit for this reason.
SAC	Acid surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two acid surrogates.
SDUP	Duplicate analysis confirmed surrogate failure due to matrix effects.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
[2C]	Indicates concentration was reported from the secondary, confirmation column.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ClHT	The method for residual chlorine indicates that samples should be analyzed immediately. 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous residual chlorine samples not analyzed in the field are considered out of hold time at the time of sample receipt.
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.
LIV	The initial volume for this sample has been reduced due to sample matrix and/or historical data therefore elevating the reporting limit.
HD	Total Hardness is a calculation based on the reported values of Ca and Mg.

Interpretation of Total Petroleum Hydrocarbon Report

Petroleum identification is determined by comparing the GC fingerprint obtained from the sample with a library of GC fingerprints obtained from analyses of various petroleum products. Possible match categories are as follows:

Gasoline - includes regular, unleaded, premium, etc.
Fuel Oil #2 - includes home heating oil, #2 fuel oil, and diesel
Fuel Oil #4 - includes #4 fuel oil
Fuel Oil #6 - includes #6 fuel oil and bunker "C" oil
Motor Oil - includes virgin and waste automobile oil
Ligroin - includes mineral spirits, petroleum naphtha, vm&p naphtha
Aviation Fuel - includes kerosene, Jet A and JP-4
Other Oil - includes lubricating and cutting oil, and silicon oil

At times, the unidentified petroleum product is quantified using a calibration that most closely approximates the distribution of compounds in the sample. When this occurs, the result is qualified as Calculated as.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

SC47844

Chain of Custody Record

Sunoco DUNS #: 0407-8069
Region: Northeast
State or Lead Regulatory Agency: MADEP
Requested Due Date (mm/dd/yy): 6/27/2018
COC Tracking Number:

Lab Name:	Eurofins Spectrum Analytical, Inc	Facility Address:	266 Mass Ave	Consultant/C	
Address:	830 Silver Street	Facility City, State:	Cambridge MA	Address:	
	Agawam, MA 01001	Site Lat/Long:			
Lab PM:	Rebbecca Merz	Sunoco PM Contact:	Bill Brochu	Consultant/C	
Tele/Fax:	413-789- 9018	Address:	PO Box 4209,	Consultant/C	
Report Type & QC Level:	MCP CAM		Concord, NH, 03302-4209	Tele/Fax:	
E-mail EDD To:	lab.sunoco@enfosinc.com	Tele/Fax:	508-728-0592 (866) 257-9205	Invoice to:	

Item No.	Sample Description	Time	Date	Matrix: Liquid	Solid	Gas	Laboratory No.	Total No. of Containers	Preservative: Methanol VOAs on ice	Amber jars on ice					Requested Analysis: EPA RGP Parameters See Attached List	pH, Temperature, Hardness & Ammonia	Total Recoverable Metals Detected in GW-RGP sample				
1	GW-RGP	1230	6/20/18	X				18							X						
2	SW-1	1315	↓	X				5								X	*X				
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Sampler's Name: Kevin H., Mark H.
Sampler's Company: Corporate Environmental Advisors (CEA)
Shipment Date:
Shipment Method:
Shipment Tracking No:

Relinquished By / Affiliation	Date	Time

Special Instructions: Email report to: svandersea@cea-inc.com and polson@cea-inc.com
Laboratory reporting limits must be less than USEPA RGP limits indicated on attached sheet.

Custody Seals In Place Yes ___ No ___ Temp Blank Yes ___ No ___ ICE Cooler Temperature on Receipt ___ °F/C

On-site Tin
Off-site Tim
Sky Condition
Meteorologic
Wind Speed:

Temp:
s:
l Events:
Direction

ntractor: Corporate Environmental Advisors (CEA)
21 East Main Street, Suite 201
Westborough, MA 01581
ntractor Project No.: 6196-06
ntractor PM: Scott VanderSea
508-835-8822 508-835-8812
CEA Sunoco Rates 21J Codes

Sample Point Lat/Long and Comments

*Analyze surface water sample SW-1 for the total metals detected in groundwater sample GW-RGP.

ccepted By / Affiliation	Date	Time
	6-20-18	14:25

Trip Blank Yes ___ No ___

2/0/1-2/02

Page 1 of 1

Temp:

Additional Resource for Selecting Sufficiently Sensitive Test Methods for RGP Notice of Intent (NOI) Sampling Requirements[1]

Table 1: Parameters, Required Minimum Levels (MLs), and Common Test Methods[2]

Parameter	Requirements	
	ML Must Be ≤	Commonly Used Test Method(s) from 40 C.F.R. Part 136 that Generally Achieves the ML Noted
A. Inorganics		
Ammonia	0.1 mg/L	SM 4500 B and D; 350.1
Chloride	230 mg/L	SM 4110 B; 300.0
Total Residual Chlorine	50 µg/L	SM 4500-Cl G and E
Total Suspended Solids	30 mg/L	SM 2540 D
Antimony	206 µg/L	200.8 and 200.9
Arsenic	FW= 10 µg/L SW= 36 µg/L	200.8 and 200.9 in FW 200.7, 200.8 and 200.9 in SW
Cadmium	FW= 0.25 µg/L SW= 8.8 µg/L in MA SW= 9.3 µg/L in NH	200.8 in FW 200.8 and 200.9 in SW
[illegible] µg/L V= 100 µg/L	200.7, 200.8 and 200.9	
W= 11 µg/L W= 50 µg/L	218.6	
W= 9 µg/L V= 3.1 µg/L	200.8 and 200.9	
= 1,000 µg/L	200.7 and 200.8	
V= 2.5 µg/L V= 8.1 µg/L	200.8 and 200.9	
= 0.77 µg/L = 0.739 µg/L	245.1, 245.7 and 1631E	
W= 52 µg/L V= 8.2 µg/L	200.8 and 200.9	
V= 5.0 µg/L W= 71 µg/L	200.8 and 200.9 in FW 200.7, 200.8 and 200.9 in SW	
V= 3.2 µg/L V= 1.9 µg/L	200.8	
V= 120 µg/L W= 81 µg/L	200.7 and 200.8	
V = 5.2 µg/L V = 5.0 µg/L	SM 4500-CN	
µg/L (sum of ividual MLs)	624 and 1624B	
5.0 µg/L	624 and 1624B	
50 µg/L	SIM	
7.97 mg/L	524.2	
300 µg/L	420.1 and 420.4	
Chromium III		F SW
Chromium VI		FW SW
Copper		FW SW
Iron		FW
Lead		FW SW
Mercury		FW SW
Nickel		FW SW
Selenium		FW SW
Silver		FW SW
Zinc		FW SW
Cyanide		FW SW
B. Non-Halogenated Volatile Organic Compounds		
Total BTEX[3]		100 ind
Benzene		
1,4 Dioxane		
Acetone		
Phenol		

Parameter	Requirements	
	ML Must Be ≤	Commonly Used Test Method(s) from 40 C.F.R. Part 136 that Generally Achieves the ML Noted
C. Halogenated Volatile Organic Compounds		
Carbon Tetrachloride	1.6 µg/L in MA 4.4 µg/L in NH	624
1,2 Dichlorobenzene	600 µg/L	624
1,3 Dichlorobenzene	320 µg/L	624
1,4 Dichlorobenzene	5.0 µg/L	624
Total Dichlorobenzene[4]	Not required in MA 763 µg/L in NH (sum of individual MLs)	624
1,1 Dichloroethane	70 µg/L	624
1,2 Dichloroethane	5.0 µg/L	624
1,1 Dichloroethylene	3.2 µg/L	624
Ethylene Dibromide	0.05 µg/L	SIM
Methylene Chloride	4.6 µg/L	624
1,1,1 Trichloroethane	200 µg/L	624
1,1,2 Trichloroethane	5.0 µg/L	624
Trichloroethylene	5.0 µg/L	624
Tetrachloroethylene	3.3 µg/L in MA 5.0 µg/L in NH	624
cis-1,2 Dichloroethylene	70 µg/L	624
Vinyl Chloride	2.0 µg/L	624
D. Non-Halogenated Semi-Volatile Organic Compounds		
Total Phthalates[5]	190 µg/L in MA FW = 3.0 µg/L in NH SW = 3.4 µg/L in NH	625 and 1625B in MA 625 in NH
Diethylhexyl Phthalate	2.2 µg/L in MA 5.9 µg/L in NH	625 in MA 625 and 1625B in NH
Total Group I Polycyclic Aromatic Hydrocarbons[6]	1.0 µg/L (sum of individual MLs)	SIM
Benzo(a)anthracene	0.1 µg/L	SIM
Benzo(a)pyrene	0.1 µg/L	SIM
Benzo(b)fluoranthene	0.1 µg/L	SIM
Benzo(k)fluoranthene	0.1 µg/L	SIM
Chrysene	0.1 µg/L	SIM
Dibenzo(a,h)anthracene	0.1 µg/L	SIM
Indeno(1,2,3-cd)pyrene	0.1 µg/L	SIM
Total Group II Polycyclic Aromatic Hydrocarbons[7]	100 µg/L (sum of individual MLs)	625
Naphthalene	20 µg/L	625

Parameter	Requirements	
	ML Must Be ≤	Commonly Used Test Method(s) from 40 C.F.R. Part 136 that Generally Achieves the ML Noted
E. Halogenated Semi-Volatile Organic Compounds		
Total Polychlorinated Biphenyls[8]	0.5 µg/L	608
Pentachlorophenol[9]	1.0 µg/L	625
F. Fuels Parameters		
Total Petroleum Hydrocarbons	5.0 mg/L	1664A and B
Ethanol	0.4 mg/L	1666/1671/D3695
Methyl-tert-Butyl Ether	20 µg/L in MA 70 µg/L in NH	SIM
tert-Butyl Alcohol	120 µg/L in MA 40 µg/L in NH	1666
tert-Amyl Methyl Ether	90 µg/L in MA 140 µg/L in NH	624

Table 1 Footnotes:

[1] The minimum levels specified in this table will satisfy the sufficiently sensitive test method requirements for the purposes of sample analysis used to prepare a Notice of Intent (NOI) for coverage under the Remediation General Permit. Where less sensitive minimum levels (MLs) may be used upon authorization to discharge, these MLs will be noted in the written authorization to discharge for an individual site.

[2] The following abbreviations are used in Table 1, above:
- [a] mg/L = milligrams per liter
- [b] µg/L = micrograms per liter
- [c] FW = freshwater
- [d] SW = saltwater
- [e] SM = standard method
- [d] SIM = selected ion monitoring

[3] Total BTEX is the sum of: benzene (CAS No. 71432); toluene (CAS No. 108883); ethylbenzene (CAS No. 100-41-4); and (m,p,o) xylenes (CAS Nos. 108-88-3, 106-42-3, 95-47-6, and 1330-20-7).

[4] Total dichlorobenzene is the sum of: 1,2 dichlorobenzene (CAS No. 95-50-1); 1,3 dichlorobenzene (CAS No. 541-73-1); and 1,4 dichlorobenzene (CAS No. 106-46-7).

[5] Total Phthalates is the sum of: diethylhexyl phthalate (CAS No. 117-81-7); butyl benzyl phthalate (CAS No. 85-68-7); di-n-butyl phthalate (CAS No. 84-74-2); diethyl phthalate (CAS No. 84-66-2); dimethyl phthalate (CAS No. 131-11-3); di-n-octyl phthalate (CAS No. 117-84-0). For the diethylhexyl phthalate in NH, EPA anticipates that the applicable ML will be revised to 2.2 µg/L, once incorporated into the RGP for sites in New Hampshire.

[6] Total Group I PAHs is the sum of: benzo(a)anthracene (CAS No. 56-55-3); benzo(a)pyrene (CAS No. 50-32-8); benzo(b)fluoranthene (CAS No. 205-99-2); benzo(k)fluoranthene (CAS No. 207-08-9; chrysene (CAS No. 218-01); dibenzo(a,h)anthracene (CAS No. 53-70-3); indeno(1,2,3-cd)pyrene (CAS No. 193-39-5).

[7] Total Group II PAHs is the sum of: acenaphthene (CAS No. 83-32-9); acenaphthylene (CAS No. 208-96-8); anthracene (CAS No. 120-12-7); benzo(g,h,i)perylene (CAS No. 191-24-2); fluoranthene (CAS No. 206-44-0); fluorene (CAS No. 86-73-7); naphthalene (CAS No. 91-20-3); phenanthrene (CAS No. 85-01-8); pyrene (CAS No. 129-00-0).

[8] Total PCBs is the sum of the following aroclors: PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, and PCB-1260.

[8] The ML for analysis of pentachlorophenol must be as close to 1.0 µg/L as possible, not to exceed ≤ 5.0 µg/L.

eurofins | Spectrum Analytical

11 Almgren Drive
Agawam, MA 01001
(413) 789-9018

This preceding chain of custody has been amended to include the client requested additional analyses as noted below:

Laboratory ID	*Client ID*	*Analysis*	*Added*
SC47844-01	GW-RGP	Purgeable Organic Compounds	6/21/2018
SC47844-01	GW-RGP	TCLP Metals Preservation	6/21/2018
SC47844-01	GW-RGP	1,4-Dioxane by SW846 8260 SIM	7/2/2018
SC47844-01	GW-RGP	Total Calcium by ICP	7/2/2018
SC47844-01	GW-RGP	Total Hardness	7/2/2018
SC47844-01	GW-RGP	Total Magnesium by ICP	7/2/2018

Batch Summary

[CALC]

General Chemistry Parameters

SC47844-01 (GW-RGP)
SC47844-02 (SW-1)

1808579

General Chemistry Parameters

1808579-DUP1
1808579-SRM1
1808579-SRM2
SC47844-02 (SW-1)

1808581

General Chemistry Parameters

1808581-BLK1
1808581-BS1
1808581-SRM1
SC47844-01 (GW-RGP)
SC47844-02 (SW-1)

1808587

Semivolatile Organic Compounds by GCMS

1808587-BLK1
1808587-BS1
1808587-BSD1
SC47844-01 (GW-RGP)

1808590

Semivolatile Organic Compounds by GC

1808590-BLK1
1808590-BS1
1808590-BSD1
SC47844-01 (GW-RGP)

1808628

Total Metals by EPA 200 Series Methods

1808628-BLK1
1808628-BS1
1808628-DUP1
1808628-MS1
1808628-PS1
SC47844-01 (GW-RGP)
SC47844-01 (GW-RGP)
SC47844-02 (SW-1)
SC47844-02 (SW-1)

1808632

Total Metals by EPA 200 Series Methods

1808632-BLK1
1808632-BS1
1808632-DUP1
1808632-MS1
1808632-PS1
SC47844-01 (GW-RGP)
SC47844-02 (SW-1)

1808633

Total Metals by EPA 200 Series Methods

1808633-BLK1
1808633-BS1
1808633-DUP1
1808633-MS1
1808633-PS1
SC47844-01 (GW-RGP)
SC47844-02 (SW-1)

1808636

General Chemistry Parameters

1808636-BLK1
1808636-BS1
SC47844-01 (GW-RGP)

1808650

General Chemistry Parameters

1808650-BLK1
1808650-BS1
1808650-SRM1
SC47844-01 (GW-RGP)

1808651

Total Metals by EPA 200/6000 Series Methods

SC47844-01 (GW-RGP)
SC47844-02 (SW-1)

1808683

Volatile Organic Compounds

1808683-BLK1
1808683-BS1
1808683-BSD1
SC47844-01 (GW-RGP)

1808692

General Chemistry Parameters

1808692-BLK1
1808692-BS1
1808692-SRM1
SC47844-01 (GW-RGP)

1808693

General Chemistry Parameters

1808693-BLK1
1808693-BS1
1808693-SRM1
SC47844-01 (GW-RGP)

1808724

Extractable Petroleum Hydrocarbons

1808724-BLK1
1808724-BS1
SC47844-01 (GW-RGP)

1808951

Semivolatile Organic Compounds by GCMS

1808951-BLK1
1808951-BLK3
1808951-BS1
1808951-BS3
1808951-BSD1
1808951-BSD3
SC47844-01RE1 (GW-RGP)

1809223

Volatile Organic Compounds

1809223-BLK1
1809223-BS1
1809223-BSD1
SC47844-01 (GW-RGP)

436006A

Subcontracted Analyses

CA76127-BLK
CA76127-DUP
CA76127-LCS
CA76127-MS
SC47844-01 (GW-RGP)

436030A

Subcontracted Analyses

CA76405-BLK
CA76405-DUP
CA76405-LCS
CA76405-MS
SC47844-01 (GW-RGP)
SC47844-02 (SW-1)

436137A

Subcontracted Analyses

CA76121-BLK
CA76121-LCS
CA76121-LCSD
CA76121-MS
CA76121-MSD
SC47844-01 (GW-RGP)

S818803

Semivolatile Organic Compounds by GCMS

S818803-CAL1
S818803-CAL2
S818803-CAL3
S818803-CAL4
S818803-CAL5
S818803-CAL6
S818803-CAL7
S818803-CAL8
S818803-CAL9
S818803-ICV1
S818803-LCV1
S818803-LCV2
S818803-TUN1

S818863

Semivolatile Organic Compounds by GCMS

S818863-CAL1
S818863-CAL2
S818863-CAL3
S818863-CAL4
S818863-CAL5
S818863-CAL6
S818863-CAL7
S818863-CAL8
S818863-CAL9
S818863-CALA
S818863-ICV1
S818863-LCV1
S818863-LCV2
S818863-TUN1

S819055

Volatile Organic Compounds

S819055-CAL1
S819055-CAL2
S819055-CAL3
S819055-CAL4
S819055-CAL5
S819055-CAL6
S819055-ICV1
S819055-LCV1
S819055-TUN1

S820051

Volatile Organic Compounds

S820051-CAL1
S820051-CAL2
S820051-CAL3
S820051-CAL4
S820051-CAL5
S820051-CAL6
S820051-CAL7
S820051-CAL8
S820051-CAL9
S820051-ICV1
S820051-LCV1
S820051-LCV2
S820051-TUN1
S820051-TUN2

S820295

Volatile Organic Compounds

S820295-CCV1
S820295-TUN1

S820307

Semivolatile Organic Compounds by GC

S820307-CAL1
S820307-CAL2
S820307-CAL3
S820307-CAL4
S820307-CAL5
S820307-CAL6
S820307-CAL7
S820307-CAL8
S820307-CAL9
S820307-CALA
S820307-CALB
S820307-CALC
S820307-CALD
S820307-CALE
S820307-CALF
S820307-CALG
S820307-CALH
S820307-CALI
S820307-CALJ
S820307-CALK
S820307-CALL
S820307-CALM
S820307-CALN
S820307-CALO
S820307-CALP
S820307-CALQ
S820307-CALR
S820307-CALS
S820307-CALT
S820307-CALU
S820307-ICV1
S820307-ICV2
S820307-ICV3
S820307-ICV4
S820307-ICV5
S820307-ICV6
S820307-LCV1
S820307-LCV2
S820307-LCV3
S820307-LCV4
S820307-LCV5
S820307-LCV6

S820343

Semivolatile Organic Compounds by GCMS

S820343-CCV1
S820343-TUN1

S820404

Semivolatile Organic Compounds by GCMS

S820404-CCV1
S820404-TUN1

S820467

Semivolatile Organic Compounds by GC

S820467-CCV1
S820467-CCV2
S820467-IBL1
S820467-IBL2

S820477

Semivolatile Organic Compounds by GCMS

S820477-CCV1
S820477-TUN1

S820486

Semivolatile Organic Compounds by GCMS

S820486-CCV1
S820486-TUN1

S820513

Semivolatile Organic Compounds by GCMS

S820513-CCV1
S820513-TUN1

S820590

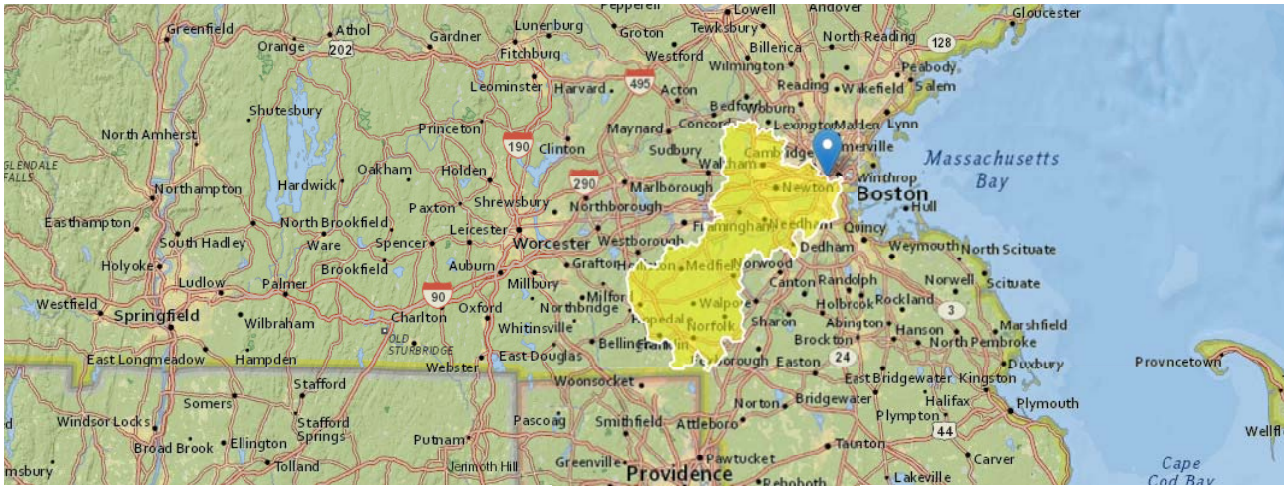
Volatile Organic Compounds

S820590-CCV1
S820590-CRL1
S820590-TUN1

Attachment C – StreamStats Flow Statistics Report

StreamStats Report

Region ID: MA
Workspace ID: MA20191028171048198000
Clicked Point (Latitude, Longitude): 42.35524, -71.08988
Time: 2019-10-28 13:11:03 -0400



Discharge to Charles River associated with construction activities at 266 Massachusetts Avenue, Cambridge, MA.

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	307	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.341	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.25	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	307	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.341	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.25	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

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

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	57.3	ft^3/s
7 Day 10 Year Low Flow	29.2	ft^3/s

Low-Flow Statistics Citations

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

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

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Application Version: 4.3.8

Attachment D – MassDEP Phase 1 Site Assessment Map and NHESP Map

MassDEP - Bureau of Waste Site Cleanup

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

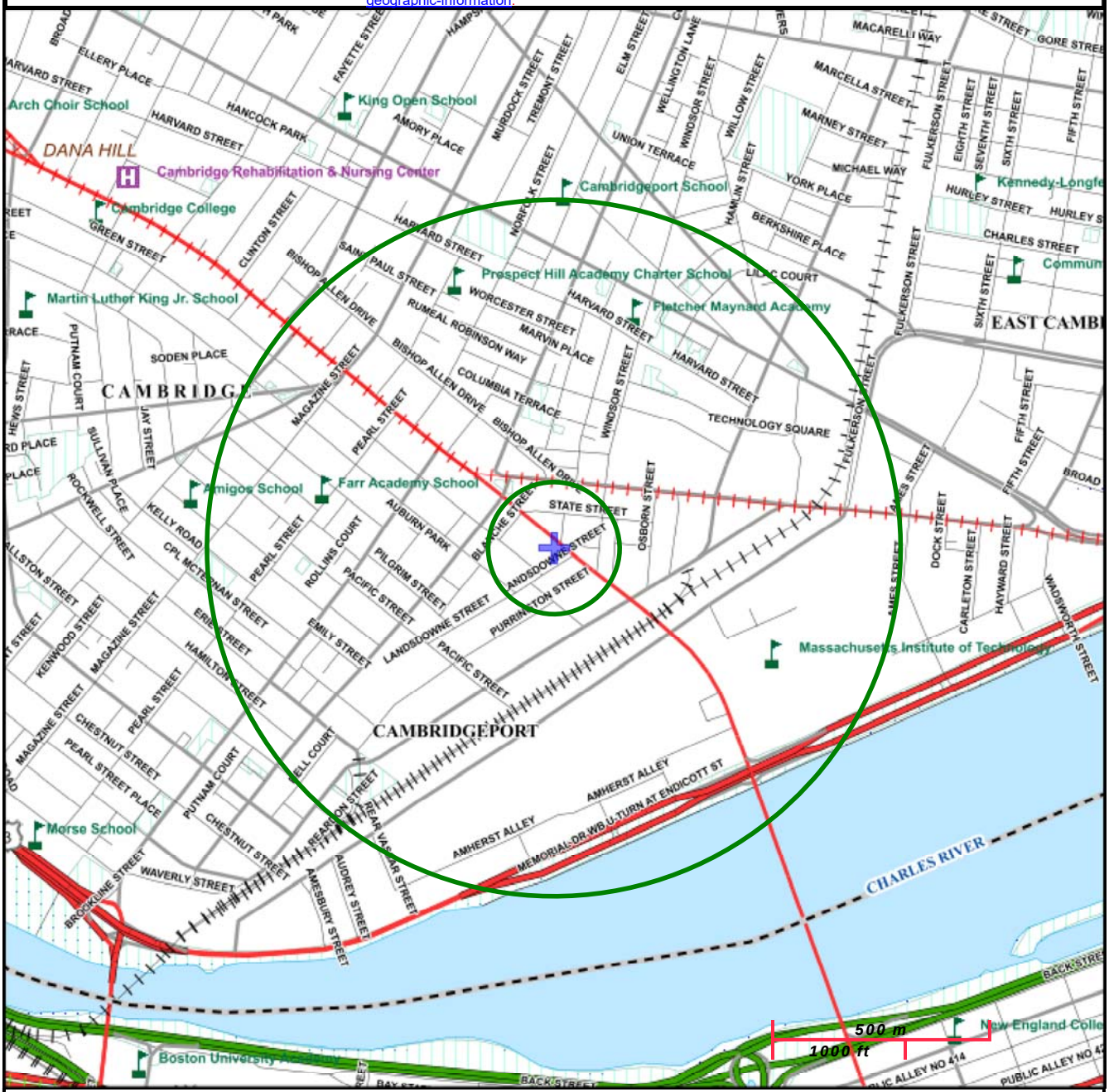
Site Information:

266 MASSACHUSETTS AVENUE CAMBRIDGE, MA

NAD83 UTM Meters:
4692091mN , 327221mE (Zone: 19)
October 28, 2019

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: https://www.mass.gov/orgs/massgis-bureau-of-geographic-information.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



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

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

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

Aquifers: Medium Yield, High Yield, EPA Sole Source

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

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

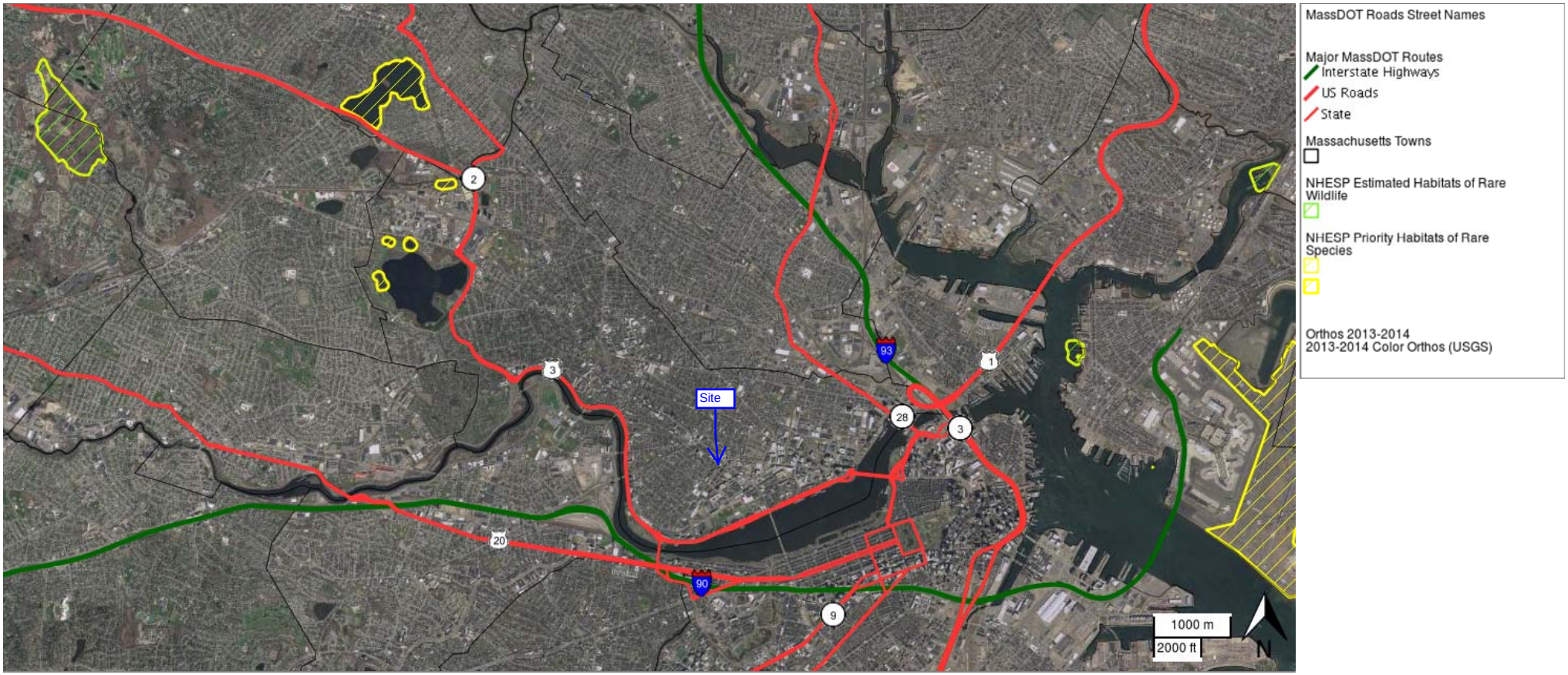
Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

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

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

Sunoco Station, 266 Massachusetts Avenue, Cambridge, MA



Priority Habitats and Estimated Habitats - Effective October 1, 2008

Priority Habitats for use with the MA Endangered Species Act Regulations (321 CMR 10)

Estimated Habitats for use with the MA Wetlands Protection Act Regulations (310 CMR 10)

Produced by the Natural Heritage & Endangered Species Program *website: www.nhesp.org*

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p.112	p.113	p.114	p.115	p.116

Priority Habitat of Rare Species

Priority Habitat of Rare Species and also Estimated Habitat of Rare Wildlife

* **Certified Vernal Pool (as of July 31, 2008)**

N

0 0.5 1 2 Miles

Boston South Quad

Attachment E – US Department of the Interior, Fish and Wildlife Services (FWS) Threatened or Endangered Species or Critical Habitat Letter

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: October 29, 2019
Consultation Code: 05E1NE00-2020-SLI-0292
Event Code: 05E1NE00-2020-E-00833
Project Name: Sunoco Station, 266 Mass Ave, Cambridge, MA

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-0292

Event Code: 05E1NE00-2020-E-00833

Project Name: Sunoco Station, 266 Mass Ave, Cambridge, MA

Project Type: ** OTHER **

Project Description: Short term (less than 2 months) remediation of petroleum impacted soil and groundwater at 266 Mass Ave, Cambridge, MA. Soil excavation, dewatering, groundwater treatment and discharge is proposed to a storm drain that discharges to the Charles River under an EPA RGP. Proposed remediation and discharge is anticipated to be completed in less than 8 weeks.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.35964585553628N71.09422112613854W

Counties: Middlesex, MA

Endangered Species Act Species

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

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

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

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

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

Critical habitats

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

Attachment F – MACRIS Historic Places Report

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Cambridge; Street Name: Massachusetts Ave; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
CAM.635	Holmes Block II - Green Block	2-14 Central Sq	Cambridge	1798
CAM.102	First Parish Church, Unitarian	1-3 Church St	Cambridge	1833
CAM.910	Fitchburg Railroad Signal Bridge	Fitchburg Railroad	Cambridge	c 1930
CAM.177	Old Cambridge Baptist Church	398 Harvard St	Cambridge	1867
CAM.260	M. I. T. Alumni Swimming Pool Building	Massachusetts Ave	Cambridge	1940
CAM.261	Kresge Auditorium	Massachusetts Ave	Cambridge	1953
CAM.262	M. I. T. Chapel	Massachusetts Ave	Cambridge	1954
CAM.901	Harvard Square Subway Kiosk	Massachusetts Ave	Cambridge	1928
CAM.905	Massachusetts Avenue Bridge over Conrail	Massachusetts Ave	Cambridge	1900
CAM.916	Central Square Subway Station	Massachusetts Ave	Cambridge	1912
CAM.921	Harvard Bridge	Massachusetts Ave	Cambridge	r 1890
CAM.938	Cambridge Common	Massachusetts Ave	Cambridge	1631
CAM.939	Cambridge Common South Traffic Island	Massachusetts Ave	Cambridge	1976
CAM.945	Burying Ground Fence	Massachusetts Ave	Cambridge	1891
CAM.946	Flagstaff Park	Massachusetts Ave	Cambridge	1913
CAM.947	North Little Common	Massachusetts Ave	Cambridge	c 1858
CAM.949	Central Square Street Pattern	Massachusetts Ave	Cambridge	c 1630
CAM.334	Cambridge Armory	120 Massachusetts Ave	Cambridge	1902
CAM.332	Metropolitan Storage Warehouse	134 Massachusetts Ave	Cambridge	1895
CAM.1366	New England Confectionery Company Factory	250 Massachusetts Ave	Cambridge	1927
CAM.612	Lamson, The	351-355 Massachusetts Ave	Cambridge	1907
CAM.614	Lafayette Square Fire Station	380 Massachusetts Ave	Cambridge	1893
CAM.613	Shell Gas Station	385 Massachusetts Ave	Cambridge	1948
CAM.615	Salvation Army - Cambridge Citadel	400-402 Massachusetts Ave	Cambridge	1968
CAM.604		401-409 Massachusetts Ave	Cambridge	1966
CAM.603	Taylor, William A. House and Shop	411-413 Massachusetts Ave	Cambridge	1887
CAM.602	Barkin and Gorfinkle Building	415-429 Massachusetts Ave	Cambridge	1925

Inv. No.	Property Name	Street	Town	Year
CAM.616	Kennedy, Frank A. Store	424 Massachusetts Ave	Cambridge	1896
CAM.617	Kutz, Issac Store	428 Massachusetts Ave	Cambridge	c 1910
CAM.229	Kennedy, The	430-442 Massachusetts Ave	Cambridge	1890
CAM.601	Robbins Building	433-447 Massachusetts Ave	Cambridge	1923
CAM.619	Blanchard Building	448-450 Massachusetts Ave	Cambridge	c 1886
CAM.324	South Row	452-458 Massachusetts Ave	Cambridge	1807
CAM.1393	Dana Row - South Row	452-458 Massachusetts Ave	Cambridge	2003
CAM.599	Rogers, F. W. and G. M. Building	453-457 Massachusetts Ave	Cambridge	1885
CAM.620	Freedman Building	460-464 Massachusetts Ave	Cambridge	1933
CAM.598	McDonald's Restaurant	463-467 Massachusetts Ave	Cambridge	1974
CAM.621	Central Square Realty Trust Building	468-480 Massachusetts Ave	Cambridge	1929
CAM.597	Moller's Furniture Store	485 Massachusetts Ave	Cambridge	1926
CAM.622	Longfellow, The	492-498 Massachusetts Ave	Cambridge	1893
CAM.596	Kane's Furniture Store	493-507 Massachusetts Ave	Cambridge	1916
CAM.625	Burger King Restaraunt	506 Massachusetts Ave	Cambridge	1970
CAM.1394	Hovey, Phineas Building	512-514 Massachusetts Ave	Cambridge	1842
CAM.595	Central Trust Building	515-527 Massachusetts Ave	Cambridge	1927
CAM.627	Miller Store	520 Massachusetts Ave	Cambridge	1924
CAM.628	Rosenwald Realty Corporation Building	522-526 Massachusetts Ave	Cambridge	1928
CAM.230	Odd Fellows Hall	536 Massachusetts Ave	Cambridge	1884
CAM.629	Clark - Lamb Building	546-550 Massachusetts Ave	Cambridge	c 1873
CAM.630	Albani Building	552-566 Massachusetts Ave	Cambridge	1925
CAM.592	Bullock, Charles Building	567-569 Massachusetts Ave	Cambridge	1859
CAM.591	Central Square Theater	571-577 Massachusetts Ave	Cambridge	1917
CAM.631	Ginsberg Building - Harvard Bazar	572-590 Massachusetts Ave	Cambridge	1913
CAM.590	Morse, Asa P. Building	579-587 Massachusetts Ave	Cambridge	1893
CAM.589	Cambridgeport National Bank Building	593-597 Massachusetts Ave	Cambridge	1869
CAM.632	Manhattan Market - Purity Supreme Super Market	596-610 Massachusetts Ave	Cambridge	1899
CAM.588	Morse, Asa Second Building	599-601 Massachusetts Ave	Cambridge	1905
CAM.587	Fisk and Coleman Building	603-605 Massachusetts Ave	Cambridge	1892
CAM.633	Prospect House	614-620 Massachusetts Ave	Cambridge	1869
CAM.586	Corcoran, John H. Building	615-627 Massachusetts Ave	Cambridge	1927
CAM.634	Holmes Block I	624-638 Massachusetts Ave	Cambridge	1915
CAM.1395	New Holmes Block	624-638 Massachusetts Ave	Cambridge	1998
CAM.585	Woolworth, F. W. Building	633-641 Massachusetts Ave	Cambridge	1950
CAM.584	Watriss Building	643-649 Massachusetts Ave	Cambridge	1880
CAM.583	Dowse, Thomas House	653-655 Massachusetts Ave	Cambridge	1814

Inv. No.	Property Name	Street	Town	Year
CAM.581	New England Gas and Electric Association II Bldg	671-675 Massachusetts Ave	Cambridge	1966
CAM.642	Central Square Building	674 Massachusetts Ave	Cambridge	1926
CAM.643	Chamberlain - Hyde Building	684-688 Massachusetts Ave	Cambridge	1869
CAM.580	Cambridgeport Savings Bank	689 Massachusetts Ave	Cambridge	1904
CAM.644	Dana Building	692-698 Massachusetts Ave	Cambridge	1872
CAM.645	Southwick Building	700-706 Massachusetts Ave	Cambridge	1908
CAM.646	Norris Building	710-720 Massachusetts Ave	Cambridge	1916
CAM.579	Cambridge Electric Light Building	719 Massachusetts Ave	Cambridge	1912
CAM.647	Thayer Building I	722-724 Massachusetts Ave	Cambridge	1863
CAM.648	Thayer Building II	728-730 Massachusetts Ave	Cambridge	1868
CAM.578	Southwick Building	731-751 Massachusetts Ave	Cambridge	1896
CAM.649	Dobbins and Draper Store	736-750 Massachusetts Ave	Cambridge	1922
CAM.650	Dobbins and Draper Store	736-750 Massachusetts Ave	Cambridge	1922
CAM.231	Cambridge Mutual Fire Insurance Company Building	763 Massachusetts Ave	Cambridge	1888
CAM.232	Central Square Post Office	770 Massachusetts Ave	Cambridge	1933
CAM.233	Cambridge City Hall	795 Massachusetts Ave	Cambridge	1889
CAM.651	Cambridge Senior Center	800-806 Massachusetts Ave	Cambridge	1925
CAM.652	Young Men's Christian Association Building	820-830 Massachusetts Ave	Cambridge	1896
CAM.1396	Brusch Medical Center	825-831 Massachusetts Ave	Cambridge	1951
CAM.653	Saint Peter's Episcopal Church	834 Massachusetts Ave	Cambridge	1867
CAM.654	Modern Manor Apartments	842-864 Massachusetts Ave	Cambridge	1925
CAM.900	Houghton Beech Tree	1000 Massachusetts Ave	Cambridge	
CAM.1127	Brentford Hall	1137 Massachusetts Ave	Cambridge	1899
CAM.1128	Dunham, Israel Houses	1156-1166 Massachusetts Ave	Cambridge	1858
CAM.1129		1168 Massachusetts Ave	Cambridge	c 1892
CAM.1130		1170-1174 Massachusetts Ave	Cambridge	c 1849
CAM.1131	Longfellow Court	1200 Massachusetts Ave	Cambridge	1916
CAM.1132	Gulf Gas Station	1201 Massachusetts Ave	Cambridge	1940
CAM.1133		1206 Massachusetts Ave	Cambridge	1965
CAM.1134		1208-1210 Massachusetts Ave	Cambridge	1842
CAM.1135	Quincy Hall	1218 Massachusetts Ave	Cambridge	1891
CAM.1136		1230 Massachusetts Ave	Cambridge	1907
CAM.1137		1234-1238 Massachusetts Ave	Cambridge	c 1894
CAM.1138	Hamden Hall	1246-1260 Massachusetts Ave	Cambridge	1902
CAM.1139	A. D. Club	1268-1270 Massachusetts Ave	Cambridge	1899
CAM.1140	Niles Building	1280 Massachusetts Ave	Cambridge	1984

Inv. No.	Property Name	Street	Town	Year
CAM.234	Fairfax, The	1300-1306 Massachusetts Ave	Cambridge	1869
CAM.1141	Fairfax - Hilton Block	1310-1312 Massachusetts Ave	Cambridge	1883
CAM.1142	Fairfax - Hilton Block	1316 Massachusetts Ave	Cambridge	1885
CAM.235	Porcellian Club	1320-1324 Massachusetts Ave	Cambridge	1890
CAM.1143	Manter Hall	1325 Massachusetts Ave	Cambridge	1885
CAM.236	Wadsworth House	1341 Massachusetts Ave	Cambridge	1726
CAM.237	Holyoke Center	1350 Massachusetts Ave	Cambridge	1961
CAM.1144	Cambridge Savings Bank	1372-1376 Massachusetts Ave	Cambridge	1923
CAM.1145	Read, Joseph Stacey House	1380-1382 Massachusetts Ave	Cambridge	c 1783
CAM.1146	Bartlett, Joseph House	1384-1392 Massachusetts Ave	Cambridge	c 1800
CAM.1147	Harvard Coop Society	1400 Massachusetts Ave	Cambridge	1924
CAM.1148	Harvard Coop Society	1408-1410 Massachusetts Ave	Cambridge	1956
CAM.1149	Harvard Trust Company	1414 Massachusetts Ave	Cambridge	1923
CAM.1150	College House	1420-1442 Massachusetts Ave	Cambridge	1832
CAM.342	Gannett House	1511 Massachusetts Ave	Cambridge	1838
CAM.343	Hemenway Gymnasium	1517 Massachusetts Ave	Cambridge	1938
CAM.344	Hastings Hall	1519 Massachusetts Ave	Cambridge	1888
CAM.345	Harvard Epworth Methodist Church	1555 Massachusetts Ave	Cambridge	1891
CAM.1334	Francis - Allyn House	1564 Massachusetts Ave	Cambridge	1831
CAM.1333	Sawin - Cobb - Wilson House	1626 Massachusetts Ave	Cambridge	1868
CAM.238	Saunders, Charles Hicks House	1627 Massachusetts Ave	Cambridge	1862
CAM.239	Montrose, The	1648 Massachusetts Ave	Cambridge	1898
CAM.240	Dunvegan, The	1654 Massachusetts Ave	Cambridge	1898
CAM.241	Worcester, Frederick House	1734 Massachusetts Ave	Cambridge	1886
CAM.242	North Avenue Congregational Church	1803 Massachusetts Ave	Cambridge	1845
CAM.243	Lovell Block	1853 Massachusetts Ave	Cambridge	1882
CAM.1385	Cambridge Masonic Temple	1950 Massachusetts Ave	Cambridge	1910
CAM.244	Saint James Episcopal Church	1991 Massachusetts Ave	Cambridge	1888
CAM.245	Henderson Carriage Repository	2067-2089 Massachusetts Ave	Cambridge	1892
CAM.246	Cornerstone Baptist Church	2114 Massachusetts Ave	Cambridge	1854
CAM.247	Mead, Alpheus House	2200 Massachusetts Ave	Cambridge	1867
CAM.248	Snow, Daniel House	2210 Massachusetts Ave	Cambridge	1868
CAM.249	McLean, Isaac House	2218 Massachusetts Ave	Cambridge	1894
CAM.250	Farwell, R. H. Double House	2222-2224 Massachusetts Ave	Cambridge	1891
CAM.251	Saint John's Roman Catholic Church	2270 Massachusetts Ave	Cambridge	1904
CAM.1390		2557 Massachusetts Ave	Cambridge	
CAM.593	Powers, Hannah - Ginsberg, Harris Building	7-15 Norfolk St	Cambridge	c 1894

Massachusetts Cultural Resource Information System

Scanned Record Cover Page

Inventory No:	CAM.1366
Historic Name:	New England Confectionery Company Factory
Common Name:	NECCO Candy Factory - Novartis Institutes Biotech
Address:	250 Massachusetts Ave
City/Town:	Cambridge
Village/Neighborhood:	Cambridgeport; Cambridgeport, South
Local No:	68-47,51
Year Constructed:	1927
Architect(s):	Harris, Hegeman Company; Lockwood, Greene and Company; Lutze, F. C.; O'Hagan, Audrey J. S.; Stubbins, Hugh and Associates; Tsoi/Kobus and Associates
Architectural Style(s):	Moderne
Use(s):	Food Processing and Packaging; Industrial Complex or District; Laboratory - Research Facility
Significance:	Architecture; Commerce; Engineering; Industry; Invention; Science; Social History
Area(s):	
Designation(s):	Nat'l Register Individual Property (11/09/2005)
Building Materials(s):	Roof: Synthetic Other Wall: Aluminum; Brick; Bronze; Cast Iron; Limestone; Stucco; Stone, Cut; Concrete, Reinforced; Stone, Veneer Foundation: Concrete, Reinforced

The Massachusetts Historical Commission (MHC) has converted this paper record to digital format as part of ongoing projects to scan records of the Inventory of Historic Assets of the Commonwealth and National Register of Historic Places nominations for Massachusetts. Efforts are ongoing and not all inventory or National Register records related to this resource may be available in digital format at this time.

The MACRIS database and scanned files are highly dynamic; new information is added daily and both database records and related scanned files may be updated as new information is incorporated into MHC files. Users should note that there may be a considerable lag time between the receipt of new or updated records by MHC and the appearance of related information in MACRIS. Users should also note that not all source materials for the MACRIS database are made available as scanned images. Users may consult the records, files and maps available in MHC's public research area at its offices at the State Archives Building, 220 Morrissey Boulevard, Boston, open M-F, 9-5.

Users of this digital material acknowledge that they have read and understood the MACRIS Information and Disclaimer (http://mhc-macris.net/macrisdisclaimer.htm)

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Commonwealth of Massachusetts
Massachusetts Historical Commission
220 Morrissey Boulevard, Boston, Massachusetts 02125
www.sec.state.ma.us/mhc

This file was accessed on: Tuesday, October 29, 2019 at 11:36 AM

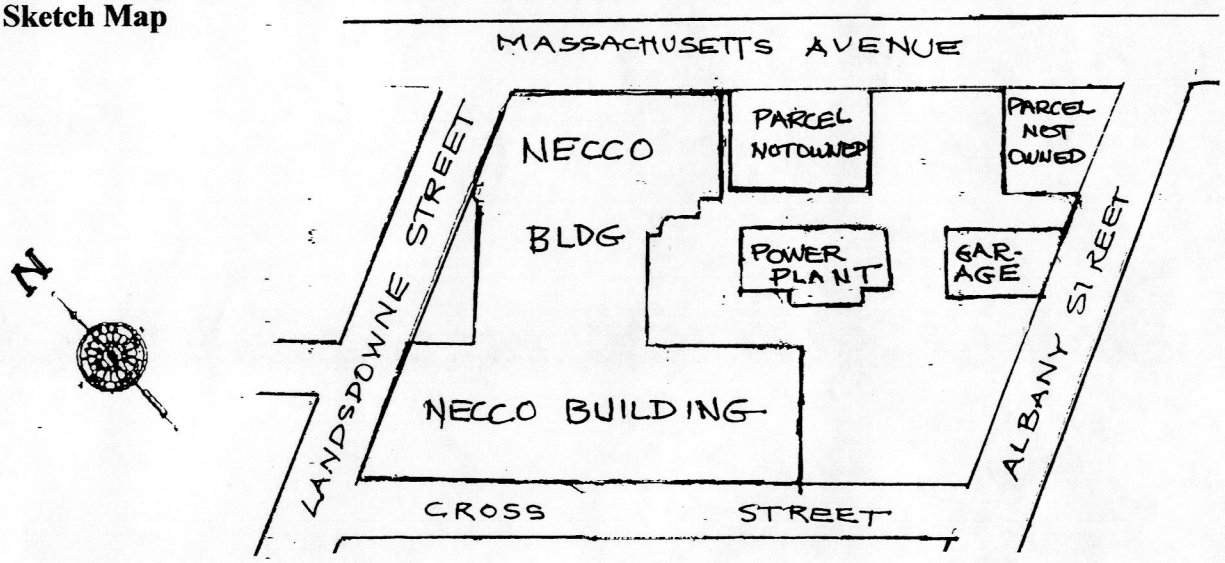
CAM. 1366

#1366

FORM B – BUILDING

Massachusetts Historical Commission
Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

Photograph
See attached plasticene pages with color photos for Determination of Eligibility
Sketch Map



Recorded by: Frederick W. Lyman

Organization: American Landmarks, LLC, Preservation Consultants

Date August, 2001

Assessor's Number USGS Quad Area(s) Form Number (All to be provided)

City: Cambridge, Massachusetts

Place Central Square/MIT environs

Address: 254 Massachusetts Avenue, Cambridge, MA 02139 (at Albany and Landsdowne Streets)

Historic Name: New England Confectionery Company

Uses: Present: Manufacture of Candies

Original: Manufacture of Candies

Date of Construction: 1925- 1927

Source: Building Records, City of Cambridge

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MASS. HIST. COMM

CAM. 1366
#1366

Style/Form Moderne (Industrial)

Architect/Builder: Architects: Lockwood, Greene & Co., Architects & Engineers
(F.C.Lutze, PE Designer)
Builders: Hegeman Harris Company, Inc., Builders

Exterior Material: Reinforced Concrete with Brick and Limestone trim

Foundation: Reinforced Concrete

Wall/Trim: Buff-colored, speckled brick with limestone relief in the form of watertable, decorative trim (e.g. door enframements) and banding .

Roof: Flat (tar and gravel)

Outbuildings/Secondary Structures: Power House; Vehicle garage (3-bay) (Altered).

Major Alterations *:*

There are remarkably few alterations to the factory of any note. In 1946 most rolled steel casement and hopper window sash which had been original equipment were replaced by translucent glass block in all openings except for the windows of the 6th floor executive offices (which remained 8/8 double hung wood sash with a fixed 8-pane transom sash) and the rear SW wall. That rear elevation was gradually changed over to glass block between 1985 and 1990.

A large smoke stack which once dominated the complex was torn down in three stages over a twenty year period between the 1960s and 1980s.

A three-bay garage bulding not originally part of the complex plan was added to the plan in 1927.

Condition: Excellent

Moved No. Date (not applicable)

Acreage: 3

Setting urban industrial

CAM. 1366
#1366

INVENTORY FORM CONTINUATION SHEET
City: Cambridge, Massachusetts Property Address: 254 Massachusetts Avenue

Massachusetts Historical Commission
Area(s) Form No.

Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

Architecural Description:

Exterior:

The NECCO factory at 254 Massachusetts Avenue in Cambridge represents a rare surviving and largely unaltered Moderne style manufacturing facility located in a densely populated urban setting.

Occupying a parallelogram-shaped parcel with no setbacks on the north, west, and south sides, the structure rises 6 stories or over 65 feet from street level. The NECCO factory, although designed by an engineer (F. C. Lutze of Lockwood, Greene & Co.) shows the influence of simplified design motifs first exhibited at the Exposition des Arts Decoratifs, held in Paris in 1925. Thus, although rare to have a PE as the lead designer in the 1920s, the expression of function in overall design was not foreign to engineers as a professional group. If anything, as Alfred H. Barr observed in his 1928 article on the Necco factory for The Arts Magazine (too often) " *our architects dabble untidily in the past and festoon the bright stark structure of the engineer".* 1.

Constructed of reinforced concrete, the NECCO factory's public facades along Massachusetts Avenue and Landsdowne Street are sheathed principally with speckled beige brick with interspersed limestone banding and decorative trim. On the southernmost end of the Landsdowne Street facade and the entire rear of Cross Street facade this is reversed. Here the dominant surface material being limestone, and the speckled brick serving as a contrasting but less pronounced material of the facade, restricted to interfloor wall panels.

The Massachusetts Avenue facade at ground level is entirely limestone-sheathed. It is puncuated by two shallow-arch recessed openings at either end and by the name *New England Confectionery Company* in bronze letters between the two openings. The westerly of these openings, closed after hours by a handsome pair of cast iron gates, serves as the main pedestrian entrance to the factory and upper level executive offices. The easterly opening, as shown in early renderings by Lockwood Greene & Company, was originally designed and most probably used for a short time as the ceremonial entrance for automobiles and busses entering off Massachusetts Avenue, leading through

to the parking lot at the southeast corner of the complex. This vehicular entrance has for many years been blocked up and sheathed in a stucco to resemble the surrounding limestone facing material.

The factory itself is configured in a c-shape, racked slightly to the southeast to conform to its unusual parcel of land. Overall dimensions are 190' on Massachusetts Avenue, 110' along Landsdowne Street, and 340' from the southwest corner to the easterly end of the building on Cross Street at the rear.

Fenestration is a dominant feature of the c-shaped complex, with window bays on all sides measuring 20' or larger. While original renderings by the architects show a combination of window types (there were said to be twenty different window configurations in the original building). By far the dominant type was rolled steel sash with portions operable in a hopper-style inward-tilting sash. These are clearly shown in original photographs of employees at work stations. The Executive Offices were equipped with 8/8 double-hung wood sash beneath a fixed 8-pane transom. By the 1940s much of the original steel sash had been replaced by translucent glass block, meeting a need for centralized temperature and humidity control throughout the factory. Today all openings are of glass block with small, operable hopper sash at the 6th floor level to serve the Executive Offices.

The flat tar-and-gravel roof is surmounted on the north and east sections of the factory (Massachusetts Avnue and Landsdowne Street facades) by a brick parapet with limestone caps. This parapet becomes a full story at the Nothwest corner where the distinctive corner tower defines the main entrance and vertical circulation system for that section of the factory.The elevator head-house is contained within this raised parapet, combining functionality with the deliberate monumentality of the tower.

Extending to the east of the northerly wing of the factory is the original powerhouse surmounted in recent years by two large metal-clad chillers. This building has smaller, vertically-oriented window openings, probably originally rolled steel - now glass block.

A small three-truck vehicular garage building, also altered by the removal of windows and pedestrian doors (similarly blocked in and stuccoed) is found at the east end of the site, its endwall facing Albany Street. It has a deteriorated concrete roof supported beneath by steel trusses and most probably covered by a tar and gravel roof surface.

Interior:

The interior of the factory is strictly utilitarian, with the only exceptions being the first floor lobby and that portion of the the upper-most 6th floor level devoted to offices. Pod-shaped concrete posts and occasional brick firewalls are the only features to interrupt the open space at all levels and all parts of the factory, except for bathrooms, canteen, and medical station. When opened, the factory was equipped with a unique gravity-driven roller belt system to move material along in the manufacturing process. This system included spiral belts between the floors. Shown in early photos, this unpowered system of moving material was long since removed.

CAM. 1366
#1366

INVENTORY FORM CONTINUATION SHEET

City: Cambridge, Massachusetts Property Address: 254 Massachusetts Avenue

Massachusetts Historical Commission
Area(s) Form No.

Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

Significance/ Historical Narrative:

This factory complex was built to serve as the sole manufactory site for the New England Confectionery Company, commonly known as NECCO. Built between 1925 and its completion in 1927, the NECCO Building is significant on several levels, architectural, commercial and socio-economic.

In 1901 three independent candy companies merged as a State of Maine corporation to form NECCO. These were Chase & Company dating to 1847, Fobes, Hayward & Company (formerly Daniel Fobes Co.) established in 1848, and Wright & Moody, formed in 1856. Three years thereafter, in 1904 the plants were phyically consolidated on Summer Street in Boston.

By 1920 the consolidated business had grown to the point that the operation needed a larger parcel of land. In 1921 some 3 acres of land bordered by Massachusetts Avenue on the north, Landsdowne Street in the west, Cross Street on the south and Albany Street on the east were acquired from one Harry F. Simpson. Soon thereafter, $ 1 million was budgeted for a new factory complex in Cambridge and design work was begun by Lockwood, Greene & Company Architects and Enginners of Boston under the supervision of F. C. Lutze, a structural engineer. Mr Lutze proved to be the ideal designer, adapting an irregular parallelogram-shaped site to the specific industrial needs of a state-of-the art candy making process. Moreover and important, he did so in a refreshingly bold, yet understated Moderne style which met with critical acclaim. In his article entitled The NECCO Factory for The Arts Magazine in 1928, Alfred H. Barr, Jr. wrote that Lutze *" has achieved architecture positively by manipulation of proportions and masses, and by the restrained use of handsomer materials than were structurally necessary; negatively by the utmost economy in decorative motive and by the frank acknowledgement of utilitarian necessity in both plan and elevation."1.*

Upon its opening in 1928 the NECCO factory was the largest in the world dedicated soley to the production of candies. It remains the last and best example of pre-WWII industrial construction in Cambridge and occupies a prominent site on Massachsetts Avenue between MIT and Central Square, noticed daily by thousands.

CAm. 1366
#1366

NEECO traced its success to the invention of a lozenge cutting machine, and later the sugar pulverizing process, both patented by Oliver B. Chase of Chase & Company and demonstrated to much acclaim at the Centennial Exhibition in Philadelphia in 1876.

After a period of difficulty in the mid 20th century, NECCO was acquired in 1963 by UIS, a closely-held New York company. Under the leadership of Domenic Antonellis who took over in 1968, NECCO has regained a prominent place in the confectionery industry. Its present sales approach 100 million dollars per year.

NECCOs flagship Necco Wafers lozenge candy is one of many well-known brands produced and marketed by NECCO. Others include the Clark Bar, Mary Janes, SkyBar and Candy "Conversation" Hearts, the edible valentine routinely exchanged by children everywhere in the US.

As observed by the Cambridge Historical Commission, at the time the Cambridge NECCO factory opened in 1928 it *"included all the leading technology of the industry, including air conditioning, a rail spur to deliver sugar and other raw materials in bulk"* (therefore eliminating costly cartage fees), *"its own power plant, fire protection, laboratories, engineering office, and a staffed medical center."2.*

In its heyday, NECCO was the largest of many candy manufacturers in Cambridge, which at one time boasted nearly thirty such concerns. Over the years NECCO has served as a reliable and socially-conscious employer to generations of immigrant families new to the US.
During World War II, due to its proximity to MIT and Harvard University, portions of the NECCO factory were loaned for the development of war-related technologies. In addition, the company provided candy to troops and published pamphlets saluting its own employees overseas for the war efforts in both World Wars.

1. Barr, Alfred H., Jr. The NECCO Facory", The Arts Magazine, May 1928
2. Burks, Sarah L. Memorandum to the Cambridge Historical Commission, August 2001

NORTH (L) AND WEST (R) FACADES FROM MASS. AVE.

MASS. AVE. FACADE (N)

EAST AND NORTH FACADES OF NORTH WING ON MASS. AVE.

LANSDOWNE (L) AND CROSS ST (R) (SOUTH FACADES)

SOUTH (L) AND EAST (R) FACADES FROM ALBANY ST.

EAST FACADE (L) AND POWER PLANT + GARAGE (R)

EAST FACADE WITH POWER PLANT ON RIGHT

NORTH FACADES OF SOUTH WING (REAR) AND POWER PLANT (FRONT)

6TH FL. OFFICE ROW CORRIDOR

LANDSDOWNE ST (W) FACADE
LOOKING NORTH

NW CORNER TOWER

Original yellow form: Eligibility file
Copies: Inventory form
Town file(w/corresp.)
Macris
NR director ____

Pete add. info for NECCO should be considered a complex (3)! - Taya

CAM. 1366

Community: CAM

MHC OPINION: ELIGIBILITY FOR NATIONAL REGISTER

Date Received: 9/26/01add. info. Date Due: Date Reviewed: 10/3/01

Type: ~~x~~ Individual (COMPLEX) __ District (Attach map indicating boundaries)

Name: New England Confectionery Company (NECCO) Inventory Form: ~~N/A~~ 1366

Address: 254 Massachusetts Avenue Requested by:

Action: __Honor ~~x~~ ITC __Grant __R & C __Other:

Agency: Staff in charge of Review: TD

INDIVIDUAL PROPERTIES

~~x~~ Eligible - AS A COMPLEX
__ Eligible, also in district
__ Eligible ~~only~~ in district
__ Ineligible
__ More information needed

DISTRICTS

__ Eligible
__ Ineligible
__ More information needed

CRITERIA: ~~x~~ A __B ~~x~~ C __D

LEVEL: ~~x~~ Local ~~x~~ State __National

STATEMENT OF SIGNIFICANCE by Taya Dixon

Additional information submitted as part of the HPCA indicates that the NECCO factory consists of three buildings, the main Art Deco factory block, the power plant building, and the garage building. The power plant and the garage buildings were constructed during the same time period as the main factory block and are functionally related and contribute to the significance of the complex. Therefore, the three buildings should be addressed in a National Register nomination for the NECCO Complex.

CAM. 1366

Original yellow form: Eligibility file
Copies: Inventory form
Town file(w/corresp.)
Macris
NR director ____

Community: CAM

MHC OPINION: ELIGIBILITY FOR NATIONAL REGISTER

Date Received: 8/10/01 Date Due: Date Reviewed: 8/15/01

Type: x Individual ~~District~~ (Attach map indicating boundaries)

Name: New England Confectionery Company (NECCO) Inventory Form: N/A

Address: 254 Massachusetts Avenue Requested by:

Action: ___Honor ~~x~~ ITC ___Grant ___R & C ___Other: 1366

Agency: Staff in charge of Review: SW

INDIVIDUAL PROPERTIES

~~x~~ Eligible
___ Eligible, also in district
___ Eligible ~~only~~ in district
___ Ineligible
___ More information needed

DISTRICTS

___ Eligible
___ Ineligible
___ More information needed

CRITERIA: ~~x~~ A ___B ~~x~~ C ___D

LEVEL: ~~x~~ Local ~~x~~ State ___National

STATEMENT OF SIGNIFICANCE

The New England Confectionary Company building, commonly known as the NECCO factory, is a rare and largely unaltered surviving example of a Moderne style manufacturing facility located in a densely populated urban setting.

This 6-story reinforced concrete factory building is the home of NECCO, makers of the NECCO Wafers lozenge candy, "conversation" hearts, Clark Bar, Mary Janes and SkyBar. The Mass Ave and Landsdowne Street facades are sheathed with speckled beige brick and limestone banding and trim. The building was constructed between 1925-1927 and was designed by Lockwood, Greene & Co., an engineering firm that also designed the Schraffts candy factory in Charlestown. There have been few alterations, although the original rolled steel casement and hopper window sash were replaced in 1946 with translucent glass block in all openings except for the windows of the 6th floor executive offices that retain 8/8 wood sash with a fixed 8-pane transom. A prominent smokestack was torn down between 1960s and 1980s.

In 1901 the NECCO company was formed by a union of three firms, Chase and Company (1847), Fobes, Hayward and Company (1848) and Wright and Moody (1856). Oliver Chase, founder of Chase and Company, was the inventor of the first American candy machine, the lozenge cutter, in 1847. His brother Daniel invented the Lozenge Printing Machine, creating "Conversation Candies" a forerunner of the popular "conversation hearts," introduced in 1902. The NECCO's first building was a manufacturing plant at Summer and Melcher Streets in Boston. Some interesting facts: NECCO Wafers were brought to the Arctic by Donald MacMillion in 1913 and to the South Pole in the 1930s by Admiral Byrd; in low humidity, wintergreen NECCO wafers spark in the dark when broken; over 120 NECCO Wafers are consumed every second of every day throughout the year.

When the factory was opened in 1927, it was the largest factory in the world with its entire space devoted to the manufacture of candy. In 1942, the NECCO turns over a portion of its plant for manufacturing war materials. NECCO acquires the Stark Candy Company in 1990, makers of the Mary Jane Brand (which founded and manufactured in Paul Revere's former house n Boston). To commemorate its 150th anniversary in 1996, the company painted the water tower atop the factory in the familiar NECCO Wafer roll colors.

Retains setting, location, design, workmanship, feeling, association and materials. A and C, local and state level.