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15 June 2017
File No. 128868-006

U.S. Environmental Protection Agency
Office of Ecosystem Protection
EPA/OEP RGP Coordinator
5 Post Office Square, Suite 100 (OEP06-01)
Boston, Massachusetts 02109-3912

Attention: Ms. Shelley Puleo

Subject: NPDES RGP NOI Application
Temporary Construction Dewatering
Boston Children's Hospital Clinical Building (BCCB)
Boston, Massachusetts

Dear Ms. Puleo:

On behalf of the project owner, The Children's Hospital Corporation, and in accordance with the National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) in Massachusetts, MAG910000, this letter submits a Notice of Intent (NOI) and the applicable documentation as required by the U.S. Environmental Protection Agency (EPA) for temporary construction site dewatering under the NPDES RGP. As defined in Table 1 of the NPDES RGP, the Activity Category is III.G (Contaminated Site Dewatering, Sites with Known Contamination). Temporary construction dewatering is planned in support of the proposed Boston Children's Hospital Clinical Building (BCCB) project located at 55 Shattuck Street on the Boston Children's Hospital (BCH) campus in Boston, Massachusetts. Refer to Figure 1. We anticipate construction dewatering will be conducted, as necessary, during foundation construction and below-grade excavation.

The site is located on a portion of the BCH campus in the vicinity of Shattuck Street and Meadow Lane as shown on Figure 2. General site grades are estimated at about El. 40.0¹. The site is a fenced construction staging area bordered by several other BCH campus buildings including the Bader building to the west, the Farley/Pavilion building to the west and north and the former I.C. Smith Library to the north (currently used as a construction field office). Shattuck Street borders the site to the south, beyond which is the Brigham and Women's Hospital Connors Center building; Meadow Lane borders the site to the east, beyond which are two Harvard Medical School buildings (the LHRRB and Seeley G. Mudd buildings).

Demolition of the Wolbach building is underway as part of the site preparation work for the project. The site enabling activities began in March 2017. Dewatering is anticipated to start in August 2017 and continue through approximately August 2019.

¹ Elevations reported herein are in feet and reference the Boston City Base (BCB) Datum.

PROPOSED CONSTRUCTION

Current site development plans include a new Clinical Building with a below-grade footprint area of approximately 34,500 square feet (sf) and four below-grade levels, with the lowest level floor slab finished at El. -22'-6". Portions of the lowest level are planned to extend deeper to El. -32'-6". Excavation to construct the below-grade space and building foundations is anticipated to range from approximately El. -24'-8" to about El. -37'-0". Excavation will proceed to depths of about 65 to 75 ft below existing site grades, corresponding to approximately 35 to 45 ft below site groundwater levels.

SITE HISTORY

The site has been part of the Longwood medical campus since its founding in 1869 and was undeveloped until the Wolbach building was built in 1909 as the Thomas Morgan Roch Jr. Memorial Hospital for Infants, and later was part of the Harvard Medical School until it was acquired by BCH in the mid-1970s. The building has been used for BCH administrative offices since the acquisition, and is currently vacant awaiting demolition. The Wolbach building is historically depicted on Sanborn maps at 55 Van Dyke (now Shattuck) Street with a tunnel connecting the building to the Harvard Medical School campus and to the power plant west of the BCH campus. A two-story infant hospital with a basement, platform walkways, and connecting tunnels occupied a portion of the site from approximately 1919 to the 1950s. Connecting tunnels still exist beneath the site. The site area included the Prouty Garden which was opened in 1956 replacing the area formerly occupied by the infant hospital. No significant changes were noted for the Wolbach building or Prouty Garden on Sanborn maps or aerial photographs through 2008.

ENVIRONMENTAL CONDITIONS AND MCP REGULATORY BACKGROUND

Multiple subsurface investigation and precharacterization programs have been conducted at the site by Haley & Aldrich in preparation for site redevelopment. Soil testing detected levels of semi-volatile organic compounds (SVOCs), primarily polycyclic aromatic hydrocarbons (PAHs), and metals (lead) in the urban fill consistent with the presence of historic urban fill, which is typical of the area. In addition, volatile organic compounds (VOCs) including trichloroethene (TCE) and tetrachloroethene (PCE), were detected in limited areas of soil and groundwater.

The site was reported as a Disposal Site to the Massachusetts Department of Environmental Protection (MassDEP) on 21 October 2016 by The Children's Hospital Corporation, who submitted three separate Release Notification Forms (RNFs) for concentrations of compounds in soil and groundwater exceeding Massachusetts Contingency Plan (MCP) Reportable Concentrations in Soil (RCS-1) and Groundwater (RCGW-2). MassDEP subsequently assigned Release Tracking Numbers (RTNs) 3-33887 (PAHs and lead in urban fill), 3-33888 (Carbon Tetrachloride in groundwater), and 3-33889 (TCE/PCE in groundwater) to the site.

Based on our review of environmental conditions at the subject site and a review of nearby documented releases, we have confirmed that the site is located within an area of known PCE contamination in groundwater caused by a historic release of PCE that occurred from a former dry cleaner, known in MassDEP records as the Mission Hill Ledge Site, or Ledge Site, and identified with RTN 3-12332. The

subject site development is located approximately 800 ft downgradient from the source location. Although the presence of TCE and PCE in groundwater at the site is associated with RTN 3-12332, The Children's Hospital Corporation filed a new RNF for administrative purposes.

A site enabling Release Abatement Measure (RAM) Plan is currently in place under RTN 3-33887 for site preparation activities including the removal of the top 3 ft of soil. The remaining soil and groundwater management to occur during construction will be conducted under a separate RAM Plan.

Additionally, RAM activities were also conducted to remove limited areas of polychlorinated biphenyl (PCB) impacted soils in landscaped areas adjacent to the Wolbach building in accordance with a RAM Plan dated 14 February 2017 for RTN 3-34072. PCBs were discovered in a limited area of shallow topsoil and underlying sub-soil in landscaped areas adjacent to the Wolbach building. The PCB impacted soil area was located from 0 to 3 ft below existing ground surface. Site preparation activities did not begin in the PCB impacted area until the PCB impacted soils were removed to below 1 ppm.

TEMPORARY CONSTRUCTION DEWATERING NOTICE OF INTENT (NOI)

A total of nine (9) groundwater samples have been collected at the site between June 2015 and April 2017. Samples were submitted to Alpha Analytical, Inc. (Alpha) of Westborough, Massachusetts for analysis for one or more of the following NPDES RGP permit parameters: VOCs, SVOCs, total metals (including antimony, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, silver and zinc), hexavalent chromium, total petroleum hydrocarbons (TPH), PCBs, total suspended solids (TSS), total chloride, total cyanide (free and amenable cyanide were also analyzed), total phenols, total residual chlorine (TRC), ammonia, hardness, pH and temperature. The analytical results identified concentrations of carbon tetrachloride, TCE and PCE above applicable NPDES RGP Effluent Limitations; information and calculations used to determine the effluent limitations are included in Appendix D. Additionally, a sample of the receiving water (Muddy River) was collected on 26 May 2017 (upstream of the discharge location shown on Figure 4C) and analyzed for the following parameters: pH, temperature, hardness, ammonia and total recoverable metals (including antimony, arsenic, cadmium, chromium, trivalent chromium, hexavalent chromium, copper, iron, lead, mercury, nickel, selenium, silver and zinc). The results of groundwater quality testing conducted at the site are summarized in Table I. The results of sampling of the receiving water (Muddy River) are summarized in Table II. The locations of the observation wells are shown on Figure 2.

A concrete diaphragm wall (slurry wall) is planned to provide groundwater cut-off and temporary excavation support as well as serve as the permanent foundation wall. Dewatering will be conducted from sumps or wells located inside the slurry wall. Dewatering is necessary to control groundwater, seepage, precipitation, and surface water runoff and construction-generated water to enable below-grade construction activities in-the-dry. Construction activities are underway; dewatering is anticipated to begin around August 2017 and continue through approximately August 2019.

Prior to discharge, collected water will be routed through a sedimentation tank with baffles and bag filters, at a minimum, to remove suspended solids and undissolved chemical constituents. A pretreatment system consisting of granular activated carbon (GAC) will be incorporated into the system. Total flow will be measured with a flow meter/totalizer. Supplemental pretreatment may be required to

meet NPDES RGP Effluent Limitations and may include pH control, ion exchange, oil/water separators and/or other components as required; refer to Figure 3. Construction dewatering under this NPDES RGP will include piping and discharge to storm drains located near the site. The proposed discharge point is located in Meadow Lane adjacent to the site; refer to Figure 2. The proposed discharge route travels northeast along Meadow Lane to Longwood Avenue, continues to the northeast along Blackfan Street, and reaches the Muddy River where it will discharge at outfall DO 045. The proposed discharge route is shown on Figures 4A through 4C.

OWNER AND OPERATOR INFORMATION

Owner:

The Children's Hospital Corporation
300 Longwood Avenue
Boston, MA 02115
Attn: Steven Smith, Director of Clinical
Building Construction

Operator:

Suffolk Construction Company, Inc.
65 Allerton Street
Boston, MA 02119
Attn: Jason Seaburg, Project Executive

The Children's Hospital Corporation has hired Suffolk Construction Company, Inc. (Suffolk) as the General Contractor. An earthwork subcontractor (Site Contractor) has been hired by Suffolk to conduct the site work, including dewatering activities. The Site Contractor will operate the dewatering system. Haley & Aldrich will monitor the dewatering activities on behalf of The Children's Hospital Corporation in accordance with the requirements for this NOI submission.

DILUTION FACTOR CALCULATION

A Dilution Factor (DF) was calculated using the following equation:

$$DF = (Q_d + Q_s)/Q_d$$

Where Q_d is the maximum discharge flow rate, assumed to be 100 gallons per minute (gpm) or approximately 0.1440 million gallons per day (MGD), and Q_s is the receiving water flow rate minimum for 7 consecutive days with a recurrence interval of 10 years (7Q10), assumed to be 1.03 cubic feet per second (cfs), corresponding to 0.6657 MGD². Using these assumed values, the DF is equal to 5.62.

APPENDICES

The completed "Suggested Format for the Remediation General Permit Notice of Intent (NOI)" form as provided in the NPDES RGP is enclosed in Appendix A. Appendix B provides a copy of the Boston Water and Sewer Commission (BWSC) Dewatering Discharge Permit Application to be submitted separately to the BWSC. A Best Management Practices Plan (BMPP), which outlines the proposed discharge operations covered under the RGP, is included in Appendix C. Documents supporting the dilution factor and effluent limitation calculations, as well as information on the receiving water (Muddy River)

² 7Q10 of 1.03 cfs (0.6657 MGD) based on results from the United States Geological Survey (USGS) StreamStats 4.0 Report; refer to Appendix D for the report. The 7Q10 and DF calculations and values were confirmed by Cathy Vakalopoulos of the MassDEP on 8 June 2017.

including laboratory data reports, are included in Appendix D. Appendices E and F include the Endangered Species Act Documentation and National Register of Historic Places and Massachusetts Historical Commission Documentation, respectively. The groundwater laboratory data reports are provided in Appendix G.

The Site Contractor has not yet submitted their construction dewatering submittal which will include details of the proposed dewatering system along with Safety Data Sheets (SDSs) and fact sheets for possible chemical additives to be used in the treatment system to adjust pH or reduce suspended sediments.

CLOSING

Thank you very much for your consideration of this NPDES RGP NOI. Please feel free to contact us should you wish to discuss the information contained herein or if you need additional information.

Sincerely yours,
HALEY & ALDRICH, INC.


Jonathan M. Thibault
Assistant Project Manager


Keith E. Johnson, P.E., LSP
Technical Specialist

Attachments:

- Table I – Summary of Groundwater Quality Data
- Table II – Summary of Receiving Water (Muddy River) Quality Data
- Figure 1 – Project Locus
- Figure 2 – Subsurface Exploration and Discharge Location Plan
- Figure 3 – Proposed Treatment System Schematic
- Figure 4A – Proposed Discharge Route (Figure 1 of 3)
- Figure 4B – Proposed Discharge Route (Figure 2 of 3)
- Figure 4C – Proposed Discharge Route (Figure 3 of 3)
- Appendix A – Suggested Format for the Remediation General Permit Notice of Intent (NOI)
- Appendix B – Boston Water and Sewer Commission (BWSC) Dewatering Discharge Permit Application
- Appendix C – Best Management Practices Plan (BMPP)
- Appendix D – Dilution Factor and Effluent Limitation Calculation Documents and Information on the Receiving Water (Muddy River)
- Appendix E – Endangered Species Act Documentation
- Appendix F – National Register of Historic Places and Massachusetts Historical Commission Documentation
- Appendix G – Groundwater Laboratory Data Reports

- c: The Children's Hospital Corporation, Attn: Steven Smith, Bob Sullivan
Suffolk Construction Company, Inc., Attn: Jason Seaburg, Jason Lansberry
Boston Water and Sewer Commission; Attn: Matthew Tuttle

TABLE I
 SUMMARY OF GROUNDWATER QUALITY DATA
 BOSTON CHILDREN'S HOSPITAL CLINICAL BUILDING (BCCB)
 BOSTON, MASSACHUSETTS
 FILE NO. 128868-006

Location Name	2014 MCP	NPDES RGP	Units	B115(D)	B115(S)	B5	B5	B102(D)	B114(S)	B114(D)	B115(S)	B115(D)
Sample Name	RCGW-2	Effluent		B115D_04182017	B115S_04192017	HA15-B5	B5(OW)	B102(D)	B114(S)	B114(D)	B115(S)	B115(D)
Sample Date	Reportable	Limitations		4/18/2017	4/19/2017	6/30/2015	5/20/2016	5/24/2016	5/20/2016	5/20/2016	5/20/2016	5/24/2016
Lab Sample ID	Concentrations			L1712207-01	L1712403-01	L1514957-01	L1615398-04	L1615699-01	L1615398-01	L1615398-02	L1615398-03	L1615699-02
Well Screen Interval (ft, BCB)				-29.5 to -39.5	1.5 to -8.5	-31 to -41	-31 to -41	-36 to -46	-14 to -19	-38 to -48	1.5 to -8.5	-29.5 to -39.5
Groundwater Elevation (ft, BCB) ⁴				9.99	9.72	8.30	9.25	8.11	10.16	9.37	9.45	9.64
Sample Type				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
A. Inorganics												
Ammonia	NA	Report	ug/L	224	-	-	-	-	-	-	-	-
Chloride	NA	Report	ug/L	566000	-	436000	-	-	-	-	-	-
Total Residual Chlorine	NA	62	ug/L	ND(20)	-	ND(20)	-	-	-	-	-	-
Total Suspended Solids	NA	30000	ug/L	16000	-	27000	-	-	-	-	-	-
Antimony, Total	8000	206	ug/L	1.41 J	-	5.3	-	-	-	-	-	-
Arsenic, Total	900	104	ug/L	1.83	-	1.4	-	-	-	-	-	-
Cadmium, Total	4	10.2	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Chromium, Total	300	323	ug/L	7.01	-	31.9	-	-	-	-	-	-
Chromium, Hexavalent	300	323	ug/L	ND(10)	-	30	-	-	-	-	-	-
Copper, Total	100000	242	ug/L	3.55	-	2.5	-	-	-	-	-	-
Iron, Total	NA	5000	ug/L	102	-	120	-	-	-	-	-	-
Lead, Total	10	160	ug/L	0.55	-	ND(0.5)	-	-	-	-	-	-
Mercury, Total	20	0.739	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Nickel, Total	200	1450	ug/L	1.48 J	-	2.4	-	-	-	-	-	-
Selenium, Total	100	235.8	ug/L	ND(5)	-	ND(5)	-	-	-	-	-	-
Silver, Total	7	35.1	ug/L	ND(0.4)	-	ND(0.4)	-	-	-	-	-	-
Zinc, Total	900	420	ug/L	4.62 J	-	ND(10)	-	-	-	-	-	-
Cyanide, Total	30	178000	ug/L	2 J	-	ND(5)	-	-	-	-	-	-
Total Hardness	NA	NA	ug/L	589000	-	-	-	-	-	-	-	-
pH ⁵	NA	6.5 to 8.3	SU	8.39	6.64	8.01	9.04	7.17	6.75	7.85	6.73	8.20
Temperature ⁵	NA	28.33	°C	18.2	19.4	20.3	19.9	18.9	19.9	19.4	20.8	19.3
B. Non-Halogenated Volatile Organic Compounds												
Benzene	1000	5	ug/L	ND(0.5)	0.7	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
Toluene	40000	NA	ug/L	ND(0.75)	ND(0.75)	ND(0.75)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Ethylbenzene	5000	NA	ug/L	ND(0.5)	0.27 J	ND(0.5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
o-xylene	3000	NA	ug/L	ND(1)	0.5 J	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
p/m-Xylene	3000	NA	ug/L	ND(1)	0.92 J	ND(1)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Total BTEX	NA	100	ug/L	ND	2.39	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	6000	200	ug/L	ND(3)	4.5	ND(3)	ND(250)	ND(250)	ND(250)	ND(250)	ND(250)	ND(250)
Acetone	50000	7970	ug/L	ND(5)	ND(5)	10	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
Phenol	2000	1080	ug/L	ND(5)	-	ND(5)	-	-	-	-	-	-
C. Halogenated Volatile Organic Compounds												
Carbon tetrachloride	2	4.4	ug/L	ND(0.5)	7	ND(0.5)	ND(1)	ND(1)	1.3	ND(1)	15	ND(1)
1,2-Dichlorobenzene	2000	600	ug/L	ND(2.5)	ND(2.5)	ND(2.5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
1,3-Dichlorobenzene	6000	320	ug/L	ND(2.5)	ND(2.5)	ND(2.5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
1,4-Dichlorobenzene	60	5	ug/L	ND(2.5)	ND(2.5)	ND(2.5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Total Dichlorobenzene	NA	NA	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	2000	70	ug/L	ND(0.75)	0.3 J	ND(0.75)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
1,2-Dichloroethane	5	5	ug/L	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
1,1-Dichloroethene	80	3.2	ug/L	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
1,2-Dibromoethane	2	0.05	ug/L	ND(0.01)	-	ND(0.01)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Methylene chloride	2000	4.6	ug/L	ND(3)	ND(3)	ND(3)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
1,1,1-Trichloroethane	4000	200	ug/L	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
1,1,2-Trichloroethane	900	5	ug/L	ND(0.75)	ND(0.75)	ND(0.75)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Trichloroethene	5	5	ug/L	1.5	3.6	2	4.4	6.9	3.3	9.4	2	5.1
Tetrachloroethene	50	5	ug/L	5.6	43	3.1	27	55	28	39	24	31
cis-1,2-Dichloroethene	20	70	ug/L	3	5.2	8	8.3	13	4.3	9.7	2.2	8.6
Vinyl chloride	2	2	ug/L	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)

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Lab Sample ID	Concentrations			L1712207-01	L1712403-01	L1514957-01	L1615398-04	L1615699-01	L1615398-01	L1615398-02	L1615398-03	L1615699-02
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Groundwater Elevation (ft, BCB) ⁴				9.99	9.72	8.30	9.25	8.11	10.16	9.37	9.45	9.64
Sample Type				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
D. Non-Halogenated Semi-Volatile Organic Compounds												
Butyl benzyl phthalate	10000	NA	ug/L	ND(5)	-	ND(5)	-	-	-	-	-	-
Di-n-butylphthalate	5000	NA	ug/L	ND(5)	-	ND(5)	-	-	-	-	-	-
Di-n-octylphthalate	100000	NA	ug/L	ND(5)	-	ND(5)	-	-	-	-	-	-
Diethyl phthalate	9000	NA	ug/L	ND(5)	-	ND(5)	-	-	-	-	-	-
Dimethyl phthalate	50000	NA	ug/L	ND(5)	-	ND(5)	-	-	-	-	-	-
Bis(2-ethylhexyl)phthalate	50000	101	ug/L	ND(3)	-	ND(3)	-	-	-	-	-	-
Total Phthalates	NA	190	ug/L	ND	-	ND	-	-	-	-	-	-
Benzo(a)anthracene	1000	1	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Benzo(a)pyrene	500	1	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Benzo(b)fluoranthene	400	1	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Benzo(k)fluoranthene	100	1	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Chrysene	70	1	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Dibenzo(a,h)anthracene	40	1	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	100	1	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Total Group I Polycyclic Aromatic Hydrocarbons	NA	1	ug/L	ND	-	ND	-	-	-	-	-	-
Acenaphthene	10000	NA	ug/L	ND(0.1)	-	ND(0.2)	-	-	-	-	-	-
Acenaphthylene	40	NA	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Anthracene	30	NA	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Benzo(ghi)perylene	20	NA	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Fluoranthene	200	NA	ug/L	ND(0.2)	-	0.2	-	-	-	-	-	-
Fluorene	40	NA	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Naphthalene	700	20	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Phenanthrene	10000	NA	ug/L	ND(0.2)	-	0.4	-	-	-	-	-	-
Pyrene	20	NA	ug/L	ND(0.2)	-	ND(0.2)	-	-	-	-	-	-
Total Group II Polycyclic Aromatic Hydrocarbons	NA	100	ug/L	ND	-	0.6	-	-	-	-	-	-
E. Halogenated Semi-Volatile Organic Compounds												
Aroclor 1016	5	NA	ug/L	ND(0.287)	-	ND(0.25)	-	-	-	-	-	-
Aroclor 1221	5	NA	ug/L	ND(0.287)	-	ND(0.25)	-	-	-	-	-	-
Aroclor 1232	5	NA	ug/L	ND(0.287)	-	ND(0.25)	-	-	-	-	-	-
Aroclor 1242	5	NA	ug/L	ND(0.287)	-	ND(0.25)	-	-	-	-	-	-
Aroclor 1248	5	NA	ug/L	ND(0.287)	-	ND(0.25)	-	-	-	-	-	-
Aroclor 1254	5	NA	ug/L	ND(0.287)	-	ND(0.25)	-	-	-	-	-	-
Aroclor 1260	5	NA	ug/L	ND(0.23)	-	ND(0.2)	-	-	-	-	-	-
Total Polychlorinated Biphenyls	NA	0.000064	ug/L	ND	-	ND	-	-	-	-	-	-
Pentachlorophenol	200	1	ug/L	ND(0.8)	-	ND(0.8)	-	-	-	-	-	-
F. Fuels Parameters												
Total Petroleum Hydrocarbons	5000	5000	ug/L	ND(5200)	-	ND(4000)	-	-	-	-	-	-
Ethanol	NA	Report	ug/L	ND(250)	ND(250)	-	-	-	-	-	-	-
Methyl tert butyl ether	5000	70	ug/L	0.77 J	0.41 J	ND(1)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Tert-Butyl Alcohol	NA	120	ug/L	ND(10)	ND(10)	ND(10)	-	-	-	-	-	-
Tertiary-Amyl Methyl Ether	NA	90	ug/L	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Other Volatile Organic Compounds												
Chloroform	50	NA	ug/L	0.23 J	2.1	1.1	ND(1)	ND(1)	1.8	1.1	3.9	ND(1)
Chloromethane	10000	NA	ug/L	0.45 J	ND(2.5)	ND(2.5)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Naphthalene	700	20	ug/L	0.52 J	ND(2.5)	ND(2.5)	ND(2)	ND(2)	ND(2)	ND(2)	3	ND(2)
Trichlorofluoromethane	100000	NA	ug/L	ND(2.5)	6.8	ND(2.5)	ND(2)	ND(2)	3	ND(2)	10	ND(2)

ABBREVIATIONS AND NOTES:

- : Not Analyzed
- BCB: Boston City Base Datum
- MCP: 310 CMR 40.0000 Massachusetts Contingency Plan effective 25 April 2014; revisions 23 May 2014
- NA: Not Applicable
- ug/L: micrograms per liter
- ND (2.5): Not detected, number in parentheses is the laboratory reporting limit
- J: Estimated value. The Target analyte concentration is below the quantitation limit (RL) but above the Method Detection Limit (MDL)
- or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

1. This table shows Volatile and Semi-Volatile Organic Compounds detected in at least one sample and/or listed in Table 2 of the NPDES RGP. For a complete list of analytes see the laboratory data reports.
2. Samples B115D_04182017 and B115S_04192017 were analyzed for Volatile and Semi-Volatile Organic Compounds using multiple analytical methods. The result from the method with the highest detection or the lowest quantitation limit (RL) is shown in this table. For a complete list of analytes and analyses see the laboratory data reports.
3. **Bold** values indicate an exceedance of NPDES RGP Effluent Limitations. **Bold ND** values indicate the laboratory reporting limit exceeds the NPDES RGP Effluent Limitations.
4. Groundwater elevations measured in the field on the sampling dates indicated.
5. pH and temperature measured in the field on the sampling dates indicated.

TABLE II
SUMMARY OF RECEIVING WATER (MUDDY RIVER) QUALITY DATA
BOSTON CHILDREN'S HOSPITAL CLINICAL BUILDING (BCCB)
BOSTON, MASSACHUSETTS
FILE NO. 128868-006

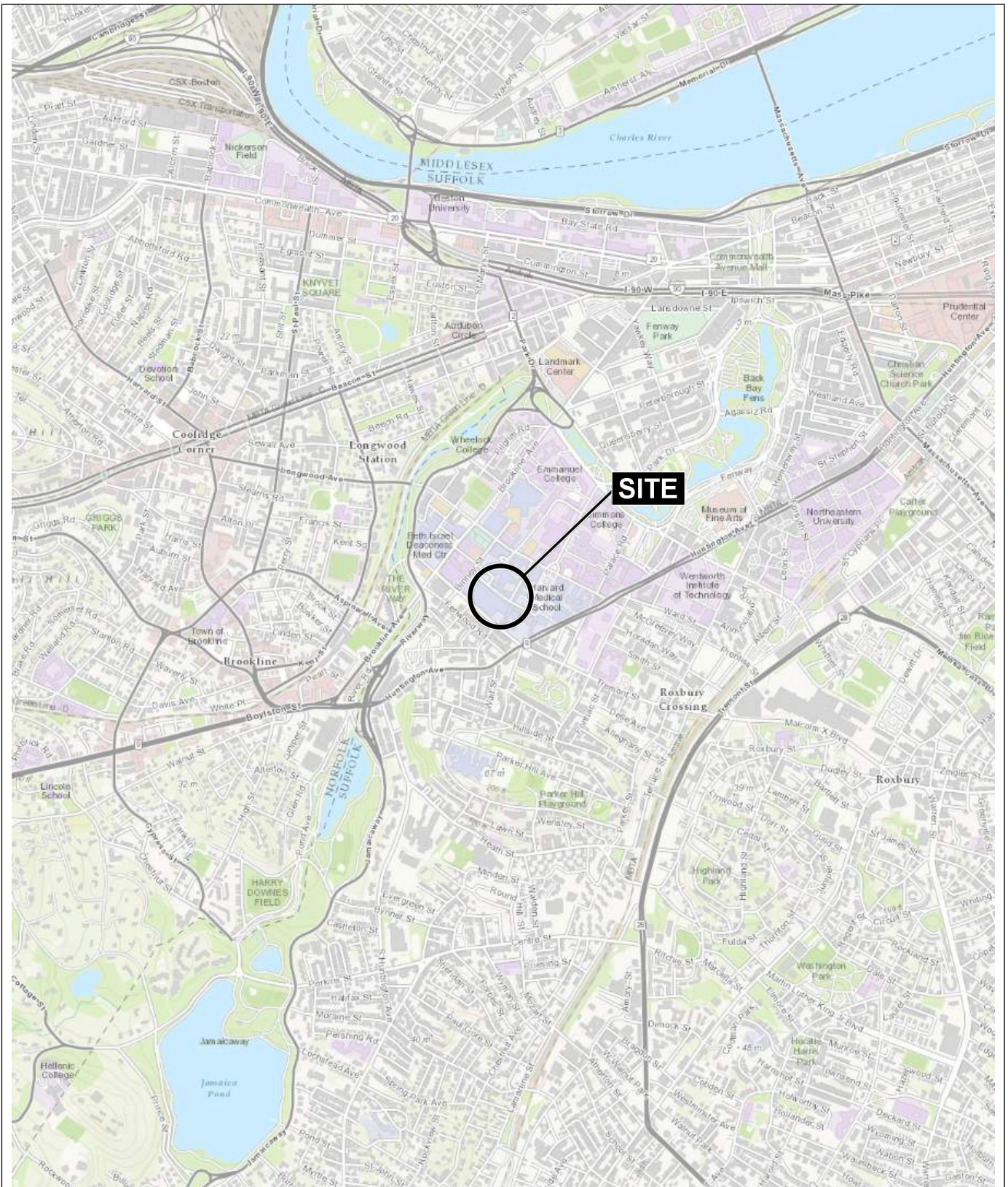
Location Name		MUDDY RIVER
Sample Name		MUDDY RIVER_05262017
Sample Date	Units	5/26/2017
Lab Sample ID		L1712207-01
Sample Type		Surface Water
A. Inorganics		
Ammonia	ug/L	161
Antimony, Total	ug/L	ND(4)
Arsenic, Total	ug/L	1.46
Cadmium, Total	ug/L	ND(0.2)
Chromium, Total	ug/L	1.94
Chromium, Hexavalent	ug/L	ND(10)
Copper, Total	ug/L	13.85
Iron, Total	ug/L	1090
Lead, Total	ug/L	12.36
Mercury, Total	ug/L	ND(0.2)
Nickel, Total	ug/L	ND(2)
Selenium, Total	ug/L	ND(5)
Silver, Total	ug/L	ND(1)
Zinc, Total	ug/L	34.3
Total Hardness	ug/L	40900
pH	SU	7.4
Temperature ²	°C	12.2

ABBREVIATIONS AND NOTES:

ug/L: micrograms per liter

ND (2.5): Not detected, number in parentheses is the laboratory reporting limit

1. Sample collected upstream of the proposed discharge location at outfall DO 045.
2. Temperature measured in the field on the sampling date indicated.



MAP SOURCE: ESRI

SITE COORDINATES: 42°20'10"N, 71°6'21"W

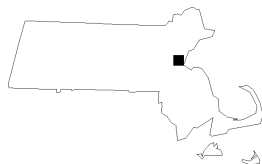
**HALEY
ALDRICH**

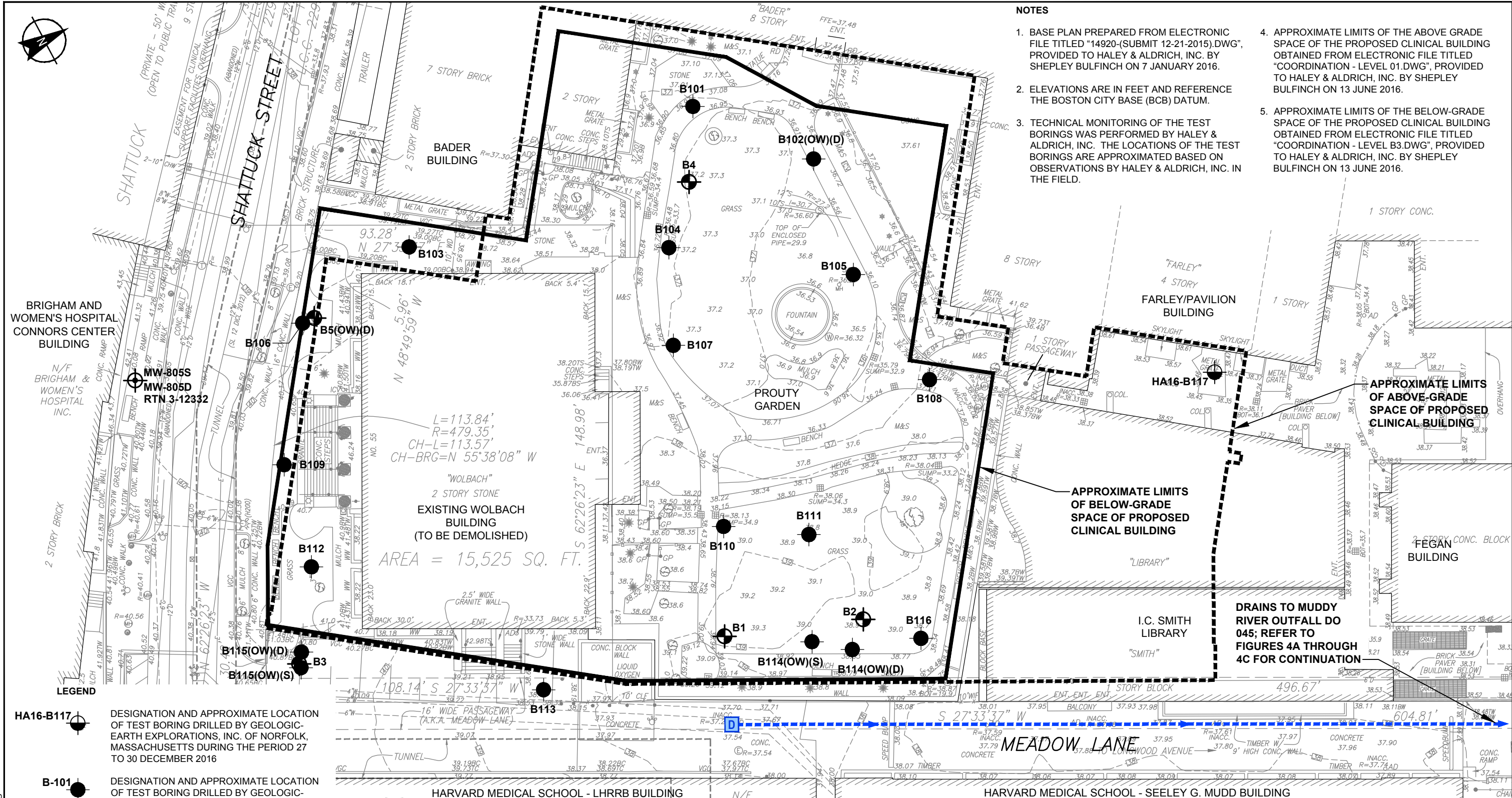
PROPOSED CLINICAL BUILDING
BOSTON CHILDREN'S HOSPITAL
BOSTON, MASSACHUSETTS

PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
JUNE 2017

FIGURE 1





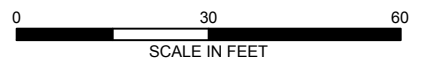
NOTES

1. BASE PLAN PREPARED FROM ELECTRONIC FILE TITLED "14920-(SUBMIT 12-21-2015).DWG", PROVIDED TO HALEY & ALDRICH, INC. BY SHEPLEY BULFINCH ON 7 JANUARY 2016.
2. ELEVATIONS ARE IN FEET AND REFERENCE THE BOSTON CITY BASE (BCB) DATUM.
3. TECHNICAL MONITORING OF THE TEST BORINGS WAS PERFORMED BY HALEY & ALDRICH, INC. THE LOCATIONS OF THE TEST BORINGS ARE APPROXIMATED BASED ON OBSERVATIONS BY HALEY & ALDRICH, INC. IN THE FIELD.
4. APPROXIMATE LIMITS OF THE ABOVE GRADE SPACE OF THE PROPOSED CLINICAL BUILDING OBTAINED FROM ELECTRONIC FILE TITLED "COORDINATION - LEVEL 01.DWG", PROVIDED TO HALEY & ALDRICH, INC. BY SHEPLEY BULFINCH ON 13 JUNE 2016.
5. APPROXIMATE LIMITS OF THE BELOW-GRADE SPACE OF THE PROPOSED CLINICAL BUILDING OBTAINED FROM ELECTRONIC FILE TITLED "COORDINATION - LEVEL B3.DWG", PROVIDED TO HALEY & ALDRICH, INC. BY SHEPLEY BULFINCH ON 13 JUNE 2016.

$L=113.84'$
 $R=479.35'$
 $CH-L=113.57'$
 $CH-BRG=N 55^{\circ}38'08" W$
 "WOLBACH"
 2 STORY STONE
 EXISTING WOLBACH
 BUILDING
 (TO BE DEMOLISHED)
 AREA = 15,525 SQ. FT.

- HA16-B117** DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY GEOLOGIC-EARTH EXPLORATIONS, INC. OF NORFOLK, MASSACHUSETTS DURING THE PERIOD 27 TO 30 DECEMBER 2016
- B-101** DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY GEOLOGIC-EARTH EXPLORATION, INC. OF NORFOLK, MASSACHUSETTS DURING THE PERIOD 20 APRIL TO 24 MAY 2016
- B1** DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY GEOLOGIC-EARTH EXPLORATION, INC. OF NORFOLK, MASSACHUSETTS DURING THE PERIOD 11 TO 28 JUNE 2015
- MW-805S**
MW-805D DESIGNATION AND APPROXIMATE LOCATION OF MONITORING WELLS FOR RTN 3-12332; "S" INDICATES INSTALLED IN OVERBURDEN, "D" INDICATES INSTALLED IN BEDROCK

- (OW)** INDICATES OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE
- (S)** INDICATES SHALLOW WELL SCREENED IN GLACIOFLUVIAL/GLACIOMARINE DEPOSITS
- (D)** INDICATES DEEP WELL SCREENED IN BEDROCK
- D** APPROXIMATE LOCATION OF PROPOSED POINT OF DISCHARGE
- APPROXIMATE ROUTE OF DISCHARGE TO OUTFALL



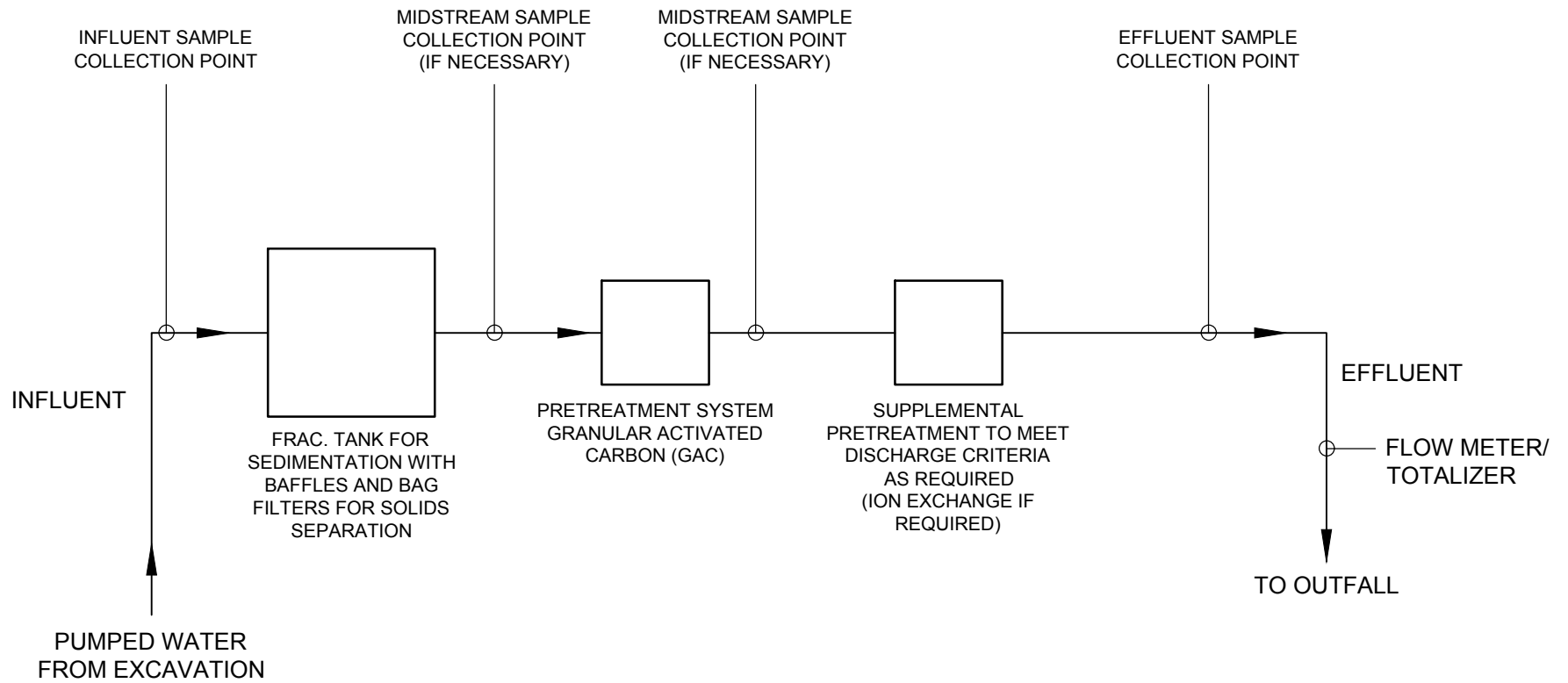
HALEY ALDRICH PROPOSED CLINICAL BUILDING
 BOSTON CHILDREN'S HOSPITAL
 BOSTON, MASSACHUSETTS

SUBSURFACE EXPLORATION AND DISCHARGE LOCATION PLAN

SCALE: AS SHOWN
 JUNE 2017

FIGURE 2

ERVIN, DAYNA
 J:\GRAPHICS\1288681128868-006-B011.DWG
 Printed: 4/24/2017 10:07 AM
 Layout: B011



LEGEND:

➔ DIRECTION OF FLOW

NOTE:

1. DETAILS OF TREATMENT SYSTEM MAY VARY FROM SYSTEM INDICATED ABOVE. SPECIFIC MEANS AND METHODS OF TREATMENT TO BE SELECTED BY CONTRACTOR. WATER WILL BE TREATED TO MEET REQUIRED EFFLUENT STANDARDS.

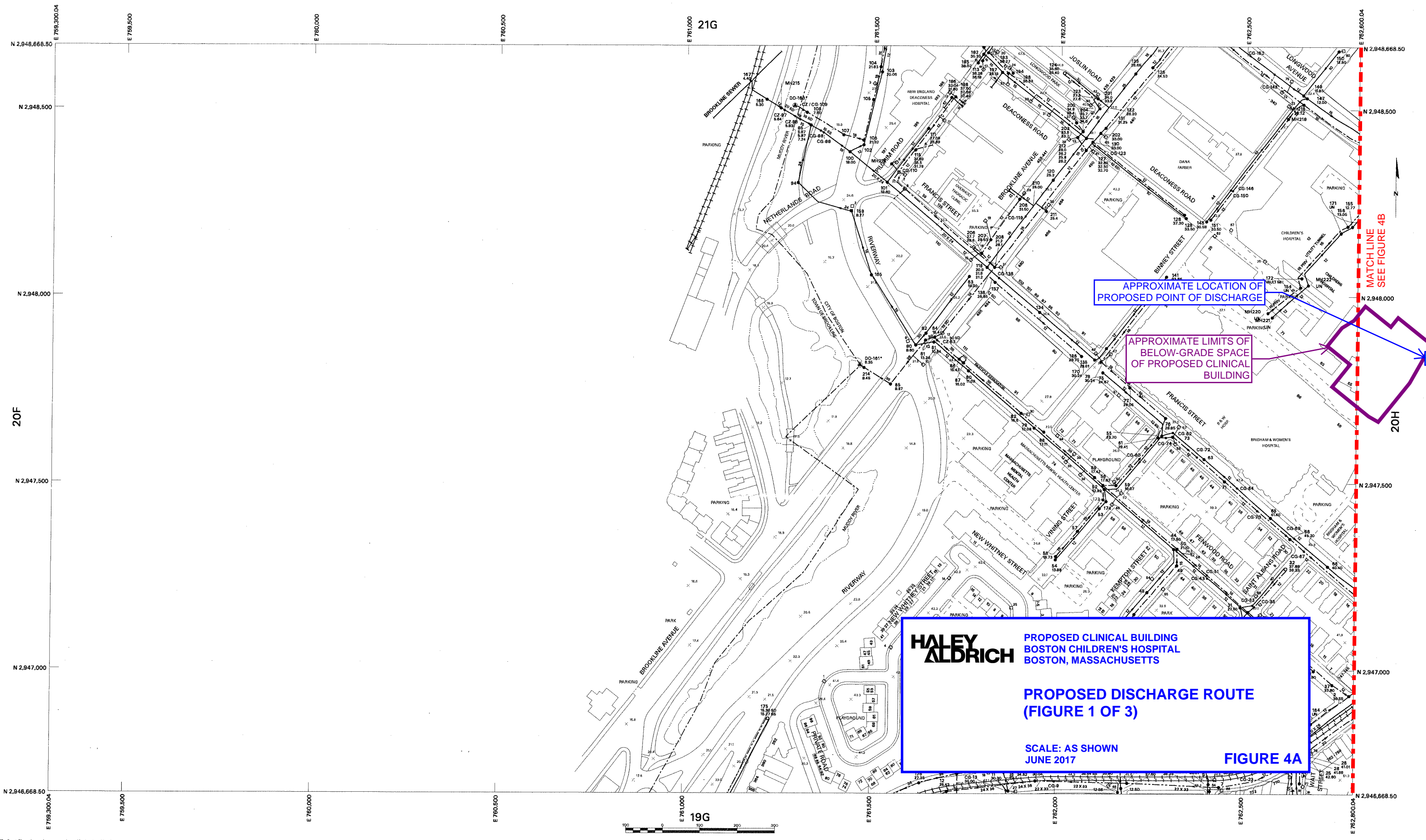
**HALEY
ALDRICH**

PROPOSED CLINICAL BUILDING
BOSTON CHILDREN'S HOSPITAL
BOSTON, MASSACHUSETTS

PROPOSED TREATMENT SYSTEM
SCHEMATIC

SCALE: AS SHOWN
JUNE 2017

FIGURE 3



HALEY ALDRICH PROPOSED CLINICAL BUILDING
 BOSTON CHILDREN'S HOSPITAL
 BOSTON, MASSACHUSETTS

**PROPOSED DISCHARGE ROUTE
 (FIGURE 1 OF 3)**

SCALE: AS SHOWN
 JUNE 2017

FIGURE 4A

APPROXIMATE LOCATION OF
 PROPOSED POINT OF DISCHARGE

APPROXIMATE LIMITS OF
 BELOW-GRADE SPACE
 OF PROPOSED CLINICAL
 BUILDING

MATCHLINE
 SEE FIGURE 4B

NOTE: Spot Elevations shown are plotted in Boston City Base

500 FOOT GRID BASED ON MASSACHUSETTS
 STATE PLANE COORDINATE SYSTEM, NAD 83

DATE OF PHOTOGRAPHY - MARCH 30, APRIL 1 & 17, 1995
 VERTICAL DATUM BASED ON THE BOSTON CITY BASE

THE LANDBASE ON THIS MAP WAS COMPILED TO MEET THE ASPRS
 STANDARD FOR CLASS 1 MAP ACCURACY

Date Produced
 December 27, 1999

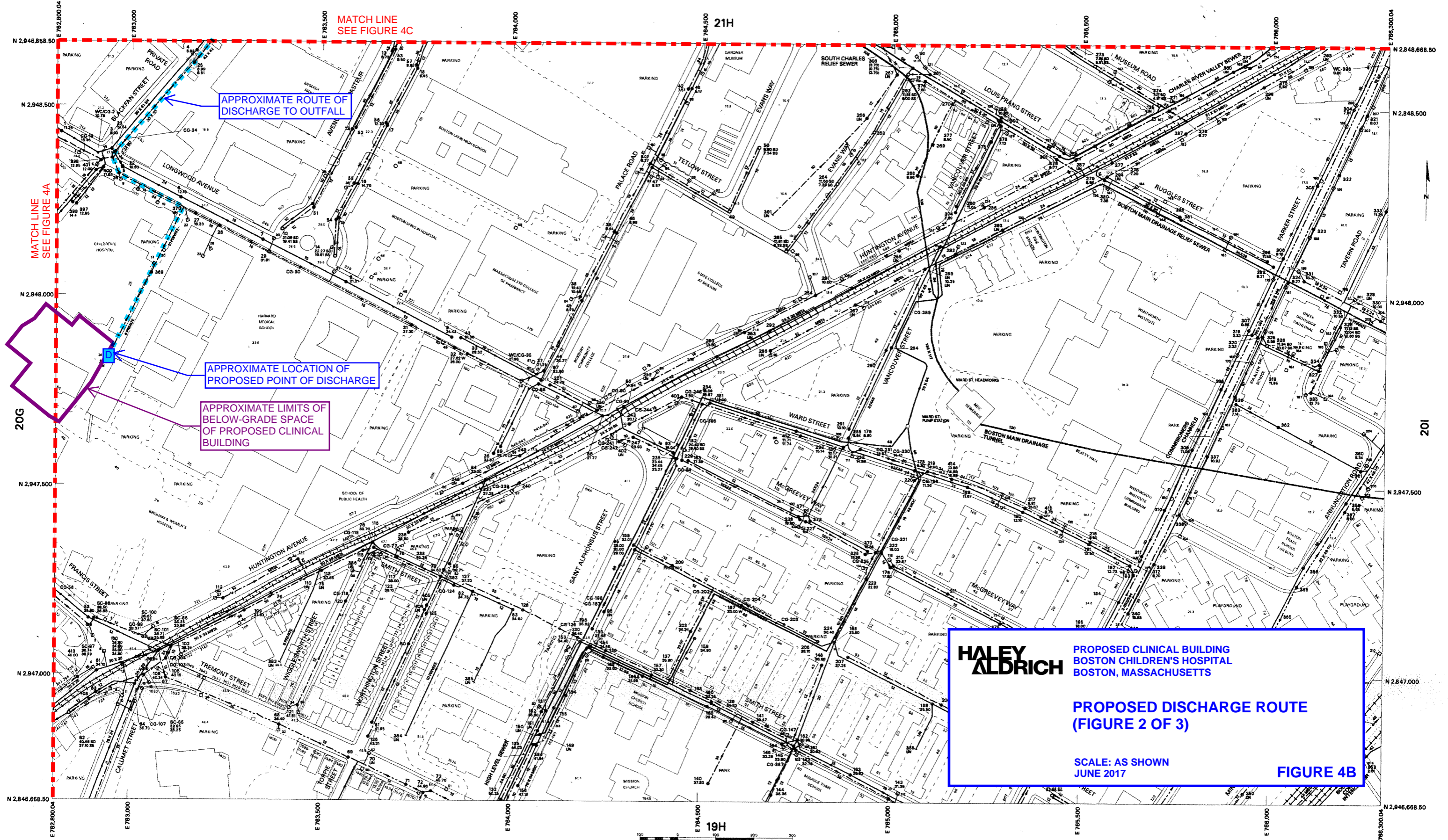


BOSTON WATER AND SEWER COMMISSION

SEWER SYSTEM MAP

**JAMAICA PLAIN
 FENWAY/KENMORE**

SHEET NO.
20G



APPROXIMATE ROUTE OF DISCHARGE TO OUTFALL

APPROXIMATE LOCATION OF PROPOSED POINT OF DISCHARGE

APPROXIMATE LIMITS OF BELOW-GRADE SPACE OF PROPOSED CLINICAL BUILDING

HALEY ALDRICH PROPOSED CLINICAL BUILDING
 BOSTON CHILDREN'S HOSPITAL
 BOSTON, MASSACHUSETTS

PROPOSED DISCHARGE ROUTE
 (FIGURE 2 OF 3)

SCALE: AS SHOWN
 JUNE 2017

FIGURE 4B

NOTE: Spot Elevations shown are plotted in Boston City Base

500 FOOT GRID BASED ON MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NAD 83

DATE OF PHOTOGRAPHY - MARCH 30, APRIL 1 & 17, 1995
 VERTICAL DATUM BASED ON THE BOSTON CITY BASE

THE LANDBASE ON THIS MAP WAS COMPILED TO MEET THE ASPRS STANDARD FOR CLASS 1 MAP ACCURACY

Date Produced
 February 15, 2000

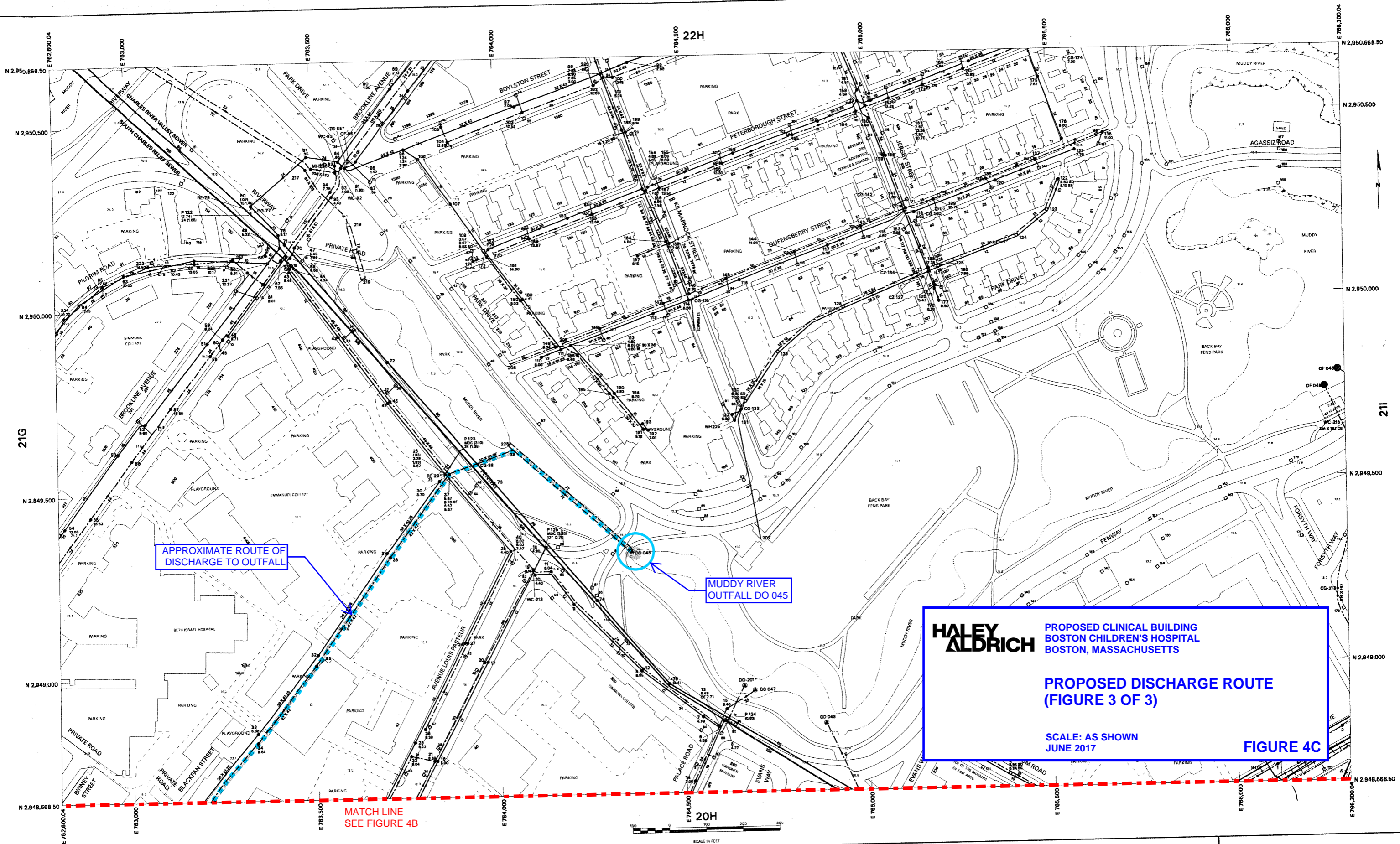


BOSTON WATER AND SEWER COMMISSION

SEWER SYSTEM MAP

FENWAY/KENMORE

SHEET NO.
20H



APPROXIMATE ROUTE OF DISCHARGE TO OUTFALL

MUDDY RIVER OUTFALL DO 045

HALEY ALDRICH

PROPOSED CLINICAL BUILDING
BOSTON CHILDREN'S HOSPITAL
BOSTON, MASSACHUSETTS

PROPOSED DISCHARGE ROUTE
(FIGURE 3 OF 3)

SCALE: AS SHOWN
JUNE 2017

FIGURE 4C

MATCH LINE
SEE FIGURE 4B



NOTE: Spot Elevations shown are plotted in Boston City Base

500 FOOT GRID BASED ON MASSACHUSETTS
STATE PLANE COORDINATE SYSTEM, NAD 83
DATE OF PHOTOGRAPHY - MARCH 30, APRIL 1 & 17, 1995
VERTICAL DATUM BASED ON THE BOSTON CITY BASE
THE LANDBASE ON THIS MAP WAS COMPILED TO MEET THE ASPRS
STANDARD FOR CLASS 1 MAP ACCURACY

Gate Produced
December 29, 1998



BOSTON WATER AND SEWER COMMISSION

SEWER SYSTEM MAP

FENWAY/KENMORE

SHEET NO.

21H

APPENDIX A

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

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

A. General site information:

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

B. Receiving water information:

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

C. Source water information:

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

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

D. Discharge information

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

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

4. Influent and Effluent Characteristics

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

E. Treatment system information

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

F. Chemical and additive information

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

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

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

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

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

G. Endangered Species Act eligibility determination

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

- FWS Criterion A:** No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".
- FWS Criterion B:** Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): Yes No; if no, is consultation underway? (check one): Yes No
- FWS Criterion C:** Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) the operator EPA Other; if so, specify:

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

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

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

H. National Historic Preservation Act eligibility determination

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

- Criterion A:** No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.
- Criterion B:** Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.
- Criterion C:** Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

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

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

I. Supplemental information

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

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

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

J. Certification requirement

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

**A BMPP MEETING THE REQUIREMENTS OF THIS GENERAL PERMIT WILL BE DEVELOPED
BMPP certification statement: AND IMPLEMENTED UPON INITIATION OF DISCHARGE.**

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

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

Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested. Check one: Yes No NA

Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission. Check one: Yes No NA

Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): RGP DGP CGP MSGP Individual NPDES permit Check one: Yes No NA
 Other, if so, specify:

Signature:



Date:

6/15/17

Print Name and Title: STEVEN SMITH, DIRECTOR OF CLINICAL BUILDING CONSTRUCTION

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.

**A BMPP MEETING THE REQUIREMENTS OF THIS GENERAL PERMIT WILL BE DEVELOPED
AND IMPLEMENTED UPON INITIATION OF DISCHARGE.**
BMPP certification statement:

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

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

Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested. Check one: Yes No NA

Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission. Check one: Yes No NA

Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): RGP DGP CGP MSGP Individual NPDES permit Other; if so, specify: Check one: Yes No NA

Signature: 

Date: 6/15/17

Print Name and Title: **Jason Seaburg, Project Executive**

APPENDIX B

**Boston Water and Sewer Commission (BWSC)
Dewatering Discharge Permit Application**



Haley & Aldrich, Inc.
465 Medford St.
Suite 2200
Boston, MA 02129
617.886.7400

15 June 2017
File No. 128868-006

Boston Water and Sewer Commission
Engineering Customer Services
980 Harrison Avenue
Boston, Massachusetts 02119

Attention: Matthew Tuttle

Subject: Request for Approval of Temporary Construction Dewatering
Boston Children's Hospital
55 Shattuck Street
Boston, Massachusetts

Dear Mr. Tuttle:

On behalf of our client, The Children's Hospital Corporation, this letter submits the Boston Water and Sewer Commission (BWSC) Dewatering Discharge Permit Application in support of the proposed Clinical Building construction at 55 Shattuck Street on the Boston Children's Hospital Campus in Boston, Massachusetts.

Dewatering is necessary to enable construction in-the-dry, and is anticipated to begin in August 2017 and continue for up to 24 months. Prior to discharge, collected water will be routed through at minimum a frac tank, bag filters and granular activated carbon (GAC). Other pretreatment may be conducted as necessary to comply with National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) effluent limitations. The proposed dewatering discharge route and BWSC outfall location are shown on Figures 4A through 4C of the submitted NPDES RGP Notice of Intent (NOI), attached for reference. Discharge of the dewatering effluent is currently under review by the U.S. Environmental Protection Agency (EPA) under the NPDES RGP.

If you have any questions, please feel free to contact the undersigned at 617-886-7400.

Sincerely yours,
HALEY & ALDRICH, INC.


Jonathan M. Thibault
Assistant Project Manager


Keith E. Johnson, P.E., LSP
Technical Specialist

Attachments:
BWSC Dewatering Discharge Permit Application
Copy of NPDES RGP NOI Application



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

DEWATERING DISCHARGE PERMIT APPLICATION

OWNER / AUTHORIZED APPLICANT PROVIDE INFORMATION HERE:

Company Name: THE CHILDREN'S HOSPITAL CORP. Address: 300 LONGWOOD AVENUE, BOSTON, MA 02115

Phone Number: 857-218-4031 Fax number: 617-730-0975

Contact person name: STEVEN SMITH Title: DIRECTOR OF CLINICAL BUILDING CONSTRUCTION

Cell number: 617-293-3653 Email address: STEVEN.SMITH@CHILDRENS.HARVARD.EDU

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

Owner's Information (if different from above):

Owner of property being dewatered: _____

Owner's mailing address: _____ Phone number: _____

Location of Discharge & Proposed Treatment System(s):

Street number and name: 55 SHATTUCK STREET Neighborhood LONGWOOD MEDICAL AREA

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

Describe Proposed Pre-Treatment System(s): FRAC. TANK, BAG FILTERS, GAC AND OTHER COMPONENTS AS NECESSARY (REFER TO ATTACHED NPDES RGP NOI APPLICATION)

BWSC Outfall No. DO 045 Receiving Waters MUDDY RIVER

Temporary Discharges (Provide Anticipated Dates of Discharge): From AUGUST 2017 To AUGUST 2019


- | | | |
|---|--|---|
| <input type="checkbox"/> Groundwater Remediation | <input type="checkbox"/> Tank Removal/Installation | <input checked="" type="checkbox"/> Foundation Excavation |
| <input type="checkbox"/> Utility/Manhole Pumping | <input type="checkbox"/> Test Pipe | <input checked="" type="checkbox"/> Trench Excavation |
| <input checked="" type="checkbox"/> Accumulated Surface Water | <input type="checkbox"/> Hydrogeologic Testing | <input type="checkbox"/> Other _____ |

Permanent Discharges

- | | |
|---|---|
| <input type="checkbox"/> Foundation Drainage | <input type="checkbox"/> Crawl Space/Footing Drain |
| <input type="checkbox"/> Accumulated Surface Water | <input type="checkbox"/> Non-contact/Uncontaminated Cooling |
| <input type="checkbox"/> Non-contact/Uncontaminated Process | <input type="checkbox"/> Other; _____ |

1. Attach a Site Plan showing the source of the discharge and the location of the point of discharge (i.e. the sewer pipe or catch basin). Include meter type, meter number, size, make and start reading. Note. All discharges to the Commission's sewer system will be assessed current sewer charges.
2. If discharging to a sanitary or combined sewer, attach a copy of MWRA's Sewer Use Discharge permit or application.
3. If discharging to a separate storm drain, attach a copy of EPA's NPDES Permit or NOI application, or NPDES Permit exclusion letter for the discharge, as well as other relevant information.
4. Dewatering Drainage Permit will be denied or revoked if applicant fails to obtain the necessary permits from MWRA or EPA.

Submit Completed Application to: Boston Water and Sewer Commission
Engineering Customer Services
980 Harrison Avenue, Boston, MA 02119
Attn: Matthew Tuttle, Engineering Customer Service
E-mail: tuttlemp@bwsc.org
Phone: 617-989-7204 Fax: 617-989-7716

Signature of Authorized Representative for Property Owner: 

Date: 6/15/17

APPENDIX C

Best Management Practices Plan (BMPP)

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
REMEDATION GENERAL PERMIT (RGP)
TEMPORARY CONSTRUCTION DEWATERING
BOSTON CHILDREN'S HOSPITAL CLINICAL BUILDING (BCCB)
BOSTON, MASSACHUSETTS**

Best Management Practices Plan

A Notice of Intent (NOI) for a Remediation General Permit (RGP) under the National Pollutant Discharge Elimination System (NPDES) has been submitted to the U.S. Environmental Protection Agency (EPA) in anticipation of temporary construction dewatering planned to occur during proposed construction of the Boston Children's Hospital Clinical Building (BCCB) at 55 Shattuck Street on the Boston Children's Hospital (BCH) campus in Boston, Massachusetts. This Best Management Practices Plan (BMPP) has been prepared as an Appendix to the RGP and will be posted at the site during the time period that temporary construction dewatering is occurring at the site.

Water Treatment and Management

Construction dewatering will be conducted from sumps located inside the excavation, inside a relatively watertight slurry wall providing groundwater cutoff and temporary excavation support as well as serving as the permanent foundation wall. The treatment system will be designed by the Contractor. Prior to discharge, collected water will likely be routed through a sedimentation tank with baffles and bag filters, at a minimum, to remove suspended solids and undissolved chemical constituents. A pretreatment system consisting of granular activated carbon (GAC) will be incorporated into the system. Total flow will be measured with a flow meter/totalizer. Supplemental pretreatment may be required to meet NPDES RGP Effluent Limitations and may include pH control, ion exchange, oil/water separators and/or other components as required; refer to the Proposed Treatment System Schematic included as Figure 3 of the NOI. Construction dewatering under this NPDES RGP will include piping and discharge to storm drains located near the site. The proposed discharge point is located in Meadow Lane adjacent to the site; refer to Figure 2 of the NOI. The proposed discharge route travels northeast along Meadow Lane to Longwood Avenue, continues to the northeast along Blackfan Street, and reaches the Muddy River where it will discharge at outfall DO 045. The proposed discharge route is shown on Figures 4A through 4C of the NOI.

Discharge Monitoring and Compliance

Regular sampling and testing will be conducted of the treated effluent as required by the RGP. This includes chemical testing required within the first month of discharging, and the monthly testing to be conducted through the end of the scheduled discharge.

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

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

Monthly monitoring reports will be compiled and maintained at the site.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
REMEDIAION GENERAL PERMIT (RGP)
TEMPORARY CONSTRUCTION DEWATERING
BOSTON CHILDREN'S HOSPITAL CLINICAL BUILDING (BCCB)
BOSTON, MASSACHUSETTS**

System Maintenance

A number of methods will be used to minimize the potential for violations for the term of this permit. Scheduled regular maintenance of the treatment system will be conducted to verify proper operation. Regular maintenance will include checking the condition of the treatment system equipment such as the fractionation tanks, filters, hoses, pumps, and flow meters. Equipment will be monitored daily for potential issues or unscheduled maintenance requirements.

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

Management of Treatment System Materials

No potential sources of pollutants are anticipated during construction dewatering activities. Dewatering effluent will be pumped directly to the treatment system from the excavation with the use of hoses and sumps to minimize handling. The Contractor will establish staging areas on the site for any equipment or materials storage which may be possible sources of pollution away from any dewatering activities.

Sediment from the fractionation tank used in the treatment system will be characterized and disposed of as soil at an appropriate receiving facility in accordance with applicable laws and regulations. If used, GAC or other used materials will be recycled and/or manifested to the appropriate receiving facility. Bag filters will be placed in drums and manifested for off-site disposal.

Miscellaneous Items

Due to the nature of the excavation, erosion control and the nature of the site and surrounding infrastructure, it is not anticipated that there will be any run off into the site from other sources, as well as no run off from the site.

Site security for the treatment system can be covered within the overall site security plan.

No adverse effects of designated water uses of surrounding surface water bodies is anticipated. The Muddy River is the nearest surface water body to the site located more than 0.25 miles from the construction activities on site. As mentioned earlier, the discharged effluent will be pumped directly to a storm drain located near the site and into existing below grade infrastructure.

APPENDIX D

**Dilution Factor and Effluent Limitation Calculation Documents
and Information on the Receiving Water (Muddy River)**

Enter number values in green boxes below

Enter values in the units specified

↓	
0.6657	Q _R = Enter upstream flow in MGD
0.144	Q _P = Enter discharge flow in MGD
0.8097	Downstream 7Q10

Enter a dilution factor, if other than zero

↓
5.62

Enter values in the units specified

↓	
589	C _d = Enter influent hardness in mg/L CaCO₃
40.9	C _s = Enter receiving water hardness in mg/L CaCO₃

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

↓	
7.4	pH in Standard Units
12.2	Temperature in °C
0.161	Ammonia in mg/L
40.9	Hardness in mg/L CaCO₃
0	Salinity in ppt
0	Antimony in µg/L
1.46	Arsenic in µg/L
0	Cadmium in µg/L
1.94	Chromium III in µg/L
0	Chromium VI in µg/L
13.85	Copper in µg/L
1090	Iron in µg/L
12.36	Lead in µg/L
0	Mercury in µg/L
0	Nickel in µg/L
0	Selenium in µg/L
0	Silver in µg/L
34.3	Zinc in µg/L

Enter **influent** concentrations in the units specified

↓	
0	TRC in µg/L
224	Ammonia in mg/L
5.3	Antimony in µg/L
1.83	Arsenic in µg/L
0	Cadmium in µg/L
31.9	Chromium III in µg/L
30	Chromium VI in µg/L
3.55	Copper in µg/L
120	Iron in µg/L
0.55	Lead in µg/L
0	Mercury in µg/L
2.4	Nickel in µg/L
0	Selenium in µg/L
0	Silver in µg/L
4.62	Zinc in µg/L
2	Cyanide in µg/L
0	Phenol in µg/L
15	Carbon Tetrachloride in µg/L
55	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
0.77	Methyl-tert butyl ether in µg/L

Notes:

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

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

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

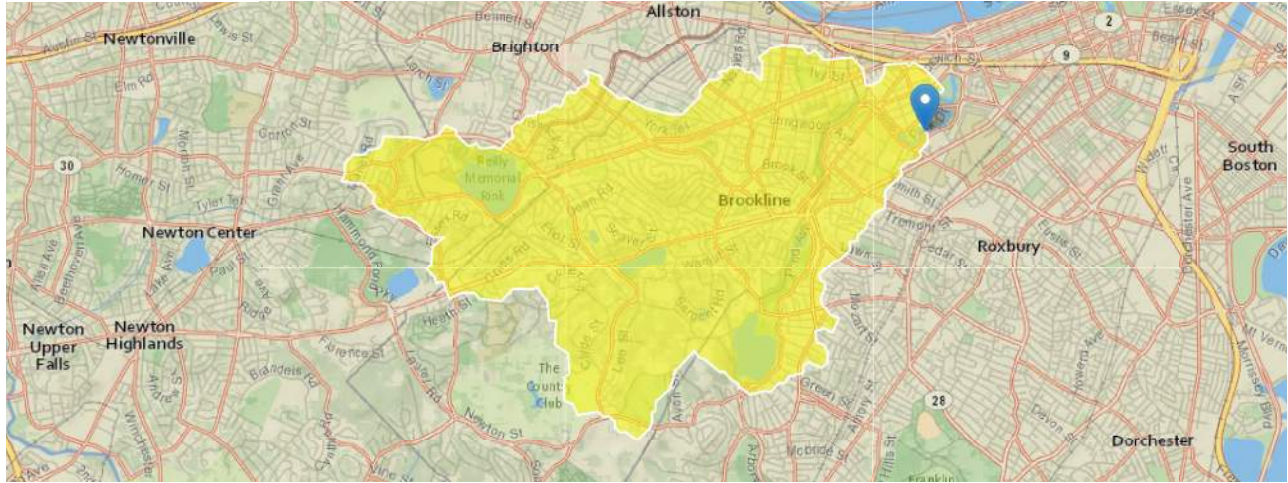
if >1 sample, enter maximum
 if >10 samples, may enter 95th percentile
 Enter 0 if non-detect or testing not required

Dilution Factor	5.6					
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	62	µg/L	---	µg/L
Total Suspended Solids	30	mg/L	---			
Antimony	206	µg/L	3599	µg/L		
Arsenic	104	µg/L	49	µg/L		
Cadmium	10.2	µg/L	0.3443	µg/L		
Chromium III	323	µg/L	623.3	µg/L		
Chromium VI	323	µg/L	64.3	µg/L		
Copper	242	µg/L	12.3	µg/L		
Iron	5000	µg/L	1000	µg/L		
Lead	160	µg/L	4.81	µg/L		
Mercury	0.739	µg/L	5.09	µg/L		
Nickel	1450	µg/L	386.1	µg/L		
Selenium	235.8	µg/L	28.1	µg/L		
Silver	35.1	µg/L	37.2	µg/L		
Zinc	420	µg/L	728.6	µg/L		
Cyanide	178	mg/L	29.2	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	1687	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	4.4	µg/L	9.0	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	18.6	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	12.4	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	1.0	µg/L	---			
Benzo(a)anthracene	1.0	µg/L	0.0214	µg/L	---	µg/L
Benzo(a)pyrene	1.0	µg/L	0.0214	µg/L	---	µg/L
Benzo(b)fluoranthene	1.0	µg/L	0.0214	µg/L	---	µg/L
Benzo(k)fluoranthene	1.0	µg/L	0.0214	µg/L	---	µg/L
Chrysene	1.0	µg/L	0.0214	µg/L	---	µg/L

Dibenzo(a,h)anthracene	1.0	µg/L	0.0214	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	1.0	µg/L	0.0214	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	112	µg/L		
tert-Butyl Alcohol	120	µg/L	---			
tert-Amyl Methyl Ether	90	µg/L	---			

StreamStats Report

Region ID: MA
Workspace ID: MA20170425102043655000
Clicked Point (Latitude, Longitude): 42.34040, -71.09609
Time: 2017-04-25 10:19:48 -0600



Basin Characteristics				
Parameter Code	Parameter Description	Value	Unit	
DRNAREA	Area that drains to a point on a stream	6.59	square miles	
DRFTPERSTR	Area of stratified drift per unit of stream length	0.73	square mile per mile	
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless	
BSLDEM250	Mean basin slope computed from 1:250K DEM	3.012	percent	
BSLDEM10M	Mean basin slope computed from 10 m DEM	6.421	percent	
FOREST	Percentage of area covered by forest	6.39	percent	
PCTSDNGRV	Percentage of land surface underlain by sand and gravel deposits	35.84	percent	

Low-Flow Statistics Parameters [100 Percent (6.6 square miles) Statewide Low Flow WRIR00 4135]					
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6.59	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.73	square mile per mile	0	1.29
BSLDEM250	Mean Basin Slope from 250K DEM	3.012	percent	0.32	24.6
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Flow Report [100 Percent (6.6 square miles) Statewide Low Flow WRIR00 4135]					
Statistic	Value	Unit	Average standard error (of either estimate or prediction)	Lower Prediction Interval	Upper Prediction Interval
7 Day 2 Year Low Flow	1.68	ft ³ /s	49.5	0.333	8.12
7 Day 10 Year Low Flow	1.03	ft ³ /s	70.8	0.166	5.93

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/>)

CHARLES RIVER WATERSHED 2002-2006 WATER QUALITY ASSESSMENT REPORT



**COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
IAN BOWLES, SECRETARY
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
LAURIE BURT, COMMISSIONER
BUREAU OF RESOURCE PROTECTION
GLENN HAAS, ACTING ASSISTANT COMMISSIONER
DIVISION OF WATERSHED MANAGEMENT
GLENN HAAS, DIRECTOR**



NOTICE OF AVAILABILITY

LIMITED COPIES OF THIS REPORT ARE AVAILABLE AT NO COST BY WRITTEN REQUEST TO:

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATERSHED MANAGEMENT
627 MAIN STREET
WORCESTER, MA 01608**

This report is also available from the MASSDEP's home page on the World Wide Web at:

<http://www.mass.gov/dep/water/resources/wqassess.htm>

Furthermore, at the time of first printing, eight copies of each report published by this office are submitted to the State Library at the State House in Boston; these copies are subsequently distributed as follows.

- On shelf; retained at the State Library (two copies);
- Microfilmed retained at the State Library;
- Delivered to the Boston Public Library at Copley Square;
- Delivered to the Worcester Public Library;
- Delivered to the Springfield Public Library;
- Delivered to the University Library at UMass, Amherst;
- Delivered to the Library of Congress in Washington, D.C.

Moreover, this wide circulation is augmented by inter-library loans from the above-listed libraries. For example a resident in Needham can apply at their local library for loan of any MassDEP/DWM report from the Worcester Public Library.

A complete list of reports published since 1963 is updated annually and printed in July. This report, entitled, "Publications of the Massachusetts Division of Watershed Management – Watershed Planning Program, 1963-(current year)", is also available by writing to the Division of Watershed Management (DWM) in Worcester.

DISCLAIMER

References to trade names, commercial products, manufacturers, or distributors in this report constituted neither endorsement nor recommendations by the Division of Watershed Management for use.

CHARLES RIVER WATERSHED
2002-2006 WATER QUALITY ASSESSMENT REPORT

Prepared by:

Massachusetts Department of Environmental Protection
Division of Watershed Management

Report Number:
72-AC-4

DWM Control Number:

CN136.5

Massachusetts Department of Environmental Protection
Division of Watershed Management
Worcester, Massachusetts

April 2008

MUDDY RIVER (SEGMENT MA72-11)

Location: Headwaters, outlet Ward Pond in Olmstead Park, Boston, to confluence with the Charles River, Boston.

Segment Length: 3.6 miles

Classification: Class B, Warm Water Fishery, Combined Sewer Overflow.

Land-use estimates (top 3, excluding water) for the 6.5 mi² subwatershed.

Residential 55%

Open land 22%

Commercial..... 9%

The estimated percent impervious area for this subwatershed area is 29.5%.

This segment is on the 2006 Integrated List of Waters in *Category 5 - Waters Requiring a TMDL* because of priority organics, metals, nutrients, siltation, organic enrichment/low DO, oil and grease, pathogens, taste, odor and color, and other habitat alterations (MassDEP 2007).

WITHDRAWALS AND DISCHARGES

WMA (See Appendix H, Table H1)

The Country Club (32004601)

NPDES (See Appendix H, Tables H2 and H3):

Boston Water and Sewer Commission (MA0101192). This combined sewer overflow (CSO) discharge is through outfall BOS 046 to the Back Bay Fens area of the Muddy River.

[Note: The BWSC completed the Stony Brook Sewer Separation Project (at a cost of \$45 million) in September 2006 (MWRA 2007), which will alleviate some of the discharges to the Muddy River at Outfall BOS 046. MWRA (2007) also states that "*The project was intended to reduce CSO discharge at seven CSO regulators along the Stony Brook Conduit from 22 activations and 44.5 million gallons in a typical year (a discharge level that had been attained in 2000 with completion of pumping and treatment improvements at Deer Island) to 2 activations and 0.13 million gallons. While this represents a 99.7 % reduction in annual CSO volume, the CSO regulators must remain open to provide flood control in large storm events. In 2007, BWSC will continue work to repave streets and remove downspouts from the sewer system. Downspout connections in this area are 85% complete.*"]

Boston Water and Sewer Commission (MAS010001). There are two major stormwater outfalls - 20G161 and 21H201, and seven minor stormwater outfalls - 18G233, 19G199, 19G043, 19G194, 20G163, 21H047, and 21H048 - that discharge to this segment of the Muddy River (BWSC 2007). There are also four major stormwater outfalls that discharge into the Stony Brook subwatershed area – 13D077, 13D078, 13E175, and 15F288 and three minor stormwater outfalls (13E174, 13E176, and 13F095).

[Note: EPA terminated the former Boston Latin Academy NPDES permit (MA0039934) in October 2005 because the facility was dismantled. There were also four NPDES permittees that were identified as discharging to Muddy River as of the last water quality assessment report (Fiorentino *et al.* 2000). EPA has since terminated these permits (MA0034410 and MA0034401 remediation ended, MA0036102 discharge ceased, and MA0030783 EPA determined a permit was not required).]

USE ASSESSMENT

Aquatic Life Use

Habitat and Flow

The USGS maintains a real time water stage recorder and precipitation gage (01104683) on the Muddy River just downstream from Netherlands Road Bridge (near the Brookline Water Department building), Brookline, MA. The period of record for this gage is November 1999 to October 2000 and August 2001 to current year. The USGS remarks that there are daily or more frequent fluctuations related to pool stage fluctuations in the lower Charles River Basin and operation of flood-control gates and pumps at Charles River Dam (Socolow *et al.* 2005). The annual average gage height is approximately 7.8 feet (October 2003 through September 2005) and flood stage at this gage is 15 feet (established by the MBTA) (USGS 2007b and USGS 2007c).

Breault *et al.* (1998) describes the channel morphology and bathymetry of the Muddy River as well as sediment quality conditions. Accumulation of sediment and poor sediment quality, channelization, altered hydrology, and the infestation of *Phragmites australis* degrades habitat quality of the Muddy River. The

U.S. Army Corps of Engineers has developed a plan to increase flood control, improve water quality and enhance aquatic/riparian habitat within the Muddy River by dredging accumulated sediment, providing flood damage reduction through improvements to restrictive drainage culverts, removing nuisance vegetation, improving fisheries/wildlife habitat and water quality, bank stabilization and promoting and enhancing recreational use of Emerald Necklace parklands (ACOE 2003). The design effort for Phase 1 of the project (flood damage reduction component) was initiated in September 2005 and was expected to be complete in October 2007 (Keegan 2007). Work in Phase I includes the installation of two culverts and daylighting of the river (ACOE 2007).

Water Chemistry

USGS personnel conducted water quality monitoring in the upper portion of this segment of the Muddy River just downstream from Netherlands Road Bridge (near the Brookline Water Department building), Brookline, MA. Dry weather total phosphorus concentrations ranged from ≤ 0.1 to 0.20 mg/L (n=13 including one split sample) for samples collected from July 1999 through July 2000 (Breault *et al.* 2002). Event mean wet weather total phosphorus concentrations ranged from 0.1 to 0.40 mg/L (n=10 including one split sample) for samples collected from January through September 2000 (Breault *et al.* 2002).

The CRWA volunteers sampled the Muddy River at Commonwealth Avenue in Boston (Station 760T and/or 760S) as part of their monthly monitoring program (CRWA 2007 and Kaplan 2007). These data included temperature, pH, and total suspended solids. The total number of samples collected varied by analyte. Data collected as part of this monitoring program since 2000 are summarized below. None of the temperature measurements (n=54) taken between February 2000 and October 2006 exceeded 28.3°C (maximum measurement was 27°C in July 2006). A total of 23 pH measurements were taken between February 2000 and December 2001. One measurement was slightly low (6.4 SU). Between February 2000 and December 2003, total suspended solids concentrations ranged from <2 to 51 mg/L (n=37) and only two samples were >25 mg/L.

EPA deployed a meter near the mouth of the Muddy River from 17 to 21 July 2000 (EPA 2001). The minimum DO measurement recorded was 3.5 mg/L, while the maximum DO recorded was 7.1 mg/L. Over the 72 hour deployment period DO was less than 5.0 mg/L for an estimated total of 8.5 hours. The maximum temperature was 25.5°C (EPA 2001).

Sediment Chemistry

Breault *et al.* (1998) describes the poor sediment quality conditions of sites sampled along the Muddy River. Elevated concentrations of trace metals and organic compounds exceeded S-EL guidelines (Fiorentino *et al.* 2000). These conditions are still considered to be problematic since remediation (e.g. dredging) has not yet occurred.

The *Aquatic Life Use* for the Muddy River is assessed as impaired. Causes of impairment include habitat quality degradation in the form of culverting and channelization, bottom deposits of sediment and silt, sediment contamination, the infestation of *P. australis*, and high concentrations of total phosphorus. Sources of impairment include urban stormwater runoff, channelization, sediment contamination, the loss of riparian habitat, as well as discharges from both municipal separate storm sewer systems and combined sewer systems.

Fish Consumption Use

DWM conducted fish toxics monitoring in July 1990 (Fiorentino *et al.* 2000). The MA DPH issued the following fish consumption advisory for the Muddy River.

“Children younger than 12 years of age, pregnant women, women of childbearing age who may become pregnant, and nursing mothers should not eat any fish from this water body, the general public should not consume brown bullhead, carp or American eel from this water body, and the general public should limit consumption of non-affected fish from this waterbody to two meals per month.”

Elevated concentrations of PCBs in brown bullhead, carp, and American eel resulted in the issuance of a site-specific DPH advisory so the *Fish Consumption Use* for the Muddy River is assessed as impaired. Sediment contamination (Breault *et al.* 1998) is one source of the problem.

Primary and Secondary Contact Recreation and Aesthetics Uses

Dry weather bacteria sampling data for the upper portion of this segment of the Muddy River just downstream from Netherlands Road Bridge (near the Brookline Water Department building), Brookline, MA reported by USGS can be summarized as follows. *Enterococcus* counts ranged from <10 to 1,100 cfu/100 ml (n=12 samples collected between July 1999 and July 2000) (Breault *et al.* 2002). *Enterococcus* bacteria counts for discrete samples collected during storm events ranged from <10 to 44,000 cfu/100 ml (n=29 samples including two replicates collected between December 1999 and September 2000) (Breault *et al.* 2002).] Event mean *Enterococcus* bacteria results for the storm events sampled were reported to range from 1,300 to 20,000 cfu/100 ml (n=8 events between January 2000 and July 2000) (Breault *et al.* 2002).

[Note: Although Massachusetts Surface Water Quality Standards have recently adopted the use of *E. coli* bacteria, fecal coliform bacteria data was the former bacterial criteria. Dry weather bacteria sampling data for the Muddy River reported by USGS can be summarized as follows. fecal coliform counts ranged from ≤10 to 4,200 cfu/100 ml (n=12 samples collected between July 1999 and July 2000) (Breault *et al.* 2002). Fecal coliform bacteria counts for discrete samples collected during storm events ranged from <10 to 64,000 cfu/100 ml (n=31 samples including two replicates collected between December 1999 and September 2000) (Breault *et al.* 2002).]

Total suspended solids concentrations during dry weather dry sampling conditions were all ≤ 11 mg/L (n=14 including one split collected between June 1999 and July 2000) (Breault *et al.* 2002). Similarly, turbidity measurements were also low (≤ 23 NTU n=10 measurements). Event mean concentrations of total suspended solids and turbidity for the storm events sampled were reported to range from 24 to 65 mg/L (n=10 measurements including one split) and 16.0 to 39.0 NTU (n=7), respectively (storm events sampled between January 2000 and September 2000) (Breault *et al.* 2002).

As part of the CRWA monthly monitoring program *E. coli* samples were also collected from one station in the Muddy River at Commonwealth Avenue in Boston (Station 760T and/or 760S) between June 2002 and October 2006 (CRWA 2007 and Kaplan 2007). A total of 36 samples were collected, 23 of which were during the primary contact recreation season. Both the geometric means and number of samples exceeding maximum counts were analyzed for each of the five years and these data are summarized below.

Station	Station 760S	(CRWA 2007)	Year					Total
Period	Summary Statistic		2002	2003	2004	2005	2006	
Primary Contact	Samples Assessed		5	6	3	3	6	23
	Maximum cfu/100 ml		430	5,200	520	1,130	13,700	13,700
	Minimum cfu/100 ml		90	100	80	120	15	
	126 cfu/100 ml	Geometric Mean	258	354	224	372	260	
	Max 235 cfu/100 ml	Number of Exceedances	4	2	2	2	4	
Secondary Contact	Samples Assessed		7	10	5	6	8	36
	Maximum cfu/100 ml		2,000	5,200	520	1,130	13,700	13,700
	Minimum cfu/100 ml		90	100	60	110	15	
	630 cfu/100 ml	Geometric Mean	383	445	163	328	190	
	Max 1260 cfu/100 ml	Number of Exceedances	1	3	0	0	1	

The Brookline Open Space 2005 Plan (Town of Brookline 2006) states the following.






“...As mandated by the federal stormwater discharge permit for urbanized communities, the Town's stormwater control and management work includes minimizing polluted stormwater runoff or treating it before it drains to the Charles and Muddy Rivers, identifying and removing illicit connections to the storm drain system, and repairing or replacing faulty, broken sewer pipes...In late 2004, Brookline DPW began a formal illicit discharge detection and elimination program to remove sanitary sewer connections to the storm drain system. This program should be a major focus of the DPW in the upcoming years and will contribute to cleaner water in both the Muddy and the Charles Rivers.”

Sampling in the Muddy River has recently been conducted by USGS as part of a study evaluating *Pharmaceuticals and Personal Care Products as Indicators of Sewage Contamination in Urban Streams* (USGS 2007i and Eleria 2008). The results of this study have not yet been published but should be used to help identify sources contributing to elevated bacteria in this river.

Finally, both CRWA and DWM staff describe the Muddy River as very turbid with frequently less than one foot of visibility into the water column (Eleria 2008 and Davis 2008).

The *Primary Contact Recreational Use* is assessed as impaired for the Muddy River because of elevated bacteria (*E. coli*) counts and turbidity. The *Secondary Contact Recreational and Aesthetic Uses* are assessed as impaired because of objectionable turbidity. Occasionally highly elevated *E. coli* counts (notably higher during storm events) are also of concern for the *Secondary Contact Recreational Use*. Urban stormwater runoff, illicit connections/hookups to storm sewers, and discharges from both municipal separate storm sewer systems and combined sewer systems all contribute to elevated bacteria and turbidity in the Muddy River. These sources as well as the loss of riparian habitat, channelization, and altered hydrology also likely contribute to the turbidity problems.

Muddy River (Segment MA72-11) Use Summary Table

Designated Uses		Status
Aquatic Life		IMPAIRED Causes: Bottom deposits of sediment and silt, physical substrate habitat alteration, flow regime alterations, elevated total phosphorus, and the dense infestation of <i>Phragmites australis</i> , and other contamination including elevated concentrations of trace metals and organic compounds in sediment Sources: Wet weather discharges (point source and combination of stormwater, sanitary sewer overflow (SSO) or combined sewer overflow (CSO), channelization, sediment contamination, the loss of riparian habitat
Fish Consumption		IMPAIRED Causes: Elevated levels of polychlorinated biphenyls in fish tissue (carp, bullhead, and American eel) Sources: Unknown and contaminated sediments
Primary Contact		IMPAIRED Causes: Elevated <i>E. coli</i> , turbidity Sources: Wet weather discharges (point source and combination of stormwater, sanitary sewer overflow (SSO) or combined sewer overflow (CSO), illicit connections/hookups to storm sewers Suspected sources: Channelization, loss of riparian habitat
Secondary Contact		IMPAIRED Cause: Turbidity Sources: Wet weather discharges (point source and combination of stormwater, sanitary sewer overflow (SSO) or combined sewer overflow (CSO), illicit connections/hookups to storm sewers Suspected sources: Channelization, loss of riparian habitat
Aesthetics		IMPAIRED Sources: Wet weather discharges (point source and combination of stormwater, sanitary sewer overflow (SSO) or combined sewer overflow (CSO), illicit connections/hookups to storm sewers Suspected sources: Channelization, loss of riparian habitat

*Alert Status issues identified, see details in use assessment section

RECOMMENDATIONS

Continue to monitor *E. coli* bacteria in the Muddy River to evaluate the status of the *Primary* and *Secondary Contact Recreational Uses* as well as progress made through cleanup/restoration efforts. Review results of recent studies (e.g., USGS 2007i) conducted which may identify bacteria sources to this system.

Support the U.S. Army Corps of Engineers' plan to increase flood control, improve water quality and enhance aquatic/riparian habitat within the Muddy River by dredging accumulated sediment, providing flood damage reduction through improvements to restrictive drainage culverts, removing nuisance vegetation, improving fisheries/wildlife habitat and water quality, bank stabilization and promoting and enhancing recreational use of Emerald Necklace parklands (ACOE 2003).

Brookline and Boston should continue to identify and remediate illicit hookups/connections to storm drains.

Massachusetts Year 2014 Integrated List of Waters

Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act



CN 450.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Matthew A. Beaton, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Douglas E. Fine, Assistant Commissioner

NOTICE OF AVAILABILITY

This report is available via the Massachusetts Department of Environmental Protection's (MassDEP) website: <http://www.mass.gov/eea/agencies/massdep/water/watersheds/total-maximum-daily-loads-tmdls.html>

DISCLAIMER

References to trade names, commercial products, manufacturers, or distributors in this report constituted neither endorsement nor recommendations by the Division of Watershed Management for use.

Cover photo: West Branch Westfield River, Middlefield, MA by Matt Reardon

Massachusetts Year 2014 Integrated List of Waters

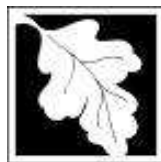
*Final Listing of the Condition of Massachusetts' Waters Pursuant to
Sections 305(b), 314 and 303(d) of the Clean Water Act*

Prepared by:

Massachusetts Division of Watershed Management
Watershed Planning Program

CN: 450.1

December, 2015



MASSACHUSETTS
DEPARTMENT
OF
ENVIRONMENTAL
PROTECTION

Massachusetts Department of Environmental Protection
Division of Watershed Management
Watershed Planning Program
8 New Bond Street
Worcester, Massachusetts 01606

Massachusetts Category 5 Waters "Waters requiring a TMDL"

NAME	SEGMENT ID	DESCRIPTION	SIZE	UNITS	IMPAIRMENT CAUSE	EPA TMDL NO.
Muddy River	MA72-11	Headwaters, outlet Ward Pond in Olmstead Park, Boston through Leverett Pond, Boston/Brookline to confluence with Charles River, Boston.	3.6	MILES	(Bottom Deposits*)	
					(Non-Native Aquatic Plants*)	
					(Other flow regime alterations*)	
					(Physical substrate habitat alterations*)	
					DDT	
					Escherichia coli	32383
					Oil and Grease	
					Other	
					Oxygen, Dissolved	
					PCB in Fish Tissue	
					Phosphorus (Total)	
					Taste and Odor	
Turbidity						
Populatic Pond	MA72096	Norfolk	41.911	ACRES	Chlordane	
					DDT	
					Dissolved oxygen saturation	40319
					Excess Algal Growth	40319
					Mercury in Fish Tissue	33880
					Nutrient/Eutrophication Biological Indicators	40319
Oxygen, Dissolved	40319					
Powissett Brook	MA72-20	Headwaters, outlet Noannet Pond, Westwood to confluence with Charles River, Dover.	1.849	MILES	Combined Biota/Habitat Bioassessments	
Rock Meadow Brook	MA72-21	Headwaters in Fisher Meadow, Westwood through Stevens Pond and Lee Pond, Westwood to confluence with Charles River, Dedham.	3.771	MILES	Aquatic Macroinvertebrate Bioassessments	
					Aquatic Plants (Macrophytes)	40317
					Excess Algal Growth	40317
					Nutrient/Eutrophication Biological Indicators	40317
					Oxygen, Dissolved	40317
					Phosphorus (Total)	40317
Sawmill Brook	MA72-23	Headwaters, Newton to confluence with Charles River, Boston.	2.397	MILES	Chloride	
					Escherichia coli	32376
					Organic Enrichment (Sewage) Biological Indicators	40317
					Oxygen, Dissolved	40317
					Phosphorus (Total)	40317





ANALYTICAL REPORT

Lab Number:	L1717570
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Lee Vanzler
Phone:	(617) 886-7561
Project Name:	BOSTON CHILDREN'S HOSPITAL
Project Number:	128868-006
Report Date:	06/02/17

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

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Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1717570-01	MUDDY RIVER_05262017	WATER	BOSTON, MA	05/26/17 08:45	05/26/17

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

Case Narrative

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

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

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

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

HOLD POLICY

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

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

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

Case Narrative (continued)

Metals

The WG1007987-1 Method Blank, associated with L1717570-01 (MUDDY RIVER_05262017), has a concentration above the reporting limit for antimony. Since the sample was non-detect to the RL for this target analyte, no further action was taken. The results of the original analysis are reported.

The WG1007987-2 LCS recovery, associated with L1717570-01 (MUDDY RIVER_05262017), is above the acceptance criteria for antimony (116%); however, the associated sample is non-detect to the RL for this target analyte. The results of the original analysis are reported.

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

Authorized Signature:

 Amita Naik

Title: Technical Director/Representative

Date: 06/02/17

METALS

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

SAMPLE RESULTS

Lab ID: L1717570-01
Client ID: MUDDY RIVER_05262017
Sample Location: BOSTON, MA
Matrix: Water

Date Collected: 05/26/17 08:45
Date Received: 05/26/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.00400	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Arsenic, Total	0.00146		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Chromium, Total	0.00194		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Copper, Total	0.01385		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Iron, Total	1.09		mg/l	0.050	--	1	05/30/17 10:13	06/01/17 17:20	EPA 3005A	19,200.7	AB
Lead, Total	0.01236		mg/l	0.00050	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	05/30/17 11:24	05/30/17 17:55	EPA 245.1	3,245.1	EA
Nickel, Total	ND		mg/l	0.00200	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Zinc, Total	0.03430		mg/l	0.01000	--	1	05/30/17 10:13	05/31/17 10:00	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	40.9		mg/l	0.660	NA	1	05/30/17 10:13	06/01/17 17:20	EPA 3005A	19,200.7	AB
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		05/31/17 10:00	NA	107,-	



Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1007987-1									
Antimony, Total	0.00440	mg/l	0.00400	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Arsenic, Total	ND	mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Cadmium, Total	ND	mg/l	0.00020	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Chromium, Total	ND	mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Copper, Total	ND	mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Lead, Total	ND	mg/l	0.0005	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Nickel, Total	ND	mg/l	0.00200	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Selenium, Total	ND	mg/l	0.00500	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Silver, Total	ND	mg/l	0.00100	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM
Zinc, Total	ND	mg/l	0.01000	--	1	05/30/17 10:13	05/31/17 08:57	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1008032-1									
Mercury, Total	ND	mg/l	0.00020	--	1	05/30/17 11:24	05/30/17 17:05	3,245.1	EA

Prep Information

Digestion Method: EPA 245.1

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1008775-1									
Iron, Total	ND	mg/l	0.050	--	1	05/30/17 10:13	06/01/17 16:50	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A



Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1717570

Project Number: 128868-006

Report Date: 06/02/17

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1008775-1										
Hardness	ND		mg/l	0.660	NA	1	05/30/17 10:13	06/01/17 16:50	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1717570

Project Number: 128868-006

Report Date: 06/02/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1007987-2								
Antimony, Total	116	Q	-		85-115	-		
Arsenic, Total	103		-		85-115	-		
Cadmium, Total	106		-		85-115	-		
Chromium, Total	99		-		85-115	-		
Copper, Total	102		-		85-115	-		
Lead, Total	108		-		85-115	-		
Nickel, Total	101		-		85-115	-		
Selenium, Total	105		-		85-115	-		
Silver, Total	100		-		85-115	-		
Zinc, Total	101		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1008032-2								
Mercury, Total	105		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1008775-2								
Iron, Total	100		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1008775-2								
Hardness	98		-		85-115	-		

Matrix Spike Analysis Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007987-3 QC Sample: L1717349-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.5537	111	-	-	-	-	70-130	-	-	20
Arsenic, Total	0.0016	0.12	0.1238	102	-	-	-	-	70-130	-	-	20
Cadmium, Total	ND	0.051	0.05542	109	-	-	-	-	70-130	-	-	20
Chromium, Total	ND	0.2	0.2049	102	-	-	-	-	70-130	-	-	20
Copper, Total	0.00118	0.25	0.2625	104	-	-	-	-	70-130	-	-	20
Lead, Total	0.0007	0.51	0.5384	105	-	-	-	-	70-130	-	-	20
Nickel, Total	ND	0.5	0.5218	104	-	-	-	-	70-130	-	-	20
Selenium, Total	ND	0.12	0.1199	100	-	-	-	-	70-130	-	-	20
Silver, Total	ND	0.05	0.04981	100	-	-	-	-	70-130	-	-	20
Zinc, Total	ND	0.5	0.5075	102	-	-	-	-	70-130	-	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007987-5 QC Sample: L1717374-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.5601	112	-	-	-	-	70-130	-	-	20
Arsenic, Total	ND	0.12	0.1218	102	-	-	-	-	70-130	-	-	20
Cadmium, Total	ND	0.051	0.05348	105	-	-	-	-	70-130	-	-	20
Chromium, Total	ND	0.2	0.1995	100	-	-	-	-	70-130	-	-	20
Copper, Total	0.0339	0.25	0.2849	100	-	-	-	-	70-130	-	-	20
Lead, Total	ND	0.51	0.5287	104	-	-	-	-	70-130	-	-	20
Nickel, Total	0.0022	0.5	0.4997	99	-	-	-	-	70-130	-	-	20
Selenium, Total	ND	0.12	0.1294	108	-	-	-	-	70-130	-	-	20
Silver, Total	ND	0.05	0.04822	96	-	-	-	-	70-130	-	-	20
Zinc, Total	0.1525	0.5	0.6630	102	-	-	-	-	70-130	-	-	20

Matrix Spike Analysis Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008032-3 QC Sample: L1717138-01 Client ID: MS Sample									
Mercury, Total	ND	0.005	0.00501	100	-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008032-5 QC Sample: L1717557-01 Client ID: MS Sample									
Mercury, Total	ND	0.005	0.00513	103	-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008775-3 QC Sample: L1700006-06 Client ID: MS Sample									
Iron, Total	0.356	1	1.48	112	-	-	75-125	-	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008775-3 QC Sample: L1700006-06 Client ID: MS Sample									
Hardness	138	66.2	209	107	-	-	75-125	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1717570

Report Date: 06/02/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007987-4 QC Sample: L1717349-01 Client ID: DUP Sample						
Cadmium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.00118	0.00135	mg/l	14		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1007987-6 QC Sample: L1717374-01 Client ID: DUP Sample						
Lead, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008032-4 QC Sample: L1717138-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008032-6 QC Sample: L1717557-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008775-4 QC Sample: L1700006-06 Client ID: DUP Sample						
Iron, Total	0.356	0.369	mg/l	4		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1008775-4 QC Sample: L1700006-06 Client ID: DUP Sample						
Hardness	138	142	mg/l	3		20

INORGANICS & MISCELLANEOUS

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

SAMPLE RESULTS

Lab ID: L1717570-01
Client ID: MUDDY RIVER_05262017
Sample Location: BOSTON, MA
Matrix: Water

Date Collected: 05/26/17 08:45
Date Received: 05/26/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
pH (H)	7.4		SU	-	NA	1	-	05/27/17 02:02	121,4500H+-B	KA
Nitrogen, Ammonia	0.161		mg/l	0.075	--	1	05/30/17 15:38	05/31/17 01:27	121,4500NH3-BH	AT
Chromium, Hexavalent	ND		mg/l	0.010	--	1	05/27/17 00:21	05/27/17 00:58	1,7196A	KA



Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1717570

Project Number: 128868-006

Report Date: 06/02/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1007622-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	05/27/17 00:21	05/27/17 00:54	1,7196A	KA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1007997-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	05/30/17 15:38	05/31/17 01:01	121,4500NH3-BH	AT

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1717570

Report Date: 06/02/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1007622-2								
Chromium, Hexavalent	94		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1007630-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1007997-2								
Nitrogen, Ammonia	98		-		80-120	-		20

Matrix Spike Analysis Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1007622-4 QC Sample: L1717570-01 Client ID: MUDDY RIVER_05262017												
Chromium, Hexavalent	ND	0.1	0.098	98	-	-	-	-	85-115	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1007997-4 QC Sample: L1717378-01 Client ID: MS Sample												
Nitrogen, Ammonia	0.273	4	3.87	90	-	-	-	-	80-120	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1717570

Report Date: 06/02/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1007622-3 QC Sample: L1717570-01 Client ID: MUDDY RIVER_05262017						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1007630-2 QC Sample: L1717409-01 Client ID: DUP Sample						
pH	7.2	7.4	SU	3		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1007997-3 QC Sample: L1717378-01 Client ID: DUP Sample						
Nitrogen, Ammonia	0.273	0.148	mg/l	59	Q	20

Project Name: BOSTON CHILDREN'S HOSPITAL**Project Number:** 128868-006**Lab Number:** L1717570**Report Date:** 06/02/17**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

Cooler Information Custody Seal**Cooler**

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1717570-01A	Plastic 250ml unpreserved	A	7	5.4	Y	Absent	HEXCR-7196(1),PH-4500(.01)
L1717570-01B	Plastic 250ml HNO3 preserved	A	<2	5.4	Y	Absent	CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),HARDU(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),TRICR-CALC(1),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L1717570-01C	Plastic 500ml H2SO4 preserved	A	<2	5.4	Y	Absent	NH3-4500(28)

*Values in parentheses indicate holding time in days

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

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

Report Format: Data Usability Report



Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

Data Qualifiers

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

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1717570
Report Date: 06/02/17

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.
- 19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.
- 107 Alpha Analytical - In-house calculation method.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

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

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



Certification Information

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

Westborough Facility

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

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

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

EPA 300: DW: Bromide

EPA 6860: NPW and SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

EPA 9012B: NPW: Total Cyanide

EPA 9050A: NPW: Specific Conductance

SM3500: NPW: Ferrous Iron

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

SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS

EPA 3005A NPW

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

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

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

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water

EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**

EPA 624: Volatile Halocarbons & Aromatics,

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

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

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water

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

Non-Potable Water

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

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

EPA 245.1 Hg.

SM2340B

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



CHAIN OF CUSTODY

Service Centers

Brewer, ME 04412 Portsmouth, NH 03801 Mahwah, NJ 07430
 Albany, NY 12205
 Tonawanda, NY 14150 Holmes, PA 19043

Westborough, MA 01581
 8 Walkup Dr.
 TEL: 508-898-9220
 FAX: 508-898-9193

Mansfield, MA 02048
 320 Forbes Blvd
 TEL: 508-822-9300
 FAX: 508-822-3288

Page 1
 of 1

Date Rec'd
 in Lab 5/26/17

ALPHA Job #
L1717570

Project Information

Project Name: Boston Children's Hospital (BCCB)
 Project Location: Boston, MA
 Project # 128868-006

Deliverables

Email Fax
 EQulS (1 File) EQulS (4 File)
 Other:

Billing Information

Same as Client Info
 PO #

H&A Information

H&A Client: Jonathan Thibault
 H&A Address: 465 Medford Street
Suite 2200, Boston, MA 02129
 H&A Phone: 617.680.2293
 H&A Fax:
 H&A Email: jthibault@haleyaldrich.com

(Use Project name as Project #)
 Project Manager: L. Vanzler
 ALPHAQuote #:
 Turn-Around Time
 Standard Due Date:
 Rush (only if pre approved) # of Days:

Regulatory Requirements (Program/Criteria)

Note: Select State from menu & identify criteria.

Disposal Site Information

Please identify below location of applicable disposal facilities.
 Disposal Facility:
 NJ NY
 Other:

These samples have been previously analyzed by Alpha

Other project specific requirements/comments:

Sample submitted for 2017 NPDES RGP permit application; please follow appropriate testing methods and minimum detection levels as required by EPA. COC edits by Gina Hall 6/1/17

Please specify Metals or TAL.

ANALYSIS

1. pH	2. Temperature	3. Hardness	4. Ammonia	5. NPDES RGP Metals
X	X	X	X	X

Sample Filtration

Done
 Lab to do
Preservation
 Lab to do
 (Please Specify below)
 Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS					Sample Specific Comments	Total Bottles
		Date	Time			1. pH	2. Temperature	3. Hardness	4. Ammonia	5. NPDES RGP Metals		
<u>17570-01</u>	<u>MUDDY RIVER_05262017</u>	<u>5/26/17</u>	<u>0845</u>	<u>H₂O</u>	<u>MJD</u>	X	X	X	X	X	<u>5. NPDES RGP Metals: 3</u>	<u>3</u>
											<u>Sb, As, Cd, Cr, Hex Cr, Cu, Fe, Hg, Pb, Ni, Se, Ag, Zn</u>	
											<u>Tri Cr</u>	
											<u>3 TOTAL</u>	

Preservative Code:
 A = None
 B = HCl
 C = HNO₃
 D = H₂SO₄
 E = NaOH
 F = MeOH
 G = NaHSO₄
 H = Na₂S₂O₃
 K/E = Zn Ac/NaOH
 O = Other

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



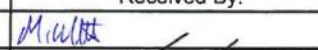
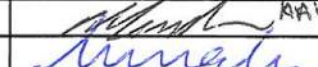
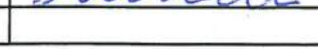
Westboro: Certification No: MA935
 Mansfield: Certification No: MA015

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

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Environmental Pollution

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Anatomy of an urban waterbody: A case study of Boston's Muddy River

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ARTICLE INFO

Article history:

Received 8 August 2010
 Received in revised form
 7 January 2011
 Accepted 11 February 2011

Keywords:

Urban
 River
 Water quality
 Model

ABSTRACT

The objective of this study was to characterize and understand the water quality of Boston's Muddy River prior to restoration, to help guide those activities and evaluate their success. We use a combination of monitoring, data analysis and mathematical modeling. The seasonal pattern of temperature, pollutant signatures (identified using a principal component analysis), correlations with precipitation and spatial patterns all point to a significant wastewater input at one of the outfalls and suggest significant receiving water impact. However, a quantitative analysis using a mathematical model (QUAL2K) suggests this source is not significant. Rather, internal loading from algae, sediment bed and waterfowl dominate the spatial pattern of water quality. These results suggest significant improvement can be expected from planned sediment dredging. The paper provides a case study of water quality assessment in the context of urban river restoration, and it illustrates the utility of combining monitoring and data analysis with modeling.

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1. Introduction

Urban rivers are one of the most intensely used environmental resources. They are subjected to inputs of treated and untreated wastewater, stormwater and combined sewage discharges; flood control channelization, culverting, shoreline encroachment, erosion and sedimentation; and invasive species. The degradation of urban streams is well documented, and has been referred to as “urban stream syndrome” (Walsh et al., 2005; Paul and Meyer, 2008).

Urban rivers evolve along with their host cities and changing water management strategies. The historical approach was to increase conveyance by straightening and concrete lining (channeling), and improve public perception and health risk by covering (culverting). Today, there is a trend to restore rivers to their natural state or function (Novotny et al., 2010). A recent review of river restoration efforts in the U.S. found that most are motivated by improving water quality (followed closely by riparian zone management), yet only 10% included assessment or monitoring (Bernhardt et al., 2005). This can be justified by the low median

cost for water quality improvement projects (\$19,000; Bernhardt et al., 2005), which may not allow for a full-scale water quality study. However, it also highlights the need for case studies. A number of water quality studies associated with urban river restoration projects have been documented (e.g. Charbonneau and Resh, 1992; Davis et al., 2003), but more are needed to learn from successes and failures, and predict outcomes of various restoration activities.

Not unlike human bodies, urban rivers are complex systems, where the water quality emerges as a result of numerous interacting processes. For example, a precipitation event may lead to more input of pollutant via runoff, but there is also more instream flow to dilute the incoming load. It is therefore often difficult to understand urban rivers by looking at one parameter using one analysis method. The approach to understanding the water quality should be multi-tiered, looking at a number of parameters using multiple analysis methods, and establishing multiple lines of evidence. Monitoring and associated data analysis (e.g. graphs of pollutant concentrations along the river, comparison to standards and criteria) can allow for an assessment of the water quality. Mathematical modeling can be used to develop a quantitative understanding of the inputs and processes affecting the water quality.

The objective of this project was to characterize and understand the water quality of an urban river prior to restoration activities. We use a combination of monitoring, data analysis and mathematical modeling. The paper provides a case study of water quality

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assessment in the context of urban river restoration. It also illustrates the utility of combining monitoring and data analysis with mathematical modeling to gain a deeper understanding of the system than can be gained by either method alone.

2. Methods

2.1. Study site: The Muddy River

The Muddy River is located in Brookline and Boston, Massachusetts (MA) and is tributary to the lower Charles River (Fig. 1). The watershed has a drainage area of 16 km² (6.3 mi²), an average slope of 7.2% and mixed land use (46% single family, 14% multi-family, 10% commercial, 16% urban open, 7% forest, 7% other, Breault et al., 2002; Zarrillo and Barlow, 2002). A typical mean annual flow rate is 0.13 m³ s⁻¹ (4.51 ft³ s⁻¹) with a range of <0.01–18 m³ s⁻¹ (<0.5–639 ft³ s⁻¹) (Breault et al., 2002). The Muddy River has a rich history of use and alterations (MA DEM, 2001; Seasholes, 2003; Haglund, 2003). It was originally a tidal estuary that was filled to address the problem of sewage-contaminated mud flats, which made it “the filthiest marsh and mud flats to be found anywhere in Massachusetts...; a body of water so foul that even clams and eels cannot live in it, and that no one will go within half a mile of in summer unless from necessity, so great is the stench arising therefrom” (Seasholes, 2003). One of the main functions of the initial construction was to serve as a holding basin for sewer overflow from its “sister river”, Stony Brook. These modifications grew into the Muddy River being the first public park in Boston (approved by the City Council in 1877), and an integral part of the Emerald Necklace park system designed by renowned landscape architect Frederick Law Olmsted. Subsequently, the river has suffered from neglect and misuse. Significant portions were filled, including culverting a section to make a parking lot (“Sears Lot”, Fig. 1, now grass covered). Other problems include shoreline erosion, sedimentation/siltation, invasive plants (*Phragmites australis*), flooding, and combined sewer and illegal sanitary sewer inflow. The Muddy River Conduit diverts a significant fraction of the total flow, and “fast tracks” it to the Charles River. The now culverted Stony Brook overflows into the Muddy River during heavy rainfall events. The Muddy River is designated by the MA DEP as Class B (fishable, swimmable). Water quality deterioration and recent flooding, that caused significant property damage, have provided impetus for the Muddy River Restoration Project. This project includes sediment removal (dredging), infrastructure improvements, daylighting several

culverted portions, wetlands restoration, bank stabilization, removal of invasive vegetation and implementation of best management practices (BMPs). In support of the restoration project we carried out an intensive study to characterize and understand water quality and causes of water quality impairment in the Muddy River.

2.2. Sampling and analysis

Details of the sampling and analysis protocol are documented elsewhere (Hellweger et al., 2007) and only an overview is presented here. Samples were collected from 8 receiving water stations (1–8) and 5 outfall stations (A–E) as shown in Fig. 1 and listed in Table 1. The outfalls carry predominantly stormwater, although illicit sanitary wastewater connections are an ongoing problem. In addition, samples were collected from one floating/roaming station. Sampling was conducted from September 2006 through August 2009 on a quarterly basis with three sampling events per quarter, including dry (no precipitation on the two days preceding the sampling day), wet (>0.1 in on the sampling day) and post-wet (>0.1 in on the day preceding the sampling day). Sampling was generally started at 9 AM, proceeded in the upstream direction and took about 2 h to complete. Samples were kept on ice and analyzed immediately upon arrival at the laboratory at Northeastern (~10 min). Parameters and analytical methods are listed in Table 2. Nutrient and metal samples were not filtered. To ensure data quality, each sampling event included a field blank and a field duplicate at a randomly selected station, and field checks (e.g. check pH meter on pH 7.0 solution). Data quality objectives and corrective action process are available in Hellweger et al. (2007).

2.3. Mathematical modeling

QUAL2K (Chapra et al., 2008) was used to develop a quantitative understanding of the inputs and processes affecting the water quality of the Muddy River. QUAL2K is a one-dimensional model that can be applied at various levels of mechanistic detail and complexity. For example, the model includes photosynthesis, but this process can be “turned off” by specifying zero initial and boundary phytoplankton concentrations. The model applications presented here are relatively simple. For DO, we used relatively simple Streeter–Phelps level kinetics. That is, DO is consumed by first-order oxidation of BOD and specified sediment oxygen demand (SOD), and replenished by reaeration from the atmosphere. TP (unfiltered) was modeled as a conservative substance that settles out of the water column. *E. coli* density was modeled using a constant first-order loss process.

Geometry (width and depth) was based on Breault et al. (1998). Flows were developed from Breault et al. (2002) and include the outfalls studied here, the Stony Brook overflow, and a nonpoint source contribution. Outfall concentrations were assigned the mean value from our measurements. Stony Brook overflow concentrations were assigned based on stormwater means measured by Breault et al. (2002). Nonpoint concentrations were assigned as the average of the outfalls. In addition, to these measured inputs, loadings from waterfowl, sediment bed and algae were needed to match the observations (discussed in Section 3.4). The measured and calibrated inputs and their contributions are summarized in Table 3.

Kinetic parameters for the DO model include the BOD oxidation, the sediment oxygen demand (SOD), and the reaeration rate. The organic material originates mostly from runoff and algae and the BOD oxidation rate was therefore assigned a relatively low value of 0.08 d⁻¹, which corresponds to secondary-treated wastewater (Chapra, 1997). The SOD was assigned spatially variable in the range 0.070–1.9 g m⁻² d⁻¹, based on measurements of Blanc and Gregory (1995).

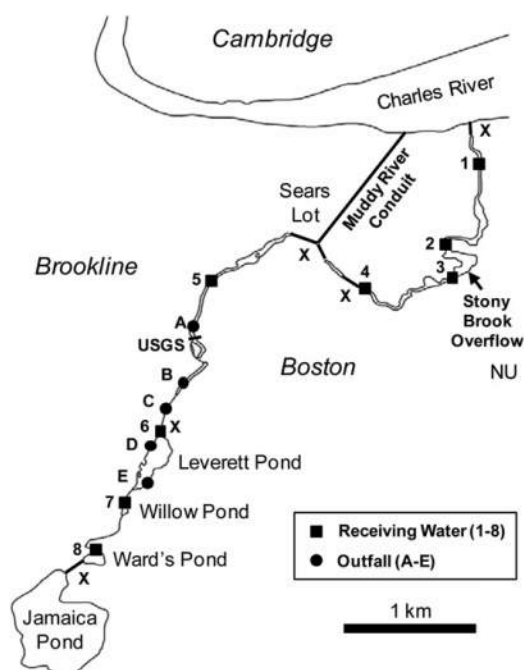


Fig. 1. Muddy River. Stations include: Receiving Water: 1 = Commonwealth Ave., 2 = Agassiz Rd., 3 = Bridge Upstream of Boston Gate Houses, 4 = Fens Bridge, 5 = Longwood Avenue Bridge, 6 = Outlet of Leverett Pond, 7 = Outlet of Willow Pond, 8 = Outlet of Wards Pond, Outfalls: A = Longwood Ave. Drain, B = Tannery Brook Drain, C = Pearl St. Drain, D = Village Brook Drain, E = Daisy Field Drain. “X” indicates culverted portion. “USGS” indicates gaging station (no flow rate data are available; Breault et al., 2002).

Table 1
Sampling Stations.

No.	Description
1	Receiving Water
2	Commonwealth Avenue
3	Agassiz Road
4	Bridge Upstr. of Boston Gate Houses
5	Fens Bridge
6	Longwood Avenue Bridge
7	Outlet of Leverett Pond
8	Outlet of Willow Pond
	Outlet of Wards Pond
	Outfalls
A	Longwood Avenue Drain
B	Tannery Brook Drain
C	Pearl St. Drain
D	Village Brook Drain
E	Daisy Field Drain

Table 2
Analytical Methods.

Parameter	Method ^a
Temperature, Dissolved Oxygen (DO) concentration and saturation, pH, specific conductivity (SpC)	SM 4500-O G, 4500-H+ B, 2510-B
Acidity, alkalinity	SM 2310 B,2320 B
Total Dissolved Solids (TDS)	SM 2540 C
Chloride	SM 4110 B
Total suspended solids (TSS)	SM 2540 D
Color	SM 2120 C
Turbidity	SM 2130 B
Biochemical oxygen demand (BOD)	SM 5210 B
Chemical oxygen demand (COD)	SM 5220 D
Total Organic Carbon (TOC)	SM 5310 C
<i>Escherichia coli</i> (<i>E. coli</i>) and fecal coliform	Coliscan MF ^b
Enterococci	EPA 1600
Total nitrogen (TN)	SM 4500-N C, 4110 B
Total phosphorus (TP)	SM 4500-P B 5, 4500-P D
Ammonia (NH3)	SM 4500-NH3 D
Nitrate (NO3), Nitrite (NO2), Orthophosphate (PO4)	SM 4110 B
Metals (Zn, Cr, Pb, Cu, Cd, As)	SM 3030 E, 3111 B
Total petroleum hydrocarbons (TPH), oil and grease (O&G)	EPA 1664

^a "SM" refers to Standard Method (Greenberg et al., 2005).
^b Micrology Laboratories, Goshen, Indiana.

Geometry and hydraulics information is available to help specify the reaeration rate. However, the river's depth and velocity are generally outside of those for empirical river formulas (e.g. O'Connor-Dobbins; Chapra, 1997). The river's bank vegetation varies significantly, ranging from open grass fields to dense brush and trees, which makes application of an empirical lake formulations difficult. We therefore assigned a spatially variable reaeration rate to match our data, which ranges from 0.0 (cultivated reaches) to 2.0 m d⁻¹. The TP settling velocity was assigned 0.1 m d⁻¹ (Chapra, 1997). The *E. coli* loss rate was assigned 1.0 d⁻¹ (Thomann and Mueller, 1987).

3. Results and discussion

3.1. Seasonal patterns

Among the parameters analyzed, temperature, specific conductivity (SpC), total dissolved solids (TDS), chloride and dissolved oxygen (DO) show obvious seasonal patterns (Fig. 2).

3.1.1. Temperature

The temperature at Station E fluctuates less compared to the other outfalls (Fig. 2A). This may reflect the contribution of groundwater, wastewater (i.e., illicit releases of untreated sewage) and/or another component with a relatively constant temperature. A simple mixing model considering runoff (RO), groundwater (GW) and wastewater (WW) components is:

$$T_{Outfall} = f_{RO} T_{RO} + f_{GW} T_{GW} + f_{WW} T_{WW} \tag{1}$$

Table 3
Pollutant Inputs to Muddy River.

	BODu (kg/day)	TP (kg/day)	<i>E. coli</i> (CFU/day)
Measured			
Upstream	7.3	0.061	1.1 × 10 ¹⁰
Point	74	1.2	3.1 × 10 ¹¹
(Station E)	(2.2)	(0.047)	(7.4 × 10 ⁹)
Nonpoint	60	0.89	2.8 × 10 ¹¹
SOD	100	—	—
Calibrated			
Waterfowl	1.3	0.15	3.5 × 10 ¹²
Sediment bed	—	1.8	—
Algae	82	—	—
Total	320	4.1	4.1 × 10 ¹²

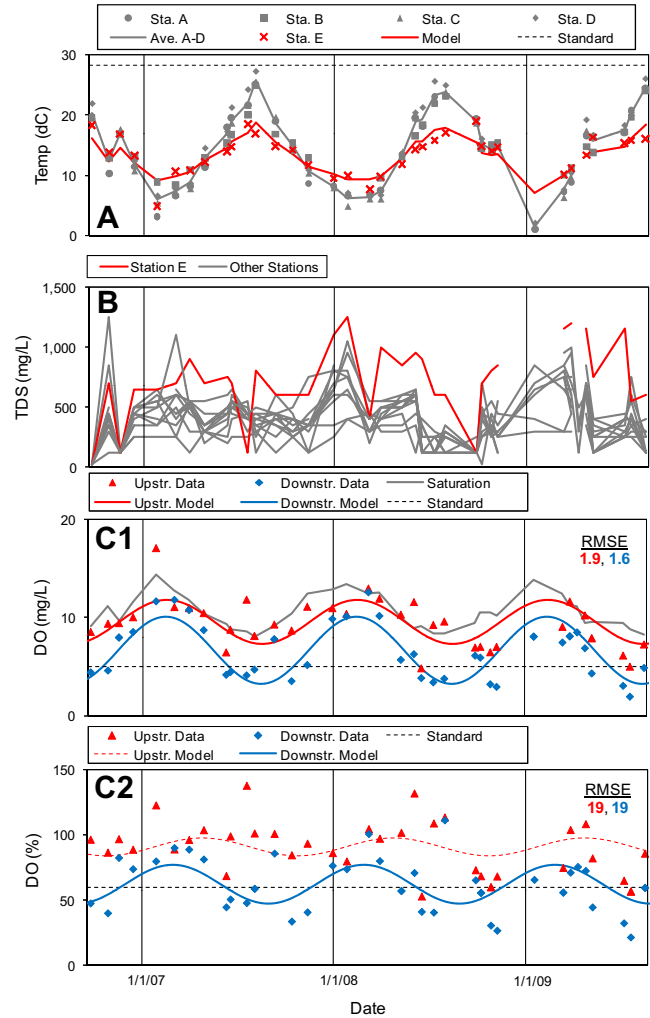


Fig. 2. Time series analysis. (A) Temperature at outfalls. Model corresponds to 49% runoff, 49% groundwater and 2% wastewater (see text). (B) Total dissolved solids (TDS) at Station E and other stations. (C) Dissolved oxygen (DO) concentration and saturation.

where $T_{Outfall}$ is the outfall temperature, and f_{RO} , f_{GW} and f_{WW} are the flow fractions and T_{RO} , T_{GW} and T_{WW} are the temperatures of the three components. Eq. (1) is a weighted average that states the temperature of the outfall is equal to those of the three components weighted by their respective flow fraction. The runoff temperature (T_{RO}) is assigned the time-variable average temperature at Stations A–D (Fig. 2A, gray line), the groundwater temperature (T_{GW}) is assigned the mean annual air temperature in Boston (11 °C), and the wastewater temperature (T_{WW}) is assigned the mean annual influent temperature at the Deer Island Treatment Plant (17 °C). Then, the optimal values for the three flow fractions (f_{RO} , f_{GW} and f_{WW}) are found by minimizing the sum of the error squares between the observed and predicted outfall temperatures ($T_{Outfall}$), constrained by $f_{RO} + f_{GW} + f_{WW} = 1$, using the MS Excel SOLVER optimization routine (Fig. 2A, red line). The resulting groundwater and wastewater fractions are 49% and 2%, respectively. Of course, this is only a rough ballpark estimate based on a simple model. Using estimates of flow rates based on a sewer model and drainage areas (Breault et al., 2002; Zarriello and Barlow, 2002), this suggests a wastewater flow rate of 3.3 m³ d⁻¹ (860 gpd) at Station E.

3.1.2. Specific conductivity, TDS and chloride

Specific conductivity, TDS and chloride show relatively high values during the winters, which may reflect the use of road salt (Fig. 2B, specific conductivity and chloride show similar patterns and are not presented). Chloride is a component of TDS, which correlates with conductivity (Fig. 3). The correlation for TDS ($R^2 = 0.68$) is stronger than that for chloride ($R^2 = 0.35$). TDS can be predicted from specific conductivity using the relationships of Langlier and Russell (Snoeyink and Jenkins, 1980) (TDS/S.C. = 0.64, blue line in Fig. 3). The Muddy River data suggest a lower ratio (TDS/S.C. = 0.49). Going back to the time series, Station E has the highest values (Fig. 2C, thin dashed lines), which is qualitatively consistent with a significant groundwater and/or wastewater flow component, which generally have higher TDS concentrations than surface waters (Snoeyink and Jenkins, 1980; Metcalf and Eddy Inc, 1991). The average TDS at Station E is 720 mg L⁻¹, which is on the high side, but within the range of groundwater concentrations observed in the Boston Metropolitan Area (median = 166, range = 52–1460 mg L⁻¹, Flanagan et al., 2001).

3.1.3. Dissolved oxygen

The DO concentrations of the receiving water stations also show a seasonal pattern (Fig. 2C1). For the upstream stations (6–8), the seasonality can be explained by the effect of temperature on the solubility. That is, the DO concentration (Fig. 2C1, red symbols) is typically close to saturation (Fig. 2C1, gray line), and the percent saturation (Fig. 2C2, red symbols) does not show a strong seasonal pattern. The downstream stations (1–5) show a more pronounced seasonality in DO concentration (Fig. 2C1, blue symbols) and this is also evident in the saturation (Fig. 2C2, blue symbols). The difference between the seasonality of the upstream and downstream stations can be quantified by fitting a sine curve to the data and comparing the relative amplitudes (amplitude/mean). The upstream stations DO concentration and saturation relative amplitudes are 24% and 7.6%, respectively. For the DO saturation, the optimization routine predicts a small amplitude, but a straight line also fits the data relatively well (RMSE: sine = 19.1, straight line = 19.7). The downstream stations DO concentration and saturation relative amplitudes are 51% and 24%, respectively. This suggests that for the downstream stations there is another seasonal factor (in addition to the effect of temperature on solubility). This could be the effect of temperature on the heterotrophic bacteria growth rate, which would be visible for the downstream stations, because DO consumption by bacteria is a significant term, as suggested by the lower DO concentration in general. It could also be another factor that is not directly related to temperature, like

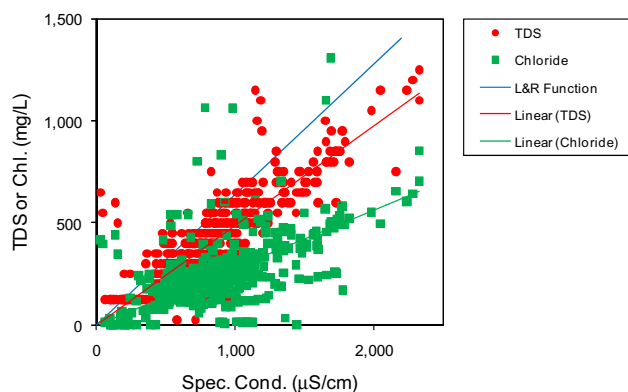


Fig. 3. Total dissolved solids (TDS) and chloride vs. specific conductivity. L&R Function is the relationships of Langlier and Russell (Snoeyink and Jenkins, 1980).

streamflow and/or wind velocity, which would affect the reaeration rate (O'Connor and Dobbins, 1958; Banks and Herrera, 1977).

3.2. Pollutant signatures

To understand differences in water quality among the stations, pollutant concentrations are compared (Fig. 4). The pollutants have different units (e.g. mg L⁻¹ vs. CFU 100 mL⁻¹) and concentration magnitudes (e.g. TSS vs. Chromium). To facilitate visual comparison, the values are normalized by dividing by the mean for each parameter across all stations. Parameters are arranged into physical (gray), organic (red), bacteria (green), nutrient (blue) and metal (orange) pollutants. For the receiving water stations, the analysis confirms the generally better water quality of the upstream Stations 8 and 7 compared to those downstream (Fig. 4A). For the outfall stations, Station E has the highest bacteria and nutrient pollutant concentrations, whereas Station A has the highest physical and organic pollutant concentrations (Fig. 4B). Interestingly, there appear to be two different patterns - or pollutant signatures - among the outfall stations. Higher bacteria and nutrient pollutants are seen for Stations E and B (Fig. 4B, green and blue bars). Higher physical and organic pollutants are seen for Stations A and C (Fig. 4B, gray and red bars). These patterns generally apply to the pollutant categories, but individual pollutants may differ (e.g. Station A has slightly higher fecal coliform than Station B).

We explore this further using principal component analysis (PCA) (Jolliffe, 2002), which uses orthogonal linear transformation to remove correlation between variables. That is, the method converts correlated variables (e.g. pollutant concentrations shown

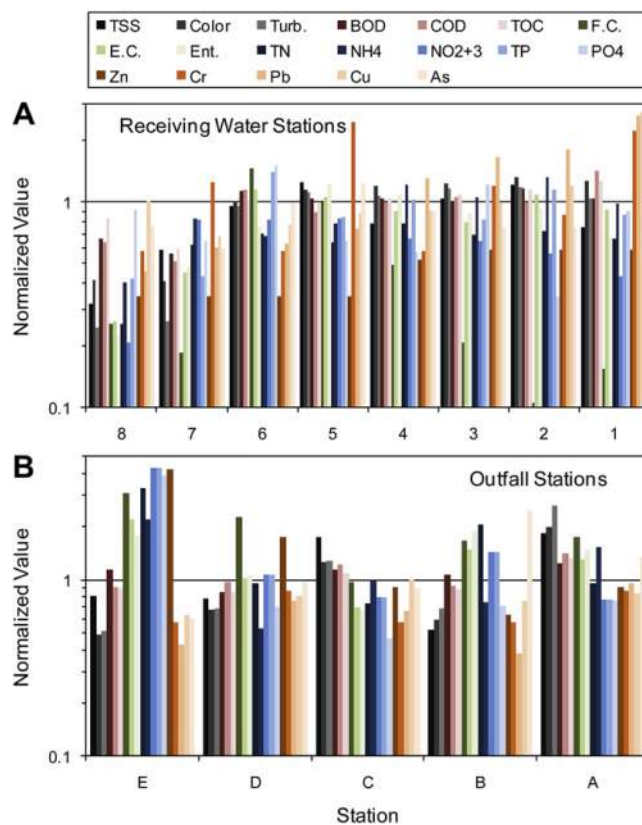


Fig. 4. Comparison of pollutants by station. Groupings: Physical (gray): TSS, Color, Turb., Organic (red): BOD, COD, TOC, Bacteria (green): F.C., E.C., Ent., Nutrients (blue): TN, NH4, NO2+3, TP, PO4, Metals (orange): Zn, Cr, Pb, Cu, Cd, As.

in Fig. 4) into a set of uncorrelated variables called principal components. PCA readily identifies the two different pollutant signatures (Fig. 5). That is, Component 1 corresponds to bacteria and nutrient pollutants and zinc, and Component 2 corresponds to physical and organic pollutants. Different source types (e.g. runoff vs. wastewater) have different contributions of pollutants, and the different signatures identified here suggest the pollutant sources for Stations E and B are different than those for Stations A and C.

3.3. Precipitation patterns

To understand how the water quality changes with precipitation, linear regression analyses were performed on all parameters and stations. Metals were excluded because only one year of data was available and data were frequently below the detection limit. Various timeframes for precipitation were evaluated, including precipitation on the sampling day, the sampling plus preceding day, the sampling plus preceding two days, etc.

The correlations are generally poor with average R^2 (across all stations, parameters and precipitation length periods) of 0.10. This is not surprising since our analysis does not consider several factors known to affect urban runoff pollutant concentrations, like variability within the event (first flush, event mean-concentration) and storm characteristics (intensity, antecedent dry period) (USEPA, 1983; Breault et al., 2002; Lee et al., 2002). However, there is one point worth mentioning. Station E has the lowest average R^2 for the pollutants (0.057). This suggests pollutant concentrations are least affected by precipitation at this station, which is consistent with a groundwater or wastewater component.

3.4. Spatial patterns

3.4.1. DO and BOD Data

The dissolved oxygen (DO) concentration and saturation (not shown) exhibit a clear spatial pattern (Fig. 6A). The DO is higher in the upstream reaches and decreases in the reach from Station 6 to Station 5. This is also evident in the seasonal analysis presented above. Our sampling occurred in the morning and proceeded in the upstream direction, so the DO observations are expected to increase in the upstream direction due to the diel variation. However, the sampling was completed in a relatively short time (2 h). Blanc and Gregory (1995) accounted for diel variation and

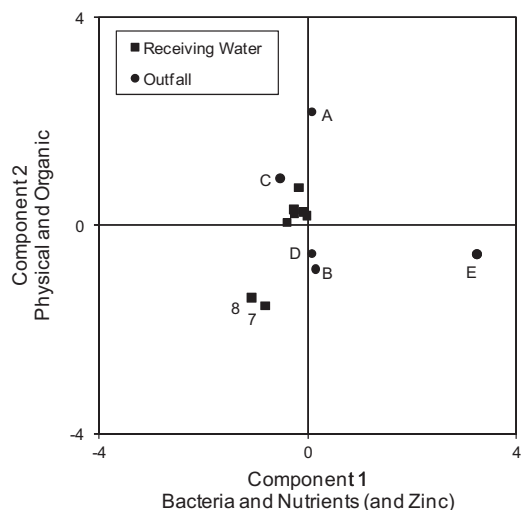


Fig. 5. Principal component analysis (PCA) of pollutants by station. See caption Fig. 4.

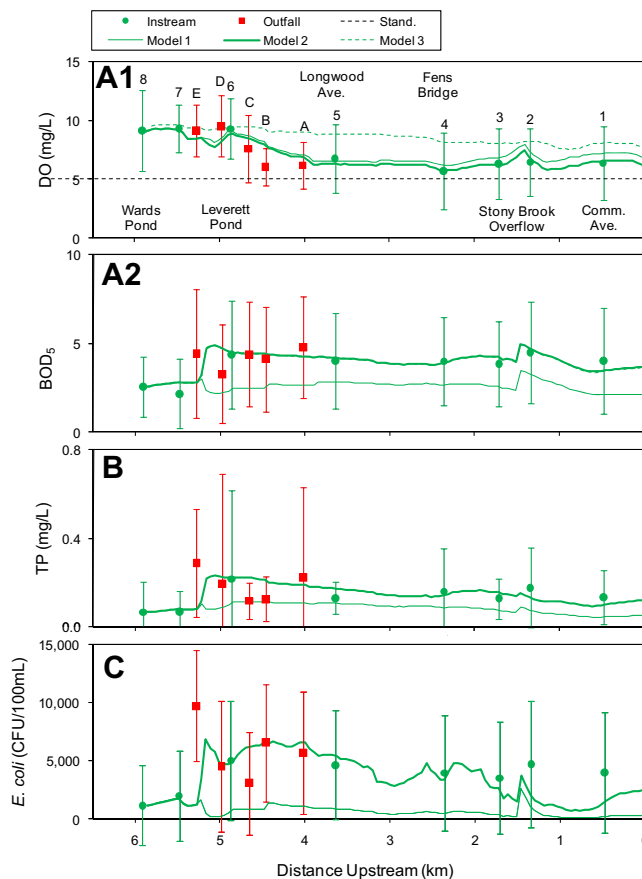


Fig. 6. Spatial profiles of (A1) Dissolved oxygen (DO), (A2) Biochemical oxygen demand (BOD), (B) total phosphorus (TP) and (C) *E. coli*. Symbols are mean \pm 1 standard deviation. See text for description of model simulations.

also found that DO increases in the upstream direction. The spatial pattern can therefore not be attributed to diel fluctuation. The decrease with distance downstream reflects oxidation of organic material by heterotrophic microorganisms in the water column and sediment bed. Station 4 has the lowest DO, which may be due to lower reaeration in the culverted reach immediately upstream (see Fig. 1). The biochemical oxygen demand (BOD) is lowest for the upstream stations (7 and 8), and higher and relatively constant downstream of that. The spatial patterns of COD and TOC are similar to that of BOD (not shown).

3.4.2. DO and BOD Model

Three different model runs were performed to understand the spatial pattern of DO in the Muddy River. The first simulation (Model 1) is the base case scenario with inputs based on measurements as described in Section 2.3. This model matches the DO reasonably well (Fig. 6A1). However, it does not capture the increase of BOD in Leverett pond and underestimates the concentration downstream of that point (Fig. 6A2). The increase in Leverett Pond cannot be attributed to the two outfalls entering it (Stations D and E). Station E has a high BOD, but constitutes only a small fraction (3.0%) of flow at that location. Station D has a high flow (71%), but low BOD. This points to an internal source, like autochthonous organic matter (i.e. dead algae) or “direct input” of fecal matter by waterfowl. The second model (Model 2) includes an additional input term to account for this source, which was adjusted (calibrated) to match the data (Table 3). The magnitude

and origin of this input will be discussed further below. The second model captures the BOD pattern in the Muddy River (Fig. 6A2), but the DO concentration did not change significantly. This suggests the water column BOD is not the dominant driver of the DO pattern and points to the sediment bed. To investigate the relative contribution of SOD to the DO decrease, the third simulation (Model 3) includes no SOD. This simulation predicts a significant increase in DO, suggesting SOD is an important sink for water column DO (Fig. 6A). The sediment dredging planned as part of the restoration project should reduce the SOD, so a significant improvement in DO can be expected. However, input of organic material (from allochthonous and autochthonous sources) to the sediment bed will continue, so the SOD will increase again. An important question, which has not been answered, is how fast and to what extent this will occur. A number of modeling methods are available to investigate this question (Chapra, 1997; Di Toro, 2001). Monitoring the temporal progression of SOD and water column DO following the dredging would constitute a useful dataset to compliment such a modeling analysis.

3.4.3. Total phosphorus data and model

The total phosphorus and phosphate (not shown) data are highest at outfall Station E (Fig. 6B). The highest receiving water concentrations are at Station 6, suggesting this may be due to the influence of the outfall. The model quantitatively relates the source and receiving water concentrations, and it suggests that the high TP at Station 6 cannot be attributed to input from Station E (Fig. 6B, Model 1). As with BOD, we added an internal input to match the data (Table 3, Fig. 6B, Model 2). This input is discussed further below. The model-estimated total load of TP from the Muddy River to the Charles River is 1.1 kg d^{-1} , which is lower than the 5.0 kg d^{-1} estimated by Breault et al. (2002). The discrepancy is likely due to the steady-state analysis used here. These loads can be put into context of the downstream Charles River. The current and Total Maximum Daily Load (TMDL) input of TP to the Lower Charles River are 110 and 54 kg d^{-1} , respectively (Tetra Tech, 2006).

3.4.4. *E. coli* data and model

E. coli, as well as fecal coliforms and Enterococcus, are generally low at Stations 8 and 7 and increase at Leverett Pond (Fig. 6C). The average *E. coli* density at the most downstream station is $4.0 \times 10^3 \text{ CFU } 100 \text{ mL}^{-1}$, confirming that the Muddy River is a significant source of *E. coli* to the Charles River (Hellweger and Masopust, 2008). The model generally underpredicts the *E. coli* density at Leverett Pond and downstream (Fig. 6C, Model 1). However, it predicts a significant increase at the Stony Brook Overflow. As with BOD and TP, an internal input was calibrated to match the data (Table 3). That model matches the data reasonably well, although it underpredicts the *E. coli* density at the downstream end by 67% (Fig. 6C, Model 2).

3.4.5. Calibrated internal input

We now discuss the magnitude and origin of the calibrated input of BOD, TP and *E. coli* (Table 3). Specifically, we consider if the input can reasonably be explained by a combination of three internal sources, including direct input from waterfowl, the sediment bed and autochthonous production (algae). We assume that only waterfowl contribute *E. coli* (although the sediment bed can serve as a temporary reservoir of enteric bacteria; Chapra, 1997). To see if the calibrated *E. coli* loading can be attributed to waterfowl, we estimate the corresponding number of birds. Wither et al. (2005) cite a value of $1.1 \times 10^{10} \text{ CFU bird}^{-1} \text{ d}^{-1}$ for ducks. Roll and Fujioka (1997) measured $1.6 \times 10^6 \text{ CFU gGuano}^{-1}$ for ducks, which correspond to $1.6 \times 10^8 \text{ CFU bird}^{-1} \text{ d}^{-1}$ (using 98 gGuano $\text{bird}^{-1} \text{ d}^{-1}$, ave. of Canada Goose and Mallard Ducks, Don and

Donovan, 2002). Using the higher value from Wither et al., the calibrated *E. coli* input corresponds to 310 birds. This number is within the range of 100–790 observed by the MA Div. of Fisheries and Wildlife (2003, 2008; Fens and Leverett Pond; Mallard Ducks, American Black Duck, Canada Goose; Heusmann, personal communication). However, that number of birds cannot explain the calibrated input of BOD and TP (Table 3, estimated using $41 \text{ gBOD kgGuano}^{-1}$, $4.9 \text{ gP kgGuano}^{-1}$, Don and Donovan, 2002). Among the remaining sources, only the sediment bed contributes TP. For the shallow Muddy River, the predominant release mechanism is likely sediment resuspension (possibly mediated by waterfowl). The areal input to Leverett Pond is $29 \text{ mg m}^{-2} \text{ d}^{-1}$, which is reasonably close to what is being put into the sediment bed by particle settling ($21 \text{ mg m}^{-2} \text{ d}^{-1}$, $\text{TP} = 0.21 \text{ mg L}^{-1}$, $v_s = 0.1 \text{ m d}^{-1}$). The sediment bed does not constitute a source of BOD (SOD is included based on measurements), so the source of the calibrated BOD is in the water column, which could be attributed to dead algae. The areal input of BOD to Leverett Pond corresponds to $180 \text{ gC m}^{-2} \text{ y}^{-1}$ (using 0.036 km^2 , $2.67 \text{ gBOD gC}^{-1}$, Chapra, 1997). This is within the range of autochthonous production rates for lakes (e.g. Lawrence Lake: 130, Lake Wingra: 610, Wetzel, 2001). Therefore, the calibrated input of *E. coli*, TP and BOD can be reasonably attributed to waterfowl, sediment bed and algae internal sources, respectively. Targeted site-specific studies, like more extensive bird counts and measurement of the *E. coli* in their droppings, would be useful to further establish this.

4. Summary

This study was conducted to characterize and understand the water quality of the urban Muddy River to support and evaluate restoration. Extensive monitoring of 36 parameters at 14 locations at a monthly frequency over a three year period resulted in a database with 520 observations. A number of different data analysis methods were applied, and taken together they provide an understanding of the water quality of the river. Specifically, the study identified a significant wastewater fraction in one of the outfalls, Station E. The seasonal patterns of temperature and dissolved solids point to groundwater and wastewater components in this outfall. A simple mixing model provides a first-order estimate of the wastewater flow rate of $3.3 \text{ m}^3 \text{ d}^{-1}$. By comparing pollutant signatures at outfalls using a principal component analysis (PCA), this outfall was further identified as having the highest bacteria and nutrient component. Correlations reveal that the pollutant concentrations at this outfall are least affected by precipitation compared to other stations (although correlations are weak for all stations). None of these results are conclusive by themselves, but they are consistent and together they suggest a wastewater component at this outfall. Subsequent inspections by the Boston Water and Sewer Commission have identified a significant illegal sanitary connection to this outfall with a flow rate of $4.3 \text{ m}^3 \text{ d}^{-1}$ (1139 gpd). The biochemical oxygen demand (BOD), total phosphorus (TP) and *E. coli* increase immediately downstream of this outfall, which suggests it has a significant impact on the water quality of the river. A mathematical model was developed and compared to the data. The model quantitatively relates the input from the outfalls to receiving water concentrations. It suggests the impact of the outfall is not significant. Rather, there is significant internal input, which we attribute to waterfowl, sediment bed and algae. The sediment bed dredging planned as part of the restoration project should lead to significant improvements in DO, BOD and TP.

This study illustrates the utility of combining monitoring and data analysis with mathematical modeling to help understand the water quality of a river. Monitoring and data analysis helped identify an illegal wastewater connection, yet it suggested that

inflow has a significant impact on the river. Mathematical modeling allowed for a quantitative analysis of this input and showed that it is not a significant driver of water quality in the river. Internal inputs from waterfowl, sediment bed and algae are more important in this case.

Acknowledgements

This research was sponsored by the Town of Brookline, City of Boston and Massachusetts Department of Conservation and Recreation (DCR) under subcontract to Camp Dresser & McKee Inc. (CDM). We appreciate the useful discussions we had with various members of the Boston-area water quality community, especially Roger Frymire. Three anonymous reviewers provided constructive criticism. This paper is dedicated to the memory of Robert Kachinsky.

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APPENDIX E

Endangered Species Act Documentation



United States Department of the Interior



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

In Reply Refer To:

April 26, 2017

Consultation Code: 05E1NE00-2017-SLI-1418

Event Code: 05E1NE00-2017-E-02797

Project Name: Boston Children's Hospital Clinical Building (BCCB) Discharge Location

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: 05E1NE00-2017-SLI-1418

Event Code: 05E1NE00-2017-E-02797

Project Name: Boston Children's Hospital Clinical Building (BCCB) Discharge Location

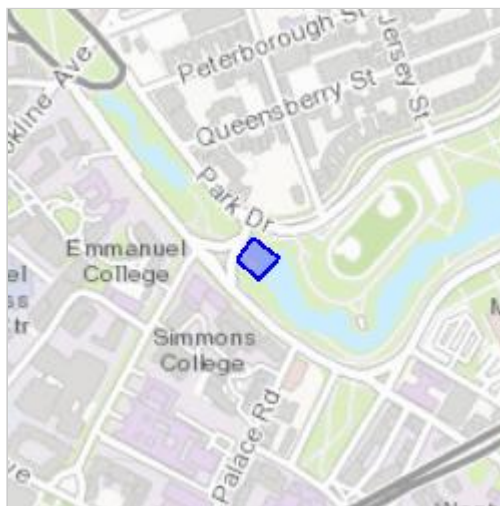
Project Type: DEVELOPMENT

Project Description: Current site development plans include a new Clinical Building with a below-grade footprint area of approximately 34,500 square feet (sf) and four below-grade levels. Excavation to construct the below-grade space will proceed to depths of about 65 to 75 ft below existing site grades, corresponding to approximately 35 to 45 ft below site groundwater levels. Dewatering is necessary to control groundwater, seepage, precipitation, and surface water runoff and construction-generated water to enable below-grade construction activities in-the-dry. Construction activities are underway; dewatering is anticipated to begin around May 2017 and will likely continue through approximately May 2019. Temporary construction dewatering will be conducted a NPDES RGP; this request for an official species list is to support the NPDES RGP NOI application.

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/42.34023351897317N71.0996369137462W>



Counties: Suffolk, MA

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on your 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. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

Critical habitats

There are no critical habitats within your project area.



United States Department of the Interior



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In Reply Refer To:

April 26, 2017

Consultation Code: 05E1NE00-2017-SLI-1417

Event Code: 05E1NE00-2017-E-02795

Project Name: Boston Children's Hospital Clinical Building (BCCB)

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.).

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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.

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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:

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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.

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New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2017-SLI-1417

Event Code: 05E1NE00-2017-E-02795

Project Name: Boston Children's Hospital Clinical Building (BCCB)

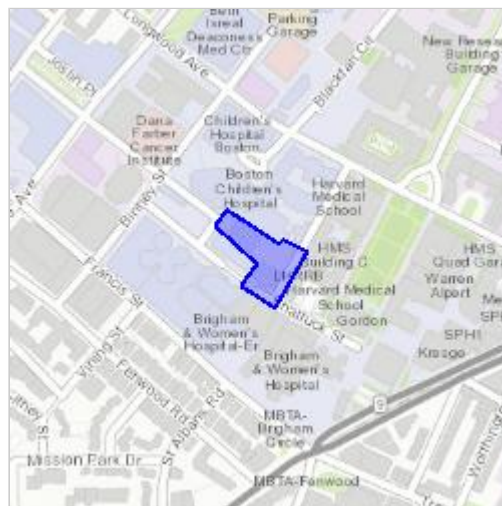
Project Type: DEVELOPMENT

Project Description: Current site development plans include a new Clinical Building with a below-grade footprint area of approximately 34,500 square feet (sf) and four below-grade levels. Excavation to construct the below-grade space will proceed to depths of about 65 to 75 ft below existing site grades, corresponding to approximately 35 to 45 ft below site groundwater levels. Dewatering is necessary to control groundwater, seepage, precipitation, and surface water runoff and construction-generated water to enable below-grade construction activities in-the-dry. Construction activities are underway; dewatering is anticipated to begin around May 2017 and will likely continue through approximately May 2019. Temporary construction dewatering will be conducted a NPDES RGP; this request for an official species list is to support the NPDES RGP NOI application.

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/42.33634754593064N71.10535227631351W>



Counties: Suffolk, MA

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on your 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. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

Critical habitats

There are no critical habitats within your project area.

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN
MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Barnstable	Piping Plover	Threatened	Coastal Beaches	All Towns
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Chatham
	Sandplain gerardia	Endangered	Open areas with sandy soils.	Sandwich and Falmouth.
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Bourne (north of the Cape Cod Canal)
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Berkshire	Bog Turtle	Threatened	Wetlands	Egremont and Sheffield
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Bristol	Piping Plover	Threatened	Coastal Beaches	Fairhaven, Dartmouth, Westport
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Fairhaven, New Bedford, Dartmouth, Westport
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Taunton
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Dukes	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Piping Plover	Threatened	Coastal Beaches	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Aquinnah and Chilmark
	Sandplain gerardia	Endangered	Open areas with sandy soils.	West Tisbury
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Franklin	Northeastern bulrush	Endangered	Wetlands	Montague, Warwick
	Dwarf wedgemussel	Endangered	Mill River	Whately
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampshire	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Hadley
	Puritan tiger beetle	Threatened	Sandy beaches along the Connecticut River	Northampton and Hadley
	Dwarf wedgemussel	Endangered	Rivers and Streams.	Hatfield, Amherst and Northampton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Nantucket	Piping Plover	Threatened	Coastal Beaches	Nantucket
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Nantucket
	American burying beetle	Endangered	Upland grassy meadows	Nantucket
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Plymouth	Piping Plover	Threatened	Coastal Beaches	Scituate, Marshfield, Duxbury, Plymouth, Wareham and Mattapoisett
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Kingston, Middleborough, Carver, Plymouth, Bourne, Wareham, Halifax, and Pembroke
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Plymouth, Marion, Wareham, and Mattapoisett.
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Suffolk	Piping Plover	Threatened	Coastal Beaches	Revere, Winthrop
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Worcester	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Leominster
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

¹Migratory only, scattered along the coast in small numbers

-Eastern cougar and gray wolf are considered extirpated in Massachusetts.

-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.

-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

APPENDIX F

**National Register of Historic Places and
Massachusetts Historical Commission Documentation**



7/2/15
Beas File

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

May 22, 2015

Douglas Kelleher
Epsilon Associates
3 Clock Tower Pl., #250
Maynard, MA 01754

RE: Children's Hospital 2012 IMP, Children's Clinical Building (CCB), Combined Heat & Power (CHP) Plant (300 Longwood Ave), Parking Garage Addition, & New Construction at 819 Beacon Street, Boston (Fenway), MA; MHC# RC.53231; EEA# 14964

Dear Mr. Kelleher:

Thank you for your letter dated April 22, 2015 and received at this office on April 24, 2015, concerning the proposed project referenced above. Staff of the Massachusetts Historical Commission (MHC) have reviewed the draft Memorandum of Agreement (MOA) and have the following comments.

In Stipulation I Photographic Documentation, please delete the words "the MHC" in the first sentence. The MHC does not wish to receive a copy of the photodocumentation.

In Stipulation II, Preservation Plan, please include "A copy of the final Preservation Plan shall be submitted to the MHC for MHC's files."

In Stipulation V, Longwood Medical and Academic Area Architectural Survey, please include "Completed new MHC Inventory Forms shall be submitted to the MHC in draft form for MHC's review and comment. Final original MHC Inventory forms shall be submitted to the MHC in archivally stable and digital format, consistent with the MHC's Survey Guidelines."

The MHC has not received any comments from the consulting parties regarding the draft MOA.

Please circulate the revised final MOA with the requested changes described above to the signatories for their signature and submit the original to the MHC for final signature.

These comments are offered to assist in compliance with M.G.L. Chapter 9, sections 26-27C (950 CMR 71.00) and MEPA (301 CMR 11).

Sincerely,

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

xc: Charles Weinstein, Boston Children's Hospital
Steve Chilton, MassDevelopment
Rosanne Foley, Boston Landmarks Commission
Greg Galer, Boston Preservation Alliance
Marilyn Sticklor, Goulston & Storrs

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Boston; Place: Fenway - Longwood; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
BOS.JE	Emerald Necklace Parks		Boston	
BOS.JG	Massachusetts Mental Health Center		Boston	
BOS.JH	Massachusetts State Hospitals and State Schools		Boston	
BOS.TC	Emmanuel College Campus		Boston	
BOS.ACA	Francis Street - Fenwood Road District		Boston	
BOS.7517	Boston Public Latin High School	78 Ave Louis Pasteur	Boston	1922
BOS.9293	Riverway - Brookline Avenue Bridge	Brookline Ave	Boston	1894
BOS.7358	Simmons College - South Hall	321 Brookline Ave	Boston	1905
BOS.7357	Massachusetts School of Art	364 Brookline Ave	Boston	1929
BOS.7359	Boston Fire Engine House #3	411 Brookline Ave	Boston	1873
BOS.7414	Lyons, John B. Three-Family House	7 Fenwood Rd	Boston	1910
BOS.7410	Farragut Primary School	10 Fenwood Rd	Boston	1903
BOS.7415	Spillane, Jeremiah C. Two-Family House	11 Fenwood Rd	Boston	1903
BOS.7416	Spillane, Jeremiah C. Two-Family House	15 Fenwood Rd	Boston	1903
BOS.16666	Sheean, Benjamin Two-Family House	17 Fenwood Rd	Boston	c 1899
BOS.16667	Dunn, F. and J. L. Two-Family House	19 Fenwood Rd	Boston	c 1899
BOS.16668	Whelan, M. J. and A. J. Two-Family House	21 Fenwood Rd	Boston	c 1899
BOS.16669	Mahan, E. J. Two-Family House	24 Fenwood Rd	Boston	c 1899
BOS.16670	Barry, Anna M. Two-Family House	30 Fenwood Rd	Boston	1909
BOS.16671	Stroud, F. W. Two-Family House	31 Fenwood Rd	Boston	c 1899
BOS.16672	Lowney, J. F. Two-Family House	32 Fenwood Rd	Boston	c 1899
BOS.16673	Kilduff, M. Two-Family House	33 Fenwood Rd	Boston	c 1899
BOS.16674	Holland, J. F. Two-Family House	35 Fenwood Rd	Boston	1901
BOS.7411	Olsson, H. C. Two-Family House	36 Fenwood Rd	Boston	c 1900
BOS.16675	Bailey, N. Two-Family House	39 Fenwood Rd	Boston	1899
BOS.7412	Mead, C. E. Two-Family House	40 Fenwood Rd	Boston	1900

Inv. No.	Property Name	Street	Town	Year
BOS.7417	Freiman, Max Two-Family House	43 Fenwood Rd	Boston	c 1899
BOS.16676	Hosmer, Ida A. Two-Family House	44 Fenwood Rd	Boston	c 1899
BOS.16677	Ewing, E. F. Two-Family House	47 Fenwood Rd	Boston	c 1899
BOS.7418	Spillane, Jeremiah C. Two-Family House	49 Fenwood Rd	Boston	c 1899
BOS.16678	Callahan, J. M. Two-Family House	50 Fenwood Rd	Boston	c 1899
BOS.7422	Dooley, Rose H. Three Decker	51 Fenwood Rd	Boston	c 1899
BOS.16679	Sampson, W. W. Two-Family House	52 Fenwood Rd	Boston	1899
BOS.16680	Leather, Annie Three-Decker	53 Fenwood Rd	Boston	1900
BOS.16681	Connor, Genevieve Three-Decker	54 Fenwood Rd	Boston	1904
BOS.16682	Spillane, J. C. Two-Family House	55 Fenwood Rd	Boston	c 1899
BOS.16683	Gregory, Gustina M. Two-Family House	56 Fenwood Rd	Boston	1905
BOS.16684	Moon, Patrick W. Two-Family House	57 Fenwood Rd	Boston	1902
BOS.16685	Connelly, C. J. Two-Family House	58 Fenwood Rd	Boston	c 1899
BOS.7711	Massachusetts Mental Health Center Main Building	74 Fenwood Rd	Boston	1912
BOS.7712	Massachusetts Mental Health Center Power House	74 Fenwood Rd	Boston	1912
BOS.7713	Massachusetts Mental Health Center Research Bldg.	74 Fenwood Rd	Boston	1954
BOS.7714	Massachusetts Mental Health Center Therapeutic Blg	74 Fenwood Rd	Boston	1957
BOS.9295	Massachusetts Mental Health Center Fence	74 Fenwood Rd	Boston	1912
BOS.16686	Santander Bank	2-6 Francis St	Boston	c 1999
BOS.16687	Donlan, D. Three-Decker	12 Francis St	Boston	1900
BOS.16688	Lindauer, Louisa Three-Decker	16 Francis St	Boston	1899
BOS.16689	Lindauer, Louisa Three-Decker	18 Francis St	Boston	c 1899
BOS.16690	Breen, Jane Three-Decker	20 Francis St	Boston	1899
BOS.16691	Cannon, P. and J. Three-Decker	22 Francis St	Boston	1900
BOS.7419	Crowley, Daniel Apartment Building	30 Francis St	Boston	c 1900
BOS.16692	Donovan, C. J. Three-Decker	32 Francis St	Boston	1898
BOS.16693	Donovan, C. J. Three-Decker	34 Francis St	Boston	1898
BOS.16694	Houriham, J. Three-Decker	36 Francis St	Boston	1898
BOS.16695	Cole, William S. Three-Decker	38 Francis St	Boston	1900
BOS.16696	McGovern, O. Three-Decker	40 Francis St	Boston	1901
BOS.9773	Francis Street Garden	42 Francis St	Boston	r 2000
BOS.16698	Hannan, R. and M. Three-Decker	44 Francis St	Boston	1898
BOS.16699	O'Neil, M. Three-Decker	46 Francis St	Boston	1901
BOS.16700	Cole, Mary A. Three-Decker	48 Francis St	Boston	1899
BOS.7421	Ilse, Fredericka Three-Decker	50 Francis St	Boston	1900

Inv. No.	Property Name	Street	Town	Year
BOS.16701	Sullivan, Mary Three-Decker	52 Francis St	Boston	1900
BOS.7423	Donovan, Jereh Three Decker	58 Francis St	Boston	1901
BOS.7494	Bangs, Edward A. - Bangs, Outram Double House	553-555 Huntington Ave	Boston	c 1900
BOS.7495	Stanley, Martha Apartment Building	641 Huntington Ave	Boston	1888
BOS.7496	Holmes, William Apartment Building	643-645 Huntington Ave	Boston	1888
BOS.7497	Brigham, Peter Bent Hospital	721 Huntington Ave	Boston	1911
BOS.9772	Hanlon Square	725 Huntington Ave	Boston	r 2000
BOS.7498	Harmon, James Apartment House and Commercial Block	733-739 Huntington Ave	Boston	1899
BOS.7499	Lyons, L. J. Apartment House	741-747 Huntington Ave	Boston	1899
BOS.16702	Avondale Chambers - Avondale Apartments	777-779 Huntington Ave	Boston	1916
BOS.9291	Longwood Avenue Bridge	Longwood Ave	Boston	c 1897
BOS.7504	Carlton Apartment Building	160 Longwood Ave	Boston	1892
BOS.7505	Westcourt Apartment Building	164 Longwood Ave	Boston	1900
BOS.7514	Massachusetts College of Pharmacy	179 Longwood Ave	Boston	1917
BOS.7506	Angell Memorial Animal Hospital	180 Longwood Ave	Boston	1915
BOS.7507	Harvard University Dental School and Hospital	188 Longwood Ave	Boston	1908
BOS.7515	Boston Lying-in Hospital	221 Longwood Ave	Boston	1922
BOS.7508	Harvard Medical School - Administrative Building	230-240 Longwood Ave	Boston	1906
BOS.7509	Harvard Medical School - Anatomy & Histology Bldg	230-240 Longwood Ave	Boston	1906
BOS.7510	Harvard Medical School - Physiological Chemistry	230-240 Longwood Ave	Boston	1906
BOS.7511	Harvard Medical School - Bacteriology & Pathology	230-240 Longwood Ave	Boston	1906
BOS.7512	Harvard Medical School - Pharmacology & Hygiene	230-240 Longwood Ave	Boston	1906
BOS.7516	Harvard Medical School - Vanderbilt Hall	245 Longwood Ave	Boston	1926
BOS.7513	Children's Hospital	300 Longwood Ave	Boston	1912
BOS.9292	Netherlands Road Bridge	Netherlands Rd	Boston	1894
BOS.7533	Girls Latin School	Palace Rd	Boston	1907
BOS.7534	Collins, Patrick A. Model School	Palace Rd	Boston	1907
BOS.7535	Boston Normal School	Palace Rd	Boston	1907
BOS.9288	Riverway Shelter and Toolhouse	Park Dr	Boston	1893
BOS.9289	Riverway - Chapel Street Bridge	Park Dr	Boston	1890
BOS.9290	Riverway - Bridle Path Bridge	Park Dr	Boston	1892
BOS.9617	Riverway Pathway	Park Dr	Boston	
BOS.7536	Riverway Administration Building	440 Park Dr	Boston	1898
BOS.7580	Simmons College - North Hall	86 Pilgrim Rd	Boston	1906

Inv. No.	Property Name	Street	Town	Year
BOS.7581	Simmons College - Refectory	86R Pilgrim Rd	Boston	1905
BOS.7582	Winsor School	103 Pilgrim Rd	Boston	1909
BOS.7583	New England Deaconess Hospital	175 Pilgrim Rd	Boston	1903
BOS.7584	Palmer Memorial Hospital	195 Pilgrim Rd	Boston	1927
BOS.9294	Route 9 Overpass and Retaining Wall	Rt 9	Boston	1936
BOS.7420	Crowley, Daniel Apartment Building	5 Saint Albans Rd	Boston	1900
BOS.16703	Kelley, Frank C. Two-Family House	24 Saint Albans Rd	Boston	1926
BOS.16697	McInerney, Elizabeth C. Two-Family House	26-28 Saint Albans Rd	Boston	c 1906
BOS.7683	Rotch, Thomas M. Jr. Memorial Hospital for Infants	55 Shattuck St	Boston	1910
BOS.7684	Hastings, Mary C. Hews House	2 Short St	Boston	c 1875
BOS.7685	Pope - Hastings, Bulkley A. House	4 Short St	Boston	c 1855
BOS.7408	Gardner, Isabella Stewart Museum	280 The Fenway	Boston	1900
BOS.7409	Simmons Female College	300 The Fenway	Boston	1901
BOS.7413	Boston Academy of Notre Dame	400 The Fenway	Boston	1916
BOS.13247	Emmanuel College - Saint Ann Dormitory	400 The Fenway	Boston	1961
BOS.13248	Emmanuel College - Campus Shop	400 The Fenway	Boston	1962
BOS.13249	Emmanuel College - Loretto Hall	400 The Fenway	Boston	1963
BOS.13250	Emmanuel College - Marian Hall	400 The Fenway	Boston	1954
BOS.13251	Emmanuel College - Saint Joseph Hall	400 The Fenway	Boston	1966
BOS.7706	Green, Joseph Three-Family House	7 Vancouver St	Boston	1900

APPENDIX G

Groundwater Laboratory Data Reports



ANALYTICAL REPORT

Lab Number:	L1514957
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Jessica Lefkowitz
Phone:	(617) 886-7400
Project Name:	BOSTON CHILDREN'S HOSPITAL CLI
Project Number:	35520-977
Report Date:	07/08/15

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

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



Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1514957-01	HA15-B5	WATER	Not Specified	06/30/15 11:55	06/30/15

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Case Narrative

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

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

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

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

HOLD POLICY

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

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

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Case Narrative (continued)

Sample Receipt

Sample "HA15-B5" was received without the container for Total Metals analysis. An aliquot was taken from an unpreserved container and preserved appropriately.

Semivolatile Organics

The WG799242-2/-3 LCS/LCSD recoveries, associated with L1514957-01 (HA15-B5), are below the acceptance criteria for benzoic acid (0%/0%); however, it has been identified as a "difficult" analyte. The results of the associated sample are reported.

Metals

The WG799321-2 LCS recovery, associated with L1514957-01 (HA15-B5), is above the acceptance criteria for selenium (132%); however, the associated sample is non-detect for this target analyte. The results of the original analysis are reported.

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

Authorized Signature:



Michelle M. Morris

Title: Technical Director/Representative

Date: 07/08/15

ORGANICS

VOLATILES

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/06/15 10:13
 Analyst: MM

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	1.1		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.8	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	3.1		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	2.5	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.5	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.5	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1
1,2-Dichloroethene, Total	8.0		ug/l	0.50	--	1
Trichloroethene	2.0		ug/l	0.50	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
Client ID: HA15-B5
Sample Location: Not Specified

Date Collected: 06/30/15 11:55
Date Received: 06/30/15
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichlorobenzene	ND		ug/l	2.5	--	1
1,3-Dichlorobenzene	ND		ug/l	2.5	--	1
1,4-Dichlorobenzene	ND		ug/l	2.5	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	8.0		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	5.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	5.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	5.0	--	1
Acetone	10		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	5.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.5	--	1
Tetrahydrofuran	ND		ug/l	5.0	--	1
2,2-Dichloropropane	ND		ug/l	2.5	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.5	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	2.5	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	2.5	--	1
o-Chlorotoluene	ND		ug/l	2.5	--	1
p-Chlorotoluene	ND		ug/l	2.5	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	2.5	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	111		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 1,8260C-SIM(M)
 Analytical Date: 07/06/15 10:13
 Analyst: MM

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)

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

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 14,504.1
 Analytical Date: 07/01/15 17:23
 Analyst: NS

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)
 Extraction Method: EPA 8011
 Extraction Date: 07/01/15 15:33

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	--	1	A

Project Name: BOSTON CHILDREN'S HOSPITAL CLI**Lab Number:** L1514957**Project Number:** 35520-977**Report Date:** 07/08/15**Method Blank Analysis
Batch Quality Control**

Analytical Method: 14,504.1
 Analytical Date: 07/01/15 16:31
 Analyst: NS

Extraction Method: EPA 8011
 Extraction Date: 07/01/15 15:33

Parameter	Result	Qualifier	Units	RL	MDL
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG799114-1					
1,2-Dibromoethane	ND		ug/l	0.010	-- A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	-- A

Project Name: BOSTON CHILDREN'S HOSPITAL CLI**Lab Number:** L1514957**Project Number:** 35520-977**Report Date:** 07/08/15**Method Blank Analysis
Batch Quality Control**

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

Analytical Date: 07/06/15 07:30

Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG800052-3					
1,4-Dioxane	ND		ug/l	3.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/06/15 07:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG800054-3					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.8	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	2.5	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	2.5	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.5	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/06/15 07:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG800054-3					
1,2-Dichloroethene (total)	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	2.5	--
1,3-Dichlorobenzene	ND		ug/l	2.5	--
1,4-Dichlorobenzene	ND		ug/l	2.5	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylene (Total)	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	5.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	5.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	5.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	5.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.5	--
Tetrahydrofuran	ND		ug/l	5.0	--
2,2-Dichloropropane	ND		ug/l	2.5	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.5	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/06/15 07:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG800054-3					
Bromobenzene	ND		ug/l	2.5	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	2.5	--
o-Chlorotoluene	ND		ug/l	2.5	--
p-Chlorotoluene	ND		ug/l	2.5	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	2.5	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--
1,2,4-Trichlorobenzene	ND		ug/l	2.5	--
1,3,5-Trimethylbenzene	ND		ug/l	2.5	--
1,3,5-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.5	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	2.5	--
Methyl Acetate	ND		ug/l	10	--
Ethyl Acetate	ND		ug/l	10	--
Isopropyl Ether	ND		ug/l	2.0	--
Cyclohexane	ND		ug/l	10	--
tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	10	--
Methyl cyclohexane	ND		ug/l	10	--
1,4-Diethylbenzene	ND		ug/l	2.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/06/15 07:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG800054-3					
4-Ethyltoluene	ND		ug/l	2.0	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	108		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01 Batch: WG799114-2									
1,2-Dibromoethane	107		-		70-130	-		20	A
1,2-Dibromo-3-chloropropane	100		-		70-130	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG800052-1 WG800052-2								
1,4-Dioxane	109		111		70-130	2		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG800054-1 WG800054-2								
Methylene chloride	101		102		70-130	1		20
1,1-Dichloroethane	101		100		70-130	1		20
Chloroform	98		97		70-130	1		20
Carbon tetrachloride	93		95		63-132	2		20
1,2-Dichloropropane	96		94		70-130	2		20
Dibromochloromethane	88		94		63-130	7		20
1,1,2-Trichloroethane	91		97		70-130	6		20
2-Chloroethylvinyl ether	86		89		70-130	3		20
Tetrachloroethene	92		93		70-130	1		20
Chlorobenzene	93		94		75-130	1		25
Trichlorofluoromethane	122		122		62-150	0		20
1,2-Dichloroethane	98		101		70-130	3		20
1,1,1-Trichloroethane	93		93		67-130	0		20
Bromodichloromethane	89		91		67-130	2		20
trans-1,3-Dichloropropene	81		86		70-130	6		20
cis-1,3-Dichloropropene	84		90		70-130	7		20
1,1-Dichloropropene	95		93		70-130	2		20
Bromoform	84		91		54-136	8		20
1,1,2,2-Tetrachloroethane	92		100		67-130	8		20
Benzene	95		94		70-130	1		25
Toluene	95		93		70-130	2		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG800054-1 WG800054-2								
Ethylbenzene	94		96		70-130	2		20
Chloromethane	96		92		64-130	4		20
Bromomethane	70		67		39-139	4		20
Vinyl chloride	99		99		55-140	0		20
Chloroethane	117		112		55-138	4		20
1,1-Dichloroethene	105		108		61-145	3		25
trans-1,2-Dichloroethene	94		92		70-130	2		20
Trichloroethene	95		94		70-130	1		25
1,2-Dichlorobenzene	92		93		70-130	1		20
1,3-Dichlorobenzene	94		96		70-130	2		20
1,4-Dichlorobenzene	91		95		70-130	4		20
Methyl tert butyl ether	85		90		63-130	6		20
p/m-Xylene	96		96		70-130	0		20
o-Xylene	94		95		70-130	1		20
cis-1,2-Dichloroethene	92		92		70-130	0		20
Dibromomethane	63	Q	67	Q	70-130	6		20
1,4-Dichlorobutane	95		99		70-130	4		20
1,2,3-Trichloropropane	90		98		64-130	9		20
Styrene	95		96		70-130	1		20
Dichlorodifluoromethane	108		106		36-147	2		20
Acetone	97		116		58-148	18		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG800054-1 WG800054-2								
Carbon disulfide	92		99		51-130	7		20
2-Butanone	100		107		63-138	7		20
Vinyl acetate	83		88		70-130	6		20
4-Methyl-2-pentanone	80		91		59-130	13		20
2-Hexanone	81		97		57-130	18		20
Ethyl methacrylate	78		85		70-130	9		20
Acrylonitrile	103		110		70-130	7		20
Bromochloromethane	88		93		70-130	6		20
Tetrahydrofuran	102		103		58-130	1		20
2,2-Dichloropropane	88		85		63-133	3		20
1,2-Dibromoethane	86		92		70-130	7		20
1,3-Dichloropropane	93		99		70-130	6		20
1,1,1,2-Tetrachloroethane	90		91		64-130	1		20
Bromobenzene	90		90		70-130	0		20
n-Butylbenzene	92		95		53-136	3		20
sec-Butylbenzene	93		96		70-130	3		20
tert-Butylbenzene	89		94		70-130	5		20
o-Chlorotoluene	96		95		70-130	1		20
p-Chlorotoluene	92		93		70-130	1		20
1,2-Dibromo-3-chloropropane	71		98		41-144	32	Q	20
Hexachlorobutadiene	80		81		63-130	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG800054-1 WG800054-2								
Isopropylbenzene	93		93		70-130	0		20
p-Isopropyltoluene	90		92		70-130	2		20
Naphthalene	66	Q	71		70-130	7		20
n-Propylbenzene	95		95		69-130	0		20
1,2,3-Trichlorobenzene	74		75		70-130	1		20
1,2,4-Trichlorobenzene	72		75		70-130	4		20
1,3,5-Trimethylbenzene	93		92		64-130	1		20
1,3,5-Trichlorobenzene	82		83		70-130	1		20
1,2,4-Trimethylbenzene	92		94		70-130	2		20
trans-1,4-Dichloro-2-butene	85		94		70-130	10		20
Ethyl ether	99		104		59-134	5		20
Methyl Acetate	92		103		70-130	11		20
Ethyl Acetate	92		102		70-130	10		20
Isopropyl Ether	95		96		70-130	1		20
Cyclohexane	101		102		70-130	1		20
Tert-Butyl Alcohol	89		89		70-130	0		20
Ethyl-Tert-Butyl-Ether	83		88		70-130	6		20
Tertiary-Amyl Methyl Ether	77		80		66-130	4		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	112		117		70-130	4		20
Methyl cyclohexane	94		98		70-130	4		20
p-Diethylbenzene	87		90		70-130	3		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG800054-1 WG800054-2								
4-Ethyltoluene	93		93		70-130	0		20
1,2,4,5-Tetramethylbenzene	81		83		70-130	2		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	106		108		70-130
Toluene-d8	105		104		70-130
4-Bromofluorobenzene	100		96		70-130
Dibromofluoromethane	105		107		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>	<i>Column</i>
Microextractables by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799114-3 QC Sample: L1514957-01 Client ID: HA15-B5													
1,2-Dibromoethane	ND	0.287	0.279	97		-	-		70-130	-		20	A
1,2-Dibromo-3-chloropropane	ND	0.287	0.291	101		-	-		70-130	-		20	A

SEMIVOLATILES

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 07/04/15 21:38
 Analyst: AL

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)
 Extraction Method: EPA 3510C
 Extraction Date: 07/02/15 00:38

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

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	33		21-120
Phenol-d6	20		10-120
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	77		15-120
2,4,6-Tribromophenol	83		10-120
4-Terphenyl-d14	79		41-149

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/02/15 12:25
 Analyst: MW

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)
 Extraction Method: EPA 3510C
 Extraction Date: 07/02/15 00:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.20	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	0.20		ug/l	0.20	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.20	--	1
Benzo(a)anthracene	ND		ug/l	0.20	--	1
Benzo(a)pyrene	ND		ug/l	0.20	--	1
Benzo(b)fluoranthene	ND		ug/l	0.20	--	1
Benzo(k)fluoranthene	ND		ug/l	0.20	--	1
Chrysene	ND		ug/l	0.20	--	1
Acenaphthylene	ND		ug/l	0.20	--	1
Anthracene	ND		ug/l	0.20	--	1
Benzo(ghi)perylene	ND		ug/l	0.20	--	1
Fluorene	ND		ug/l	0.20	--	1
Phenanthrene	0.40		ug/l	0.20	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.20	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.20	--	1
Pyrene	ND		ug/l	0.20	--	1
2-Methylnaphthalene	ND		ug/l	0.20	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	33		21-120
Phenol-d6	22		10-120
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	83		15-120
2,4,6-Tribromophenol	91		10-120
4-Terphenyl-d14	75		41-149

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/02/15 09:14
Analyst: MW

Extraction Method: EPA 3510C
Extraction Date: 07/02/15 00:40

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG799241-1					
Acenaphthene	ND		ug/l	0.20	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.20	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.20	--
Benzo(a)anthracene	ND		ug/l	0.20	--
Benzo(a)pyrene	ND		ug/l	0.20	--
Benzo(b)fluoranthene	ND		ug/l	0.20	--
Benzo(k)fluoranthene	ND		ug/l	0.20	--
Chrysene	ND		ug/l	0.20	--
Acenaphthylene	ND		ug/l	0.20	--
Anthracene	ND		ug/l	0.20	--
Benzo(ghi)perylene	ND		ug/l	0.20	--
Fluorene	ND		ug/l	0.20	--
Phenanthrene	ND		ug/l	0.20	--
Dibenzo(a,h)anthracene	ND		ug/l	0.20	--
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.20	--
Pyrene	ND		ug/l	0.20	--
2-Methylnaphthalene	ND		ug/l	0.20	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/02/15 09:14
Analyst: MW

Extraction Method: EPA 3510C
Extraction Date: 07/02/15 00:40

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG799241-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	31		21-120
Phenol-d6	20		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	70		15-120
2,4,6-Tribromophenol	75		10-120
4-Terphenyl-d14	64		41-149

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/04/15 16:28
Analyst: AL

Extraction Method: EPA 3510C
Extraction Date: 07/02/15 00:38

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG799242-1					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NitrosoDiPhenylAmine(NDPA)/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-Ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/04/15 16:28
Analyst: AL

Extraction Method: EPA 3510C
Extraction Date: 07/02/15 00:38

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG799242-1					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)Pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
P-Chloro-M-Cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/04/15 16:28
Analyst: AL

Extraction Method: EPA 3510C
Extraction Date: 07/02/15 00:38

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG799242-1					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	5.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	29		21-120
Phenol-d6	17		10-120
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	63		15-120
2,4,6-Tribromophenol	67		10-120
4-Terphenyl-d14	64		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG799241-2 WG799241-3								
Acenaphthene	68		67		37-111	1		40
2-Chloronaphthalene	73		71		40-140	3		40
Fluoranthene	73		73		40-140	0		40
Hexachlorobutadiene	64		62		40-140	3		40
Naphthalene	70		68		40-140	3		40
Benzo(a)anthracene	78		77		40-140	1		40
Benzo(a)pyrene	67		66		40-140	2		40
Benzo(b)fluoranthene	78		77		40-140	1		40
Benzo(k)fluoranthene	70		68		40-140	3		40
Chrysene	68		67		40-140	1		40
Acenaphthylene	81		80		40-140	1		40
Anthracene	72		71		40-140	1		40
Benzo(ghi)perylene	71		70		40-140	1		40
Fluorene	73		73		40-140	0		40
Phenanthrene	66		65		40-140	2		40
Dibenzo(a,h)anthracene	72		71		40-140	1		40
Indeno(1,2,3-cd)Pyrene	77		75		40-140	3		40
Pyrene	72		71		26-127	1		40
2-Methylnaphthalene	75		73		40-140	3		40
Pentachlorophenol	59		60		9-103	2		40
Hexachlorobenzene	66		65		40-140	2		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG799241-2 WG799241-3								
Hexachloroethane	67		66		40-140	2		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	34		33		21-120
Phenol-d6	23		23		10-120
Nitrobenzene-d5	77		75		23-120
2-Fluorobiphenyl	71		69		15-120
2,4,6-Tribromophenol	79		77		10-120
4-Terphenyl-d14	63		63		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG799242-2 WG799242-3								
Acenaphthene	64		78		37-111	20		30
Benzidine	17		24		10-75	34	Q	30
1,2,4-Trichlorobenzene	53		66		39-98	22		30
Hexachlorobenzene	70		88		40-140	23		30
Bis(2-chloroethyl)ether	70		83		40-140	17		30
2-Chloronaphthalene	61		76		40-140	22		30
1,2-Dichlorobenzene	53		63		40-140	17		30
1,3-Dichlorobenzene	52		61		40-140	16		30
1,4-Dichlorobenzene	52		60		36-97	14		30
3,3'-Dichlorobenzidine	58		67		40-140	14		30
2,4-Dinitrotoluene	76		93		24-96	20		30
2,6-Dinitrotoluene	74		92		40-140	22		30
Azobenzene	71		86		40-140	19		30
Fluoranthene	73		92		40-140	23		30
4-Chlorophenyl phenyl ether	66		82		40-140	22		30
4-Bromophenyl phenyl ether	69		87		40-140	23		30
Bis(2-chloroisopropyl)ether	69		82		40-140	17		30
Bis(2-chloroethoxy)methane	72		86		40-140	18		30
Hexachlorobutadiene	51		63		40-140	21		30
Hexachlorocyclopentadiene	36	Q	47		40-140	27		30
Hexachloroethane	47		56		40-140	17		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG799242-2 WG799242-3								
Isophorone	70		84		40-140	18		30
Naphthalene	58		73		40-140	23		30
Nitrobenzene	70		86		40-140	21		30
NDPA/DPA	73		87		40-140	18		30
n-Nitrosodi-n-propylamine	73		86		29-132	16		30
Bis(2-ethylhexyl)phthalate	74		90		40-140	20		30
Butyl benzyl phthalate	74		93		40-140	23		30
Di-n-butylphthalate	75		91		40-140	19		30
Di-n-octylphthalate	75		91		40-140	19		30
Diethyl phthalate	72		89		40-140	21		30
Dimethyl phthalate	72		90		40-140	22		30
Benzo(a)anthracene	72		88		40-140	20		30
Benzo(a)pyrene	73		90		40-140	21		30
Benzo(b)fluoranthene	74		90		40-140	20		30
Benzo(k)fluoranthene	76		97		40-140	24		30
Chrysene	73		89		40-140	20		30
Acenaphthylene	66		82		45-123	22		30
Anthracene	71		88		40-140	21		30
Benzo(ghi)perylene	73		91		40-140	22		30
Fluorene	68		84		40-140	21		30
Phenanthrene	70		87		40-140	22		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG799242-2 WG799242-3								
Dibenzo(a,h)anthracene	74		92		40-140	22		30
Indeno(1,2,3-cd)pyrene	74		90		40-140	20		30
Pyrene	73		90		26-127	21		30
Biphenyl	63		78		40-140	21		30
Aniline	31	Q	40		40-140	25		30
4-Chloroaniline	65		77		40-140	17		30
1-Methylnaphthalene	61		74		41-103	19		30
2-Nitroaniline	74		95		52-143	25		30
3-Nitroaniline	53		64		25-145	19		30
4-Nitroaniline	66		83		51-143	23		30
Dibenzofuran	67		83		40-140	21		30
2-Methylnaphthalene	59		74		40-140	23		30
n-Nitrosodimethylamine	32		38		22-74	17		30
2,4,6-Trichlorophenol	72		90		30-130	22		30
p-Chloro-m-cresol	64		81		23-97	23		30
2-Chlorophenol	57		69		27-123	19		30
2,4-Dichlorophenol	72		88		30-130	20		30
2,4-Dimethylphenol	62		75		30-130	19		30
2-Nitrophenol	72		84		30-130	15		30
4-Nitrophenol	27		36		10-80	29		30
2,4-Dinitrophenol	44		57		20-130	26		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG799242-2 WG799242-3								
4,6-Dinitro-o-cresol	63		81		20-164	25		30
Pentachlorophenol	56		72		9-103	25		30
Phenol	24		29		12-110	19		30
2-Methylphenol	48		59		30-130	21		30
3-Methylphenol/4-Methylphenol	47		58		30-130	21		30
2,4,5-Trichlorophenol	74		95		30-130	25		30
Benzoic Acid	0	Q	0	Q	10-164	NC		30
Benzyl Alcohol	52		62		26-116	18		30
Carbazole	72		89		55-144	21		30
Pyridine	26		29		10-66	11		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
2-Fluorophenol	33		40		21-120
Phenol-d6	21		25		10-120
Nitrobenzene-d5	72		83		23-120
2-Fluorobiphenyl	73		87		15-120
2,4,6-Tribromophenol	74		94		10-120
4-Terphenyl-d14	70		88		41-149



PCBS

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 5,608
 Analytical Date: 07/03/15 18:21
 Analyst: KB

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered (Metals)
 Extraction Method: EPA 608
 Extraction Date: 07/02/15 13:06
 Cleanup Method: EPA 3665A
 Cleanup Date: 07/03/15
 Cleanup Method: EPA 3660B
 Cleanup Date: 07/03/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.250	--	1	A
Aroclor 1221	ND		ug/l	0.250	--	1	A
Aroclor 1232	ND		ug/l	0.250	--	1	A
Aroclor 1242	ND		ug/l	0.250	--	1	A
Aroclor 1248	ND		ug/l	0.250	--	1	A
Aroclor 1254	ND		ug/l	0.250	--	1	A
Aroclor 1260	ND		ug/l	0.200	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	76		30-150	A

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 5,608
Analytical Date: 07/03/15 19:11
Analyst: KB

Extraction Method: EPA 608
Extraction Date: 07/02/15 13:06
Cleanup Method: EPA 3665A
Cleanup Date: 07/03/15
Cleanup Method: EPA 3660B
Cleanup Date: 07/03/15

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG799468-1						
Aroclor 1016	ND		ug/l	0.250	--	A
Aroclor 1221	ND		ug/l	0.250	--	A
Aroclor 1232	ND		ug/l	0.250	--	A
Aroclor 1242	ND		ug/l	0.250	--	A
Aroclor 1248	ND		ug/l	0.250	--	A
Aroclor 1254	ND		ug/l	0.250	--	A
Aroclor 1260	ND		ug/l	0.200	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		30-150	A
Decachlorobiphenyl	87		30-150	A

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>	<i>Column</i>
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799468-3 QC Sample: L1514957-01 Client ID: HA15-B5													
Aroclor 1016	ND	1	0.732	73		-	-		40-140	-		50	A
Aroclor 1260	ND	1	0.672	67		-	-		40-140	-		50	A

<i>Surrogate</i>	<i>MS</i>		<i>MSD</i>		<i>Acceptance Criteria</i>	<i>Column</i>
	<i>% Recovery</i>	<i>Qualifier</i>	<i>% Recovery</i>	<i>Qualifier</i>		
2,4,5,6-Tetrachloro-m-xylene	73				30-150	A
Decachlorobiphenyl	76				30-150	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG799468-2									
Aroclor 1016	74		-		40-140	-		50	A
Aroclor 1260	76		-		40-140	-		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68				30-150	A
Decachlorobiphenyl	87				30-150	A

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Project Number: 35520-977

Lab Number: L1514957

Report Date: 07/08/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799468-4 QC Sample: L1515065-01 Client ID: DUP Sample						
Aroclor 1016	ND	ND	ug/l	NC		50 A
Aroclor 1221	ND	ND	ug/l	NC		50 A
Aroclor 1232	ND	ND	ug/l	NC		50 A
Aroclor 1242	ND	ND	ug/l	NC		50 A
Aroclor 1248	ND	ND	ug/l	NC		50 A
Aroclor 1254	ND	ND	ug/l	NC		50 A
Aroclor 1260	ND	ND	ug/l	NC		50 A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	85		75		30-150	A
Decachlorobiphenyl	69		74		30-150	A

METALS

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
 Client ID: HA15-B5
 Sample Location: Not Specified
 Matrix: Water

Date Collected: 06/30/15 11:55
 Date Received: 06/30/15
 Field Prep: Field Filtered
 (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Westborough Lab											
Antimony, Total	0.0053		mg/l	0.0005	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Arsenic, Total	0.0014		mg/l	0.0005	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Cadmium, Total	ND		mg/l	0.0002	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Chromium, Total	0.0319		mg/l	0.0010	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Copper, Total	0.0025		mg/l	0.0010	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Iron, Total	0.12		mg/l	0.05	--	1	07/02/15 13:15	07/07/15 00:27	EPA 3005A	19,200.7	TT
Lead, Total	ND		mg/l	0.0005	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Mercury, Total	ND		mg/l	0.00020	--	1	07/02/15 15:58	07/02/15 18:48	EPA 245.1	3,245.1	EA
Nickel, Total	0.0024		mg/l	0.0005	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Selenium, Total	ND		mg/l	0.005	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Silver, Total	ND		mg/l	0.00040	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM
Zinc, Total	ND		mg/l	0.0100	--	1	07/02/15 13:22	07/06/15 20:22	EPA 3005A	1,6020A	BM



Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01 Batch: WG799320-1									
Iron, Total	ND	mg/l	0.05	--	1	07/02/15 13:15	07/06/15 23:06	19,200.7	TT

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01 Batch: WG799321-1									
Antimony, Total	ND	mg/l	0.0005	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Arsenic, Total	ND	mg/l	0.0005	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Cadmium, Total	ND	mg/l	0.0002	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Chromium, Total	ND	mg/l	0.0010	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Copper, Total	ND	mg/l	0.0010	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Lead, Total	ND	mg/l	0.0005	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Nickel, Total	ND	mg/l	0.0005	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Selenium, Total	ND	mg/l	0.005	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Silver, Total	ND	mg/l	0.0004	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM
Zinc, Total	ND	mg/l	0.0100	--	1	07/02/15 13:22	07/06/15 19:39	1,6020A	BM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01 Batch: WG799445-1									
Mercury, Total	ND	mg/l	0.00020	--	1	07/02/15 15:58	07/02/15 18:37	3,245.1	EA

Prep Information

Digestion Method: EPA 245.1



Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Westborough Lab Associated sample(s): 01 Batch: WG799320-2								
Iron, Total	110		-		85-115	-		
Total Metals - Westborough Lab Associated sample(s): 01 Batch: WG799321-2								
Antimony, Total	98		-		80-120	-		
Arsenic, Total	102		-		80-120	-		
Cadmium, Total	115		-		80-120	-		
Chromium, Total	98		-		80-120	-		
Copper, Total	96		-		80-120	-		
Lead, Total	102		-		80-120	-		
Nickel, Total	96		-		80-120	-		
Selenium, Total	132	Q	-		80-120	-		
Silver, Total	99		-		80-120	-		
Zinc, Total	105		-		80-120	-		
Total Metals - Westborough Lab Associated sample(s): 01 Batch: WG799445-2								
Mercury, Total	113		-		85-115	-		

Matrix Spike Analysis Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799320-4 QC Sample: L1514892-02 Client ID: MS Sample												
Iron, Total	ND	1	1.1	110		-	-		75-125	-		20
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799321-4 QC Sample: L1514892-02 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.5277	106		-	-		75-125	-		20
Arsenic, Total	0.0010	0.12	0.1284	106		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.0579	114		-	-		75-125	-		20
Chromium, Total	0.0020	0.2	0.1933	96		-	-		75-125	-		20
Copper, Total	ND	0.25	0.2506	100		-	-		75-125	-		20
Lead, Total	ND	0.51	0.5438	107		-	-		75-125	-		20
Nickel, Total	0.0041	0.5	0.4884	97		-	-		75-125	-		20
Selenium, Total	ND	0.12	0.128	107		-	-		75-125	-		20
Silver, Total	ND	0.05	0.0508	102		-	-		75-125	-		20
Zinc, Total	0.0231	0.5	0.5319	102		-	-		75-125	-		20
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799445-4 QC Sample: L1514974-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00525	105		-	-		70-130	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Project Number: 35520-977

Lab Number: L1514957

Report Date: 07/08/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799320-3 QC Sample: L1514892-01 Client ID: DUP Sample						
Iron, Total	ND	ND	mg/l	NC		20
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799321-3 QC Sample: L1514892-01 Client ID: DUP Sample						
Copper, Total	0.0129	0.0129	mg/l	0		20
Nickel, Total	0.0019	0.0020	mg/l	4		20
Selenium, Total	ND	ND	mg/l	NC		20
Zinc, Total	0.0390	0.0397	mg/l	2		20
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799445-3 QC Sample: L1514974-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

SAMPLE RESULTS

Lab ID: L1514957-01
Client ID: HA15-B5
Sample Location: Not Specified
Matrix: Water

Date Collected: 06/30/15 11:55
Date Received: 06/30/15
Field Prep: Field Filtered (Metals)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	27.		mg/l	5.0	NA	1	-	07/05/15 19:40	30,2540D	RP
Cyanide, Total	ND		mg/l	0.005	--	1	07/01/15 13:55	07/02/15 13:10	30,4500CN-CE	JO
Cyanide, Free	ND		ug/l	2.00	--	1	07/06/15 17:25	07/07/15 00:40	109,9016	AT
Cyanide, Amenable	ND		mg/l	0.010	--	2	07/02/15 10:52	07/02/15 15:43	30,4500CN-G	SP
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	06/30/15 23:00	30,4500CL-D	AS
TPH	ND		mg/l	4.00	--	1	07/01/15 14:00	07/01/15 22:00	74,1664A	ML
Phenolics, Total	ND		mg/l	0.030	--	1	07/06/15 12:15	07/06/15 14:38	4,420.1	MP
Chromium, Hexavalent	0.030		mg/l	0.010	--	1	07/01/15 02:05	07/01/15 02:26	119,3500CR-B	LH
Anions by Ion Chromatography - Westborough Lab										
Chloride	436.		mg/l	12.5	--	25	-	07/01/15 18:18	44,300.0	AU



Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG798824-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	06/30/15 23:00	30,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG798844-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	07/01/15 02:05	07/01/15 02:26	119,3500CR-B	LH
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG799088-1										
TPH	ND		mg/l	4.00	--	1	07/01/15 14:00	07/01/15 22:00	74,1664A	ML
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG799093-1										
Cyanide, Total	ND		mg/l	0.005	--	1	07/01/15 13:55	07/02/15 13:03	30,4500CN-CE	JO
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG799221-1										
Chloride	ND		mg/l	0.500	--	1	-	07/01/15 17:42	44,300.0	AU
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG799402-1										
Cyanide, Amenable	ND		mg/l	0.010	--	2	07/02/15 10:52	07/02/15 15:43	30,4500CN-G	SP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG799976-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	07/05/15 19:40	30,2540D	RP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG800063-1										
Phenolics, Total	ND		mg/l	0.030	--	1	07/06/15 09:00	07/06/15 11:28	4,420.1	MP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG800282-1										
Cyanide, Free	ND		ug/l	2.00	--	1	07/06/15 17:25	07/07/15 00:39	109,9016	AT

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1514957

Project Number: 35520-977

Report Date: 07/08/15

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG798824-2								
Chlorine, Total Residual	93		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG798844-2								
Chromium, Hexavalent	99		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG799088-2								
TPH	85		-		64-132	-		34
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG799093-2								
Cyanide, Total	100		-		90-110	-		
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG799221-2								
Chloride	99		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG799402-2								
Cyanide, Amenable	95		-			-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG800063-2								
Phenolics, Total	89		-		70-130	-		

Lab Control Sample Analysis**Batch Quality Control****Project Name:** BOSTON CHILDREN'S HOSPITAL CLI**Lab Number:** L1514957**Project Number:** 35520-977**Report Date:** 07/08/15

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG800282-2					
Cyanide, Free	84	-	75-125	-	

Matrix Spike Analysis Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG798844-4 QC Sample: L1514957-01 Client ID: HA15-B5												
Chromium, Hexavalent	0.030	0.1	0.132	102	-	-	-	-	85-115	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799088-4 QC Sample: L1514988-02 Client ID: MS Sample												
TPH	ND	22.7	18.0	79	-	-	-	-	64-132	-	-	34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799093-4 QC Sample: L1514988-02 Client ID: MS Sample												
Cyanide, Total	0.022	0.2	0.201	89	Q	-	-	-	90-110	-	-	30
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799221-3 WG799221-4 QC Sample: L1514708-05 Client ID: MS Sample												
Chloride	10.5	4	14.3	94	14.2	46	-	-	40-151	1	-	18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG800063-4 QC Sample: L1514957-01 Client ID: HA15-B5												
Phenolics, Total	ND	0.4	0.40	101	-	-	-	-	70-130	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG800282-3 QC Sample: L1514957-01 Client ID: HA15-B5												
Cyanide, Free	ND	50	39.7	79	-	-	-	-	70-130	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG798824-3 QC Sample: L1514957-01 Client ID: HA15-B5						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG798844-3 QC Sample: L1514957-01 Client ID: HA15-B5						
Chromium, Hexavalent	0.030	0.030	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799088-3 QC Sample: L1514957-01 Client ID: HA15-B5						
TPH	ND	ND	mg/l	NC		34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799093-3 QC Sample: L1514988-01 Client ID: DUP Sample						
Cyanide, Total	0.009	0.009	mg/l	5		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799402-3 QC Sample: L1514957-01 Client ID: HA15-B5						
Cyanide, Amenable	ND	ND	mg/l	NC		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG799976-2 QC Sample: L1514776-01 Client ID: DUP Sample						
Solids, Total Suspended	160	210	mg/l	27		29
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG800063-3 QC Sample: L1514957-01 Client ID: HA15-B5						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG800282-4 QC Sample: L1514957-01 Client ID: HA15-B5						
Cyanide, Free	ND	ND	ug/l	NC		20

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1514957-01A	Vial HCl preserved	A	N/A	4.1	Y	Absent	8260-SIM(14),8260(14)
L1514957-01B	Vial HCl preserved	A	N/A	4.1	Y	Absent	8260-SIM(14),8260(14)
L1514957-01C	Vial HCl preserved	A	N/A	4.1	Y	Absent	8260-SIM(14),8260(14)
L1514957-01D	Vial Na2S2O3 preserved	A	N/A	4.1	Y	Absent	504(14)
L1514957-01E	Vial Na2S2O3 preserved	A	N/A	4.1	Y	Absent	504(14)
L1514957-01F	Plastic 250ml HNO3 preserved spl	A	<2	4.1	Y	Absent	SE-6020T(180),CR-6020T(180),NI-6020T(180),CU-6020T(180),ZN-6020T(180),FE-UI(180),PB-6020T(180),HG-U(28),AS-6020T(180),SB-6020T(180),AG-6020T(180),CD-6020T(180)
L1514957-01G	Plastic 250ml NaOH preserved	A	>12	4.1	Y	Absent	TCN-4500(14),ACN-4500(14)
L1514957-01H	Brown Plastic 120ml NaOH preserv	A	N/A	4.1	Y	Absent	FCN-9016(14)
L1514957-01I	Plastic 120ml HNO3 preserved	A	<2	4.1	Y	Absent	HOLD-METAL(180)
L1514957-01J	Amber 1000ml HCl preserved	A	N/A	4.1	Y	Absent	TPH-1664(28)
L1514957-01K	Plastic 950ml unpreserved	A	7	4.1	Y	Absent	CL-300(28),HEXCR-3500(1),TRC-4500(1),TSS-2540(7)
L1514957-01L	Plastic 950ml unpreserved	A	7	4.1	Y	Absent	CL-300(28),HEXCR-3500(1),TRC-4500(1),TSS-2540(7)
L1514957-01M	Amber 1000ml HCl preserved	A	N/A	4.1	Y	Absent	TPH-1664(28)
L1514957-01N	Amber 950ml H2SO4 preserved	A	<2	4.1	Y	Absent	TPHENOL-420(28)
L1514957-01O	Amber 1000ml Na2S2O3	A	7	4.1	Y	Absent	PCB-608(7)
L1514957-01P	Amber 1000ml Na2S2O3	A	7	4.1	Y	Absent	PCB-608(7)
L1514957-01Q	Amber 1000ml unpreserved	A	7	4.1	Y	Absent	8270TCL(7),8270TCL-SIM(7)
L1514957-01R	Amber 1000ml unpreserved	A	7	4.1	Y	Absent	8270TCL(7),8270TCL-SIM(7)
L1514957-01S	Plastic 120ml HNO3 preserved	A	<2	4.1	Y	Absent	HOLD-METAL(180)

*Values in parentheses indicate holding time in days



Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

Report Format: Data Usability Report



Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

Data Qualifiers

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

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-977

Lab Number: L1514957
Report Date: 07/08/15

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.
- 4 Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.
- 5 Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).
- 14 Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.
- 19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.
- 30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 74 Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.
- 109 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Revision 0, June 2010.
- 119 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 21st Edition.

LIMITATION OF LIABILITIES

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

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



Certification Information

Last revised December 16, 2014

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

Westborough Facility

EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether.

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

EPA 8270D: 1-Methylnaphthalene, Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 625: 4-Chloroaniline, 4-Methylphenol.

SM4500: Soil: Total Phosphorus, TKN, NO₂, NO₃.

EPA 9071: Total Petroleum Hydrocarbons, Oil & Grease.

Mansfield Facility

EPA 8270D: Biphenyl.

EPA 2540D: TSS

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

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

Drinking Water

EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7:** Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;

EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

EPA 332: Perchlorate.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water

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

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

EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**

EPA 624: Volatile Halocarbons & Aromatics,

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

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

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

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

HALEY & ALDRICH

Haley & Aldrich, Inc.
465 Medford St.,
Suite 2200,
Boston, MA 02129-1402

CHAIN OF CUSTODY RECORD

L1514957

Phone (617) 886-7400
Fax (617) 886-7600

Page 1 of 1

H&A FILE NO. 35520-977 LABORATORY ALPHA ANALYTICAL DELIVERY DATE 6/30/2015
PROJECT NAME Boston Children's Hospital Clinical Building ADDRESS WESTBOROUGH, MA TURNAROUND TIME 5-DAY STANDARD
H&A CONTACT Teresa Cooper CONTACT GINA HALL PROJECT MANAGER J. LEFKOWITZ

Sample No.	Date	Time	Depth	Type	Analysis Requested														Number of Containers	Comments (special instructions, precautions, additional method numbers, etc.)
					1. VOCs 8260/8260-SIM	2. SVOCs 8270/8270-SIM	3. PCBs 608	4. TSS 160.2	5. EDB 504.1	6. TPH 1664	7. Total Phenol 420.1	8. Total Metals	9. Dissolved Metals	10. TRC 330.1, CI	11. TCN 335.2	12. Amenable Cyanide	13. Free Cyanide 9016	14. Hex Cr SM 3500		
H&A 150619 H&A 150619-05	6/30/15	11:55	-	Ag	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	18	Laboratory to use applicable DEP CAM methods, unless otherwise directed. 8. NPDES RGP list of metals: Cd, Cr, Cu, Pb, Ni, Ag, Zn, As, Se, Sb, Hg and Fe 9. Dissolved NPDES RGP list of metals (Field Filtered) **HOLD ANALYSIS OF DISSOLVED METALS FOR FIELD FILTERED SAMPLE <i>18 PCS</i>

Sampled and Relinquished by	Received by	LIQUID														Sampling Comments					
Sign: <i>A. Shay</i> Print: <i>A. Shay</i> Firm: <i>Haley & Aldrich, Inc.</i> Date: <i>6/30/15</i> Time: <i>16:30</i>	Sign: <i>John Trent</i> Print: <i>John Trent</i> Firm: <i>AAI</i> Date: <i>6/30/15</i> Time: <i>16:36</i>	X				X														VOA Vial	*Sample submitted for NPDES RGP permit application. Please follow appropriate testing methods and minimum detection levels as required by the EPA for the RGP.
			X	X			X	X											X	Amber Glass	
					X			X	X	X	X	X	X						X	Plastic Bottle	
		AF	A	AH	A	AH	AF	AE	AD	AD	A	AC	AC	AC	A					Preservative	
Relinquished by	Received by	40	1000	1000	1000	40	1000	500	250	250	500	250	250	250	500					Volume (mL.)	
Sign: <i>John Trent</i> Print: <i>John Trent</i> Firm: <i>AAI</i> Date: <i>6/30/15</i> Time: <i>18:40</i>	Sign: <i>Richard Scott</i> Print: <i>Richard Scott</i> Firm: <i>AAI</i> Date: <i>6/30/15</i> Time: <i>18:40</i>	SOLID																			
																				VOA Vial	
																				Amber Glass	
																				Clear Glass	
Relinquished by	Received by																			Preservative	Evidence samples were tampered with? YES NO
Sign:	Sign:																			Volume	If YES, please explain in section below.
Print:	Print:	PRESERVATION KEY																			
Firm:	Firm:	A	Sample chilled	C	NaOH	E	H ₂ SO ₄	G	Methanol												
Date:	Date:	B	Sample filtered	D	HNO ₃	F	HCl	H	Water (Na ₂ S ₂ O ₃ (circle))												

Presumptive Certainty Data Package (Laboratory to use applicable DEP CAM methods)

If Presumptive Certainty Data Package is needed, initial all sections:
 The required minimum field QC samples, as designated in BWSC CAM-VII have been or will be collected, as appropriate, to meet the requirements of Presumptive Certainty.
 Matrix Spike (MS) samples for MCP Metals and/or Cyanide are included and identified herein.
 This Chain of Custody Record (specify) includes does not include samples defined as Drinking Water Samples.
 If this Chain of Custody Record identifies samples defined as Drinking Water Samples, Trip Blanks and Field Duplicates are included and identified and analysis of TICs are required, as appropriate. Laboratory should (specify if applicable) analyze

Required Reporting Limits and Data Quality Objectives

<input type="checkbox"/> RC-S1	<input type="checkbox"/> S1	<input type="checkbox"/> GW1
<input type="checkbox"/> RC-S2	<input type="checkbox"/> S2	<input type="checkbox"/> GW2
<input type="checkbox"/> RC-GW1	<input type="checkbox"/> S3	<input type="checkbox"/> GW3
<input type="checkbox"/> RC-GW2		



ANALYTICAL REPORT

Lab Number:	L1615398
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Jessica Lefkowitz
Phone:	(617) 886-7400
Project Name:	BOSTON CHILDREN'S HOSPITAL
Project Number:	35520-410
Report Date:	05/25/16

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Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

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



Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1615398-01	B114(S)	WATER	Not Specified	05/20/16 09:07	05/20/16
L1615398-02	B114(D)	WATER	Not Specified	05/20/16 09:10	05/20/16
L1615398-03	B115(S)	WATER	Not Specified	05/20/16 11:10	05/20/16
L1615398-04	B5(OW)	WATER	Not Specified	05/20/16 11:15	05/20/16

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1615398

Project Number: 35520-410

Report Date: 05/25/16

MADEP MCP Response Action Analytical Report Certification

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

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

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



Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Case Narrative

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

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

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

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

HOLD POLICY

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

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

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Case Narrative (continued)

MCP Related Narratives

Volatile Organics


In reference to question H:

The initial calibration, associated with L1615398-01 through -04 (all samples), did not meet the method required minimum response factor on the lowest calibration standard for , 4-methyl-2-pentanone (0.094), and 1,4-dioxane (0.001), as well as the average response factor for 1,4-dioxane. The initial calibration verification is outside acceptance criteria for bromoform (135%), but within overall method criteria

The continuing calibration standard, associated with L1615398-01 through -04 (all samples), is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this report.

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

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 05/25/16

ORGANICS

VOLATILES

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

SAMPLE RESULTS

Lab ID: L1615398-01
 Client ID: B114(S)
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 05/24/16 13:02
 Analyst: MM

Date Collected: 05/20/16 09:07
 Date Received: 05/20/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	1.8		ug/l	1.0	--	1
Carbon tetrachloride	1.3		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	28		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	3.0		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	3.3		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1615398**Project Number:** 35520-410**Report Date:** 05/25/16**SAMPLE RESULTS**

Lab ID: L1615398-01

Date Collected: 05/20/16 09:07

Client ID: B114(S)

Date Received: 05/20/16

Sample Location: Not Specified

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	4.3		ug/l	1.0	--	1
1,2-Dichloroethene (total)	4.3		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1615398**Project Number:** 35520-410**Report Date:** 05/25/16**SAMPLE RESULTS**

Lab ID: L1615398-01

Date Collected: 05/20/16 09:07

Client ID: B114(S)

Date Received: 05/20/16

Sample Location: Not Specified

Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	100		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

SAMPLE RESULTS

Lab ID: L1615398-02
Client ID: B114(D)
Sample Location: Not Specified
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 05/24/16 13:33
Analyst: MM

Date Collected: 05/20/16 09:10
Date Received: 05/20/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	1.1		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	39		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	9.4		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1615398**Project Number:** 35520-410**Report Date:** 05/25/16**SAMPLE RESULTS**

Lab ID: L1615398-02

Date Collected: 05/20/16 09:10

Client ID: B114(D)

Date Received: 05/20/16

Sample Location: Not Specified

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	9.7		ug/l	1.0	--	1
1,2-Dichloroethene (total)	9.7		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1615398**Project Number:** 35520-410**Report Date:** 05/25/16**SAMPLE RESULTS**

Lab ID: L1615398-02

Date Collected: 05/20/16 09:10

Client ID: B114(D)

Date Received: 05/20/16

Sample Location: Not Specified

Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

SAMPLE RESULTS

Lab ID: L1615398-03
 Client ID: B115(S)
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 05/24/16 14:04
 Analyst: MM

Date Collected: 05/20/16 11:10
 Date Received: 05/20/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	3.9		ug/l	1.0	--	1
Carbon tetrachloride	15		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	24		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	10		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	2.0		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1615398**Project Number:** 35520-410**Report Date:** 05/25/16**SAMPLE RESULTS**

Lab ID: L1615398-03

Date Collected: 05/20/16 11:10

Client ID: B115(S)

Date Received: 05/20/16

Sample Location: Not Specified

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	2.2		ug/l	1.0	--	1
1,2-Dichloroethene (total)	2.2		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	3.0		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

SAMPLE RESULTS

Lab ID: L1615398-03
 Client ID: B115(S)
 Sample Location: Not Specified

Date Collected: 05/20/16 11:10
 Date Received: 05/20/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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MCP Volatile Organics - Westborough Lab

Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	100		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

SAMPLE RESULTS

Lab ID: L1615398-04
 Client ID: B5(OW)
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 05/24/16 14:35
 Analyst: MM

Date Collected: 05/20/16 11:15
 Date Received: 05/20/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	27		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	4.4		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1615398**Project Number:** 35520-410**Report Date:** 05/25/16**SAMPLE RESULTS**

Lab ID: L1615398-04

Date Collected: 05/20/16 11:15

Client ID: B5(OW)

Date Received: 05/20/16

Sample Location: Not Specified

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	8.3		ug/l	1.0	--	1
1,2-Dichloroethene (total)	8.3		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1615398**Project Number:** 35520-410**Report Date:** 05/25/16**SAMPLE RESULTS**

Lab ID: L1615398-04

Date Collected: 05/20/16 11:15

Client ID: B5(OW)

Date Received: 05/20/16

Sample Location: Not Specified

Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	98		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 05/24/16 07:25
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-04 Batch: WG897686-3					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 05/24/16 07:25
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-04 Batch: WG897686-3					
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylene (Total)	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene (total)	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 05/24/16 07:25
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-04 Batch: WG897686-3					
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--
Ethyl Acetate	ND		ug/l	10	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.0	--
Iodomethane	ND		ug/l	10	--
tert-Butyl Alcohol	ND		ug/l	10	--
Vinyl acetate	ND		ug/l	2.5	--
Acrolein	ND		ug/l	10	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Ethyl methacrylate	ND		ug/l	5.0	--
Methyl cyclohexane	ND		ug/l	10	--
Cyclohexane	ND		ug/l	10	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
1,4-Diethylbenzene	ND		ug/l	2.0	--
4-Ethyltoluene	ND		ug/l	2.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 05/24/16 07:25
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-04 Batch: WG897686-3					
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Halothane	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG897686-1 WG897686-2								
Methylene chloride	88		89		70-130	1		20
1,1-Dichloroethane	91		93		70-130	2		20
Chloroform	90		91		70-130	1		20
Carbon tetrachloride	94		94		70-130	0		20
1,2-Dichloropropane	96		98		70-130	2		20
Dibromochloromethane	84		87		70-130	4		20
1,1,2-Trichloroethane	85		87		70-130	2		20
Tetrachloroethene	92		90		70-130	2		20
Chlorobenzene	94		92		70-130	2		20
Trichlorofluoromethane	90		92		70-130	2		20
1,2-Dichloroethane	89		91		70-130	2		20
1,1,1-Trichloroethane	93		95		70-130	2		20
Bromodichloromethane	91		91		70-130	0		20
trans-1,3-Dichloropropene	89		90		70-130	1		20
cis-1,3-Dichloropropene	96		99		70-130	3		20
1,1-Dichloropropene	95		97		70-130	2		20
Bromoform	91		95		70-130	4		20
1,1,2,2-Tetrachloroethane	82		82		70-130	0		20
Benzene	93		94		70-130	1		20
Toluene	90		89		70-130	1		20
Ethylbenzene	94		94		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG897686-1 WG897686-2								
Chloromethane	86		85		70-130	1		20
Bromomethane	120		108		70-130	11		20
Vinyl chloride	92		90		70-130	2		20
Chloroethane	109		105		70-130	4		20
1,1-Dichloroethene	91		92		70-130	1		20
trans-1,2-Dichloroethene	90		92		70-130	2		20
Trichloroethene	94		94		70-130	0		20
1,2-Dichlorobenzene	91		89		70-130	2		20
1,3-Dichlorobenzene	92		94		70-130	2		20
1,4-Dichlorobenzene	88		90		70-130	2		20
Methyl tert butyl ether	81		82		70-130	1		20
p/m-Xylene	94		92		70-130	2		20
o-Xylene	92		90		70-130	2		20
cis-1,2-Dichloroethene	92		94		70-130	2		20
Dibromomethane	90		90		70-130	0		20
1,2,3-Trichloropropane	81		85		70-130	5		20
Styrene	96		98		70-130	2		20
Dichlorodifluoromethane	87		87		70-130	0		20
Acetone	73		70		70-130	4		20
Carbon disulfide	94		98		70-130	4		20
2-Butanone	87		85		70-130	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG897686-1 WG897686-2								
4-Methyl-2-pentanone	92		96		70-130	4		20
2-Hexanone	87		86		70-130	1		20
Bromochloromethane	93		96		70-130	3		20
Tetrahydrofuran	84		83		70-130	1		20
2,2-Dichloropropane	104		106		70-130	2		20
1,2-Dibromoethane	85		87		70-130	2		20
1,3-Dichloropropane	87		85		70-130	2		20
1,1,1,2-Tetrachloroethane	93		93		70-130	0		20
Bromobenzene	89		91		70-130	2		20
n-Butylbenzene	71		71		70-130	0		20
sec-Butylbenzene	81		81		70-130	0		20
tert-Butylbenzene	83		81		70-130	2		20
o-Chlorotoluene	90		92		70-130	2		20
p-Chlorotoluene	89		90		70-130	1		20
1,2-Dibromo-3-chloropropane	80		81		70-130	1		20
Hexachlorobutadiene	88		88		70-130	0		20
Isopropylbenzene	95		96		70-130	1		20
p-Isopropyltoluene	83		84		70-130	1		20
Naphthalene	95		97		70-130	2		20
n-Propylbenzene	88		89		70-130	1		20
1,2,3-Trichlorobenzene	93		94		70-130	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG897686-1 WG897686-2								
1,2,4-Trichlorobenzene	87		88		70-130	1		20
1,3,5-Trimethylbenzene	85		85		70-130	0		20
1,2,4-Trimethylbenzene	86		86		70-130	0		20
Ethyl ether	81		82		70-130	1		20
Isopropyl Ether	83		86		70-130	4		20
Ethyl-Tert-Butyl-Ether	88		91		70-130	3		20
Tertiary-Amyl Methyl Ether	90		92		70-130	2		20
1,4-Dioxane	99		92		70-130	7		20
Ethyl Acetate	88		90		70-130	2		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	90		91		70-130	1		20
Iodomethane	30	Q	44	Q	70-130	38	Q	20
tert-Butyl Alcohol	82		80		70-130	2		20
Vinyl acetate	89		90		70-130	1		20
Acrolein	174	Q	187	Q	70-130	7		20
2-Chloroethylvinyl ether	95		98		70-130	3		20
Ethyl methacrylate	87		85		70-130	2		20
Methyl cyclohexane	92		96		70-130	4		20
Cyclohexane	96		94		70-130	2		20
trans-1,4-Dichloro-2-butene	77		83		70-130	8		20
1,4-Diethylbenzene	74		73		70-130	1		20
4-Ethyltoluene	87		87		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG897686-1 WG897686-2								
1,2,4,5-Tetramethylbenzene	107		108		70-130	1		20
1,4-Dichlorobutane	96		97		70-130	1		20
Acrylonitrile	88		90		70-130	2		20
Halothane	92		93		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		92		70-130
Toluene-d8	94		94		70-130
4-Bromofluorobenzene	95		95		70-130
Dibromofluoromethane	98		100		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1615398-01A	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-01B	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-01C	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-02A	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-02B	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-02C	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-03A	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-03B	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-03C	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-04A	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-04B	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)
L1615398-04C	Vial HCl preserved	A	N/A	3.5	Y	Absent	MCP-8260-10(14)

*Values in parentheses indicate holding time in days

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

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

Report Format: Data Usability Report



Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

Data Qualifiers

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

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 35520-410

Lab Number: L1615398
Report Date: 05/25/16

REFERENCES

- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

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

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



Certification Information

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

Westborough Facility

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

Mansfield Facility

EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: **8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:** Lead; **8270D:** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

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

Drinking Water

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

Non-Potable Water

EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N, **SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF.**

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



Haley & Aldrich, Inc.
465 Medford St.,
Suite 2200,
Boston, MA 02129-1402

CHAIN OF CUSTODY RECORD

Phone (617) 886-7400
Fax (617) 886-7600

Page 1 of 1

H&A FILE NO.	35520-410	LABORATORY	Alpha	DELIVERY DATE	05/20/16
PROJECT NAME	Boston Children's Hospital C&S	ADDRESS	Westboro MA	TURNAROUND TIME	3 day Rush
H&A CONTACT	J. Thibault / T. Cooper	CONTACT	G. Hall	PROJECT MANAGER	J. Lepkowitz

Sample No.	Date	Time	Depth	Type	Analysis Requested													Number of Containers	Comments (special instructions, precautions, additional method numbers, etc.)	
					① VOA	ABNS PAH only	MCP Metals	Pesticides PCBs	VPH Full Suite C-ranges only	EPH Full Suite C-ranges only	TPH (specify)	TCLP (specify)	Reactivity Ignitability Corrosivity							
B114 (S)	05/20/15	0907	-	AQ	X														3	Laboratory to use applicable DEP CAM methods, unless otherwise directed. ① 8260
B114 (D)	↓	0910	-	↓	X														3	
B115 (S)	↓	1110	-	↓	X														3	
B5 (ow)	05/20/15	1115	-	AQ	X														3	

Sampled and Relinquished by Sign: [Signature] Print: Matthew Dodson Firm: Haley & Aldrich Date: 5/20/16 Time: 1505	Received by Sign: [Signature] Print: Mase Amiel Firm: AAC Date: 5/20/16 Time: 1000	LIQUID <input checked="" type="checkbox"/> VOA Vial <input type="checkbox"/> Amber Glass <input type="checkbox"/> Plastic Bottle <input type="checkbox"/> Preservative <input type="checkbox"/> Volume	Sampling Comments
Relinquished by Sign: [Signature] Print: Mase Amiel Firm: AAC Date: 5/20/16 Time: 1716	Received by Sign: [Signature] Print: William Wells Firm: High Date: 5/20/16 Time: 1716	SOLID <input type="checkbox"/> VOA Vial <input type="checkbox"/> Amber Glass <input type="checkbox"/> Clear Glass <input type="checkbox"/> Preservative <input type="checkbox"/> Volume	Evidence samples were tampered with? YES NO If YES, please explain in section below.
Relinquished by Sign: _____ Print: _____ Firm: _____ Date: _____ Time: _____		Received by Sign: _____ Print: _____ Firm: _____ Date: _____ Time: _____	PRESERVATION KEY A Sample chilled C NaOH E H ₂ SO ₄ G Methanol B Sample filtered D HNO ₃ F HCL H Water/NaHSO ₄ (circle)

If Presumptive Certainty Data Package is needed, initial all sections: The required minimum field QC samples, as designated in BWSC CAM-VII have been or will be collected, as appropriate, to meet the requirements of Presumptive Certainty. Matrix Spike (MS) samples for MCP Metals and/or Cyanide are included and identified herein. This Chain of Custody Record (specify) _____ includes _____ does not include samples defined as Drinking Water Samples. If this Chain of Custody Record identifies samples defined as Drinking Water Samples, Trip Blanks and Field Duplicates are included and identified and analysis of TICs are required, as appropriate. Laboratory should (specify if applicable) _____ analyze	Required Reporting Limits and Data Quality Objectives <input type="checkbox"/> RC-S1 <input type="checkbox"/> S1 <input type="checkbox"/> GW1 <input type="checkbox"/> RC-S2 <input type="checkbox"/> S2 <input type="checkbox"/> GW2 <input type="checkbox"/> RC-GW1 <input type="checkbox"/> S3 <input type="checkbox"/> GW3 <input type="checkbox"/> RC-GW2
--	---

7A
Volatile Organics CONTINUING CALIBRATION CHECK

Lab Name: Alpha Analytical Labs

SDG No.: L1615398

Instrument ID: Jack.i Calibration Date: 24-MAY-2016 Time: 05:53

Lab File ID: VJ160524A0 Init. Calib. Date(s): 09-MAY-2 09-MAY-2

Sample No: 8260 CCAL 1 Init. Calib. Times : 11:55 15:10

Compound	RRF	RRF	MIN RRF	%D	MAX %D	
dichlorodifluoromethane	.40999	.35711	.1	-13	20	
chloromethane	.24704	.21361	.1	-14	20	
vinyl chloride	.3412	.31342	.1	-8	20	
bromomethane	.16122	.19286	.1	20	20	
chloroethane	.14779	.16111	.1	9	20	
trichlorofluoromethane	.60766	.54427	.1	-10	20	
ethyl ether	.15878	.12878	.05	-19	20	
1,1,-dichloroethene	.36744	.33523	.1	-9	20	
carbon disulfide	.89077	.84011	.1	-6	20	
freon-113	.38161	.34501	.1	-10	20	
iodomethane	.40601	.12259	.05	-70	20	F
acrolein	.0153	.02665	.05	74	20	F
methylene chloride	.30396	.26609	.1	-12	20	
acetone	100	72.838	.1	-27	20	F
trans-1,2-dichloroethene	.39316	.35197	.1	-10	20	
methyl acetate	.13189	.1065	.1	-19	20	
methyl tert butyl ether	.73409	.59647	.1	-19	20	
tert butyl alcohol	.01382	.0113	.05	-18	20	F
Diisopropyl Ether	1.2026	1.0006	.01	-17	20	
1,1-dichloroethane	.66827	.60991	.2	-9	20	
acrylonitrile	.07507	.06601	.05	-12	20	
Halothane	.32124	.29534	.05	-8	20	
Ethyl-Tert-Butyl-Ether	.95283	.841	.05	-12	20	
vinyl acetate	.66888	.59402	.05	-11	20	
cis-1,2-dichloroethene	.44516	.40786	.1	-8	20	
2,2-dichloropropane	.5224	.54428	.05	4	20	
cyclohexane	.65214	.62527	.01	-4	30	
bromochloromethane	.20365	.18926	.05	-7	20	
chloroform	.67973	.61549	.2	-9	20	
carbontetrachloride	.61351	.57404	.1	-6	20	
tetrahydrofuran	.07634	.06424	.05	-16	20	
ethyl acetate	.22348	.1963	.05	-12	20	
1,1,1-trichloroethane	.66057	.61641	.1	-7	20	
1,1-dichloropropene	.52285	.49587	.05	-5	20	
2-butanone	.0934	.08164	.1	-13	20	F
benzene	1.5651	1.4598	.5	-7	20	
Tertiary-Amyl Methyl Ether	.76264	.68939	.05	-10	20	
1,2-dichloroethane	.40854	.3629	.1	-11	20	

FORM VII MCP-8260-10

7A
CONTINUING CALIBRATION CHECK

Lab Name: Alpha Analytical Labs

SDG No.: L1615398

Instrument ID: Jack.i Calibration Date: 24-MAY-2016 Time: 05:53

Lab File ID: VJ160524A0 Init. Calib. Date(s): 09-MAY-2 09-MAY-2

Sample No: 8260 CCAL 1 Init. Calib. Times : 11:55 15:10

Compound	RRF	RRF	MIN RRF	%D	MAX %D
=====	=====	=====	=====	=====	=====
methyl cyclohexane	.67585	.62375	.01	-8	30
trichloroethene	.43659	.4107	.2	-6	20
dibromomethane	.19015	.17067	.05	-10	20
1,2-dichloropropane	.34014	.32601	.1	-4	20
bromodichloromethane	.45577	.41672	.2	-9	20
1,4-dioxane	.00136	.00135	.05	-1	20
2-chloroethylvinyl ether	.15225	.14405	.05	-5	20
cis-1,3-dichloropropene	.51596	.49437	.2	-4	20
toluene	1.7138	1.5484	.4	-10	20
tetrachloroethene	.85577	.78735	.2	-8	20
4-methyl-2-pentanone	.06315	.05816	.1	-8	20
trans-1,3-dichloropropene	.72271	.64209	.1	-11	20
1,1,2-trichloroethane	.36607	.31204	.1	-15	20
ethyl-methacrylate	.46713	.40657	.01	-13	30
chlorodibromomethane	.53653	.44855	.1	-16	20
1,3-dichloropropane	.73232	.63777	.05	-13	20
1,2-dibromoethane	.43894	.37142	.1	-15	20
2-hexanone	.18832	.16359	.1	-13	20
chlorobenzene	1.4764	1.3910	.5	-6	20
ethyl benzene	2.2312	2.0895	.1	-6	20
1,1,1,2-tetrachloroethane	.5414	.50574	.05	-7	20
p/m xylene	.88027	.82336	.1	-6	20
o xylene	.79529	.72905	.3	-8	20
bromoform	.45997	.41888	.1	-9	20
styrene	1.1777	1.1311	.3	-4	20
isopropylbenzene	4.6503	4.4156	.1	-5	20
bromobenzene	1.1065	.98313	.05	-11	20
1,4-dichlorobutane	.93935	.90549	.01	-4	30
n-propylbenzene	4.7761	4.2176	.05	-12	20
1,1,2,2,-tetrachloroethane	.6122	.49883	.3	-19	20
4-ethyltoluene	4.0036	3.4863	.05	-13	20
2-chlorotoluene	3.1145	2.8165	.05	-10	20
1,2,3-trichloropropane	.48482	.39424	.05	-19	20
1,3,5-trimethybenzene	3.4156	2.9046	.05	-15	20
trans-1,4-dichloro-2-butene	.17274	.13376	.05	-23	20
4-chorotoluene	2.8623	2.5479	.05	-11	20
tert-butylbenzene	3.1591	2.6248	.05	-17	20
1,2,4-trimethylbenzene	3.1315	2.7071	.05	-14	20

F

F

F

FORM VII MCP-8260-10



ANALYTICAL REPORT

Lab Number:	L1615699
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Jessica Lefkowitz
Phone:	(617) 886-7400
Project Name:	BOSTON CHILDREN'S HOSPITAL CLI
Project Number:	35520-410
Report Date:	05/27/16

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Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

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Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1615699-01	B102 (D)	WATER	Not Specified	05/24/16 09:30	05/24/16
L1615699-02	B115 (D)	WATER	Not Specified	05/24/16 10:45	05/24/16

Project Name: BOSTON CHILDREN'S HOSPITAL CLI

Lab Number: L1615699

Project Number: 35520-410

Report Date: 05/27/16

MADEP MCP Response Action Analytical Report Certification

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

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

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



Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Case Narrative

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

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

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

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

HOLD POLICY

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

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

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Case Narrative (continued)

MCP Related Narratives

Volatile Organics


In reference to question H:

The initial calibration, associated with L1615699-01 and -02 (all samples), did not meet the method required minimum response factor on the lowest calibration standard for 4-methyl-2-pentanone (0.06449), and 1,4-dioxane (0.00147), as well as the average response factor for 1,4-dioxane. The initial calibration verification is outside acceptance criteria for bromoform (137%), but within overall method criteria.

The continuing calibration standard, associated with L1615699-01 and -02 (all samples), is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this report.

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

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 05/27/16

ORGANICS

VOLATILES

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

SAMPLE RESULTS

Lab ID: L1615699-01
 Client ID: B102 (D)
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 05/26/16 16:20
 Analyst: MM

Date Collected: 05/24/16 09:30
 Date Received: 05/24/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	55		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	6.9		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

SAMPLE RESULTS

Lab ID: L1615699-01
 Client ID: B102 (D)
 Sample Location: Not Specified

Date Collected: 05/24/16 09:30
 Date Received: 05/24/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	13		ug/l	1.0	--	1
1,2-Dichloroethene (total)	13		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

SAMPLE RESULTS

Lab ID: L1615699-01
 Client ID: B102 (D)
 Sample Location: Not Specified

Date Collected: 05/24/16 09:30
 Date Received: 05/24/16
 Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	101		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

SAMPLE RESULTS

Lab ID: L1615699-02
 Client ID: B115 (D)
 Sample Location: Not Specified
 Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 05/26/16 16:51
 Analyst: MM

Date Collected: 05/24/16 10:45
 Date Received: 05/24/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	31		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	5.1		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

SAMPLE RESULTS

Lab ID: L1615699-02
Client ID: B115 (D)
Sample Location: Not Specified

Date Collected: 05/24/16 10:45
Date Received: 05/24/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylene (Total)	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	8.6		ug/l	1.0	--	1
1,2-Dichloroethene (total)	8.6		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

SAMPLE RESULTS

Lab ID: L1615699-02
 Client ID: B115 (D)
 Sample Location: Not Specified

Date Collected: 05/24/16 10:45
 Date Received: 05/24/16
 Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	101		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 05/26/16 09:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-02 Batch: WG898100-3					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 05/26/16 09:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-02 Batch: WG898100-3					
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylene (Total)	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene (total)	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 97,8260C
Analytical Date: 05/26/16 09:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-02 Batch: WG898100-3					
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG898100-1 WG898100-2								
Methylene chloride	102		98		70-130	4		20
1,1-Dichloroethane	110		106		70-130	4		20
Chloroform	107		103		70-130	4		20
Carbon tetrachloride	105		103		70-130	2		20
1,2-Dichloropropane	114		112		70-130	2		20
Dibromochloromethane	94		99		70-130	5		20
1,1,2-Trichloroethane	101		102		70-130	1		20
Tetrachloroethene	102		98		70-130	4		20
Chlorobenzene	108		106		70-130	2		20
Trichlorofluoromethane	93		90		70-130	3		20
1,2-Dichloroethane	106		106		70-130	0		20
1,1,1-Trichloroethane	107		104		70-130	3		20
Bromodichloromethane	107		103		70-130	4		20
trans-1,3-Dichloropropene	98		105		70-130	7		20
cis-1,3-Dichloropropene	112		111		70-130	1		20
1,1-Dichloropropene	112		105		70-130	6		20
Bromoform	108		105		70-130	3		20
1,1,2,2-Tetrachloroethane	97		95		70-130	2		20
Benzene	113		107		70-130	5		20
Toluene	102		102		70-130	0		20
Ethylbenzene	109		108		70-130	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG898100-1 WG898100-2								
Chloromethane	85		80		70-130	6		20
Bromomethane	95		107		70-130	12		20
Vinyl chloride	91		91		70-130	0		20
Chloroethane	107		108		70-130	1		20
1,1-Dichloroethene	101		99		70-130	2		20
trans-1,2-Dichloroethene	102		98		70-130	4		20
Trichloroethene	112		107		70-130	5		20
1,2-Dichlorobenzene	104		102		70-130	2		20
1,3-Dichlorobenzene	105		102		70-130	3		20
1,4-Dichlorobenzene	102		99		70-130	3		20
Methyl tert butyl ether	96		93		70-130	3		20
p/m-Xylene	109		109		70-130	0		20
o-Xylene	106		104		70-130	2		20
cis-1,2-Dichloroethene	114		108		70-130	5		20
Dibromomethane	106		103		70-130	3		20
1,2,3-Trichloropropane	103		98		70-130	5		20
Styrene	113		112		70-130	1		20
Dichlorodifluoromethane	68	Q	66	Q	70-130	3		20
Acetone	80		79		70-130	1		20
Carbon disulfide	100		99		70-130	1		20
2-Butanone	105		100		70-130	5		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG898100-1 WG898100-2								
4-Methyl-2-pentanone	113		111		70-130	2		20
2-Hexanone	96		104		70-130	8		20
Bromochloromethane	110		110		70-130	0		20
Tetrahydrofuran	99		96		70-130	3		20
2,2-Dichloropropane	123		115		70-130	7		20
1,2-Dibromoethane	99		104		70-130	5		20
1,3-Dichloropropane	99		104		70-130	5		20
1,1,1,2-Tetrachloroethane	106		106		70-130	0		20
Bromobenzene	109		101		70-130	8		20
n-Butylbenzene	84		75		70-130	11		20
sec-Butylbenzene	94		84		70-130	11		20
tert-Butylbenzene	96		88		70-130	9		20
o-Chlorotoluene	110		100		70-130	10		20
p-Chlorotoluene	107		99		70-130	8		20
1,2-Dibromo-3-chloropropane	87		90		70-130	3		20
Hexachlorobutadiene	96		89		70-130	8		20
Isopropylbenzene	114		102		70-130	11		20
p-Isopropyltoluene	97		88		70-130	10		20
Naphthalene	114		115		70-130	1		20
n-Propylbenzene	106		96		70-130	10		20
1,2,3-Trichlorobenzene	111		106		70-130	5		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG898100-1 WG898100-2								
1,2,4-Trichlorobenzene	102		103		70-130	1		20
1,3,5-Trimethylbenzene	101		95		70-130	6		20
1,2,4-Trimethylbenzene	103		99		70-130	4		20
Ethyl ether	94		94		70-130	0		20
Isopropyl Ether	106		97		70-130	9		20
Ethyl-Tert-Butyl-Ether	105		102		70-130	3		20
Tertiary-Amyl Methyl Ether	106		106		70-130	0		20
1,4-Dioxane	99		104		70-130	5		20
Ethyl Acetate	101		102		70-130	1		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	93		91		70-130	2		20
Iodomethane	48	Q	57	Q	70-130	17		20
tert-Butyl Alcohol	93		96		70-130	3		20
Vinyl acetate	110		109		70-130	1		20
Acrolein	228	Q	112		70-130	68	Q	20
2-Chloroethylvinyl ether	112		113		70-130	1		20
Ethyl methacrylate	97		104		70-130	7		20
Methyl cyclohexane	103		94		70-130	9		20
Cyclohexane	100		95		70-130	5		20
trans-1,4-Dichloro-2-butene	103		100		70-130	3		20
1,4-Diethylbenzene	85		79		70-130	7		20
4-Ethyltoluene	104		96		70-130	8		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG898100-1 WG898100-2								
1,2,4,5-Tetramethylbenzene	125		123		70-130	2		20
1,4-Dichlorobutane	118		108		70-130	9		20
Acrylonitrile	111		108		70-130	3		20
Halothane	107		102		70-130	5		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		91		70-130
Toluene-d8	91		94		70-130
4-Bromofluorobenzene	98		95		70-130
Dibromofluoromethane	97		99		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1615699-01A	Vial HCl preserved	A	N/A	2.3	Y	Absent	MCP-8260-10(14)
L1615699-01B	Vial HCl preserved	A	N/A	2.3	Y	Absent	MCP-8260-10(14)
L1615699-01C	Vial HCl preserved	A	N/A	2.3	Y	Absent	MCP-8260-10(14)
L1615699-02A	Vial HCl preserved	A	N/A	2.3	Y	Absent	MCP-8260-10(14)
L1615699-02B	Vial HCl preserved	A	N/A	2.3	Y	Absent	MCP-8260-10(14)
L1615699-02C	Vial HCl preserved	A	N/A	2.3	Y	Absent	MCP-8260-10(14)

*Values in parentheses indicate holding time in days

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

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

Report Format: Data Usability Report



Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

Data Qualifiers

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

Project Name: BOSTON CHILDREN'S HOSPITAL CLI
Project Number: 35520-410

Lab Number: L1615699
Report Date: 05/27/16

REFERENCES

- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

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

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



Certification Information

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

Westborough Facility

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

Mansfield Facility

EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: **8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:** Lead; **8270D:** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

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

Drinking Water

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

Non-Potable Water

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, Ti, Zn;
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, Ti, Tl, V, Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N, **SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF.**

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

7A
Volatile Organics CONTINUING CALIBRATION CHECK

Lab Name: Alpha Analytical Labs

SDG No.: L1615699

Instrument ID: Jack.i Calibration Date: 26-MAY-2016 Time: 07:34

Lab File ID: VJ160526A0 Init. Calib. Date(s): 09-MAY-2 09-MAY-2

Sample No: 8260 CCAL Init. Calib. Times : 11:55 15:10

Compound	RRF	RRF	MIN RRF	%D	MAX %D	
dichlorodifluoromethane	.40999	.278	.1	-32	20	F
chloromethane	.24704	.21035	.1	-15	20	
vinyl chloride	.3412	.31092	.1	-9	20	
bromomethane	.16122	.15326	.1	-5	20	
chloroethane	.14779	.15827	.1	7	20	
trichlorofluoromethane	.60766	.56421	.1	-7	20	
ethyl ether	.15878	.14942	.05	-6	20	
1,1,-dichloroethene	.36744	.37224	.1	1	20	
carbon disulfide	.89077	.88622	.1	-1	20	
freon-113	.38161	.35459	.1	-7	20	
iodomethane	.40601	.19654	.05	-52	20	F
acrolein	.0153	.03484	.05	128	20	F
methylene chloride	.30396	.31129	.1	2	20	
acetone	100	79.976	.1	-20	20	F
trans-1,2-dichloroethene	.39316	.40335	.1	3	20	
methyl acetate	.13189	.13181	.1	0	20	
methyl tert butyl ether	.73409	.70664	.1	-4	20	
tert butyl alcohol	.01382	.01288	.05	-7	20	F
Diisopropyl Ether	1.2026	1.2779	.01	6	20	
1,1-dichloroethane	.66827	.73455	.2	10	20	
acrylonitrile	.07507	.08352	.05	11	20	
Halothane	.32124	.34356	.05	7	20	
Ethyl-Tert-Butyl-Ether	.95283	1.0046	.05	5	20	
vinyl acetate	.66888	.73409	.05	10	20	
cis-1,2-dichloroethene	.44516	.50897	.1	14	20	
2,2-dichloropropane	.5224	.64228	.05	23	20	F
cyclohexane	.65214	.6535	.01	0	30	
bromochloromethane	.20365	.2251	.05	11	20	
chloroform	.67973	.72878	.2	7	20	
carbontetrachloride	.61351	.64716	.1	5	20	
tetrahydrofuran	.07634	.0756	.05	-1	20	
ethyl acetate	.22348	.22581	.05	1	20	
1,1,1-trichloroethane	.66057	.70882	.1	7	20	
1,1-dichloropropene	.52285	.58531	.05	12	20	
2-butanone	.0934	.09803	.1	5	20	F
benzene	1.5651	1.7633	.5	13	20	
Tertiary-Amyl Methyl Ether	.76264	.81179	.05	6	20	
1,2-dichloroethane	.40854	.43409	.1	6	20	

FORM VII MCP-8260-10

7A
CONTINUING CALIBRATION CHECK

Lab Name: Alpha Analytical Labs

SDG No.: L1615699

Instrument ID: Jack.i Calibration Date: 26-MAY-2016 Time: 07:34

Lab File ID: VJ160526A0 Init. Calib. Date(s): 09-MAY-2 09-MAY-2

Sample No: 8260 CCAL Init. Calib. Times : 11:55 15:10

Compound	RRF	RRF	MIN RRF	%D	MAX %D
=====	=====	=====	=====	=====	=====
methyl cyclohexane	.67585	.69873	.01	3	30
trichloroethene	.43659	.48929	.2	12	20
dibromomethane	.19015	.20148	.05	6	20
1,2-dichloropropane	.34014	.38836	.1	14	20
bromodichloromethane	.45577	.48667	.2	7	20
1,4-dioxane	.00136	.00135	.05	-1	20
2-chloroethylvinyl ether	.15225	.17004	.05	12	20
cis-1,3-dichloropropene	.51596	.57855	.2	12	20
toluene	1.7138	1.7410	.4	2	20
tetrachloroethene	.85577	.871	.2	2	20
4-methyl-2-pentanone	.06315	.07155	.1	13	20
trans-1,3-dichloropropene	.72271	.71124	.1	-2	20
1,1,2-trichloroethane	.36607	.36924	.1	1	20
ethyl-methacrylate	.46713	.45478	.01	-3	30
chlorodibromomethane	.53653	.50557	.1	-6	20
1,3-dichloropropane	.73232	.72263	.05	-1	20
1,2-dibromoethane	.43894	.43315	.1	-1	20
2-hexanone	.18832	.18044	.1	-4	20
chlorobenzene	1.4764	1.5916	.5	8	20
ethyl benzene	2.2312	2.4329	.1	9	20
1,1,1,2-tetrachloroethane	.5414	.57245	.05	6	20
p/m xylene	.88027	.95653	.1	9	20
o xylene	.79529	.84005	.3	6	20
bromoform	.45997	.49819	.1	8	20
styrene	1.1777	1.3321	.3	13	20
isopropylbenzene	4.6503	5.2992	.1	14	20
bromobenzene	1.1065	1.2070	.05	9	20
1,4-dichlorobutane	.93935	1.1043	.01	18	30
n-propylbenzene	4.7761	5.0739	.05	6	20
1,1,2,2,-tetrachloroethane	.6122	.59414	.3	-3	20
4-ethyltoluene	4.0036	4.1571	.05	4	20
2-chlorotoluene	3.1145	3.4143	.05	10	20
1,2,3-trichloropropane	.48482	.49819	.05	3	20
1,3,5-trimethylbenzene	3.4156	3.4601	.05	1	20
trans-1,4-dichloro-2-butene	.17274	.17865	.05	3	20
4-chlorotoluene	2.8623	3.0621	.05	7	20
tert-butylbenzene	3.1591	3.0428	.05	-4	20
1,2,4-trimethylbenzene	3.1315	3.2352	.05	3	20

F

F

FORM VII MCP-8260-10



ANALYTICAL REPORT

Lab Number:	L1712207
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Lee Vanzler
Phone:	(617) 886-7561
Project Name:	BOSTON CHILDREN'S HOPSITAL
Project Number:	128868-006
Report Date:	04/26/17

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1712207-01	B115D_04182017	WATER	BOSTON, MA	04/18/17 15:30	04/18/17
L1712207-02	TB_04182017	WATER	BOSTON, MA	04/18/17 11:00	04/18/17

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Case Narrative

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

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

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

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

HOLD POLICY

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

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

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The analyses performed were specified by the client.

Volatile Organics by Method 624

The WG997012-3 LCS recovery for 1,1,1-trichloroethane (110%), associated with L1712207-01 and -02 (both submitted samples), are outside Alpha's acceptance criteria, but within the acceptance criteria specified in the method.

The WG997012-3 LCS recovery, associated with L1712207-01 and -02 (both submitted samples), is above the acceptance criteria for 1,2-dichlorobenzene (170%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

Semivolatile Organics

The WG995507-2/-3 LCS/LCSD recoveries, associated with L1712207-01 (B115D_04182017), are below the acceptance criteria for benzidine (0%/0%); however, it has been identified as a "difficult" analyte. The results of the associated sample are reported.

Metals


The WG996069-2 LCS recoveries, associated with L1712207-01 (B115D_04182017), are above the acceptance criteria for cadmium (116%) and selenium (117%); however, the associated samples are non-detect to the RL for these target analytes. The results of the original analysis are reported.

Solids, Total Suspended

WG995465: A laboratory duplicate could not be performed due to insufficient sample volume available for analysis.

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

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 04/26/17

ORGANICS

VOLATILES

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 04/26/17 14:33
 Analyst: PK

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS - Westborough Lab						
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Ethanol	ND		ug/l	250	14.	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 04/26/17 16:20
 Analyst: BD

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.68	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	0.23	J	ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.8	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	5.2		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.17	1
Bromoform	ND		ug/l	2.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
Chloromethane	0.45	J	ug/l	2.5	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
1,2-Dichloroethene, Total	2.7		ug/l	0.50	0.16	1
Trichloroethene	1.4		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
Client ID: B115D_04182017
Sample Location: BOSTON, MA

Date Collected: 04/18/17 15:30
Date Received: 04/18/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
Methyl tert butyl ether	0.77	J	ug/l	1.0	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	2.7		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	5.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Tetrahydrofuran	ND		ug/l	5.0	0.83	1
2,2-Dichloropropane	ND		ug/l	2.5	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
1,3-Dichloropropane	ND		ug/l	2.5	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	2.5	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	ND		ug/l	0.50	0.18	1
tert-Butylbenzene	ND		ug/l	2.5	0.18	1
o-Chlorotoluene	ND		ug/l	2.5	0.17	1
p-Chlorotoluene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
p-Isopropyltoluene	ND		ug/l	0.50	0.19	1
Naphthalene	0.52	J	ug/l	2.5	0.22	1
n-Propylbenzene	ND		ug/l	0.50	0.17	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18	1
Ethyl ether	ND		ug/l	2.5	0.16	1
Tert-Butyl Alcohol	ND		ug/l	10	1.4	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	106		70-130

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C-SIM(M)
 Analytical Date: 04/26/17 16:20
 Analyst: BD

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	3.0	0.76	1

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 14,504.1
 Analytical Date: 04/19/17 18:25
 Analyst: SL

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified
 Extraction Method: EPA 504.1
 Extraction Date: 04/19/17 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.004	1	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	0.005	1	A

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 5,624
 Analytical Date: 04/20/17 17:34
 Analyst: GT

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	5.0	0.62	1
1,1-Dichloroethane	ND		ug/l	1.5	0.29	1
Chloroform	ND		ug/l	1.5	0.22	1
Carbon tetrachloride	ND		ug/l	1.0	0.32	1
1,2-Dichloropropane	ND		ug/l	3.5	0.27	1
Dibromochloromethane	ND		ug/l	1.0	0.33	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.24	1
2-Chloroethylvinyl ether	ND		ug/l	10	0.54	1
Tetrachloroethene	5.6		ug/l	1.5	0.33	1
Chlorobenzene	ND		ug/l	3.5	0.30	1
Trichlorofluoromethane	ND		ug/l	5.0	0.46	1
1,2-Dichloroethane	ND		ug/l	1.5	0.32	1
1,1,1-Trichloroethane	ND		ug/l	2.0	0.30	1
Bromodichloromethane	ND		ug/l	1.0	0.25	1
trans-1,3-Dichloropropene	ND		ug/l	1.5	0.26	1
cis-1,3-Dichloropropene	ND		ug/l	1.5	0.32	1
Bromoform	ND		ug/l	1.0	0.32	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	0.22	1
Benzene	ND		ug/l	1.0	0.23	1
Toluene	ND		ug/l	1.0	0.32	1
Ethylbenzene	ND		ug/l	1.0	0.31	1
Chloromethane	ND		ug/l	5.0	0.64	1
Bromomethane	ND		ug/l	5.0	1.3	1
Vinyl chloride	ND		ug/l	1.0	0.30	1
Chloroethane	ND		ug/l	2.0	0.26	1
1,1-Dichloroethene	ND		ug/l	1.0	0.37	1
trans-1,2-Dichloroethene	ND		ug/l	1.5	0.33	1
cis-1,2-Dichloroethene ¹	3.0		ug/l	1.0	0.29	1
Trichloroethene	1.5		ug/l	1.0	0.33	1
1,2-Dichlorobenzene	ND		ug/l	5.0	0.26	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	5.0	0.25	1
1,4-Dichlorobenzene	ND		ug/l	5.0	0.26	1
p/m-Xylene ¹	ND		ug/l	2.0	0.58	1
o-xylene ¹	ND		ug/l	1.0	0.22	1
Xylenes, Total ¹	ND		ug/l	1.0	0.22	1
Styrene ¹	ND		ug/l	1.0	0.25	1
Acetone ¹	ND		ug/l	10	4.0	1
Carbon disulfide ¹	ND		ug/l	5.0	0.73	1
2-Butanone ¹	ND		ug/l	10	2.2	1
Vinyl acetate ¹	ND		ug/l	10	2.9	1
4-Methyl-2-pentanone ¹	ND		ug/l	10	1.8	1
2-Hexanone ¹	ND		ug/l	10	2.5	1
Acrolein ¹	ND		ug/l	8.0	1.3	1
Acrylonitrile ¹	ND		ug/l	10	0.97	1
Methyl tert butyl Ether ¹	0.72	J	ug/l	10	0.27	1
Dibromomethane ¹	ND		ug/l	1.0	0.11	1
Tert-Butyl Alcohol ¹	ND		ug/l	100	6.0	1
Tertiary-Amyl Methyl Ether ¹	ND		ug/l	20	0.18	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	104		80-120
Fluorobenzene	105		80-120
4-Bromofluorobenzene	99		80-120

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-02
 Client ID: TB_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 04/25/17 16:26
 Analyst: PK

Date Collected: 04/18/17 11:00
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.68	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	ND		ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.8	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,1-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.17	1
Bromoform	ND		ug/l	2.0	0.25	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
Chloromethane	ND		ug/l	2.5	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-02
Client ID: TB_04182017
Sample Location: BOSTON, MA

Date Collected: 04/18/17 11:00
Date Received: 04/18/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	5.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Tetrahydrofuran	ND		ug/l	5.0	0.83	1
2,2-Dichloropropane	ND		ug/l	2.5	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
1,3-Dichloropropane	ND		ug/l	2.5	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	2.5	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	ND		ug/l	0.50	0.18	1
tert-Butylbenzene	ND		ug/l	2.5	0.18	1
o-Chlorotoluene	ND		ug/l	2.5	0.17	1
p-Chlorotoluene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
p-Isopropyltoluene	ND		ug/l	0.50	0.19	1
Naphthalene	0.51	J	ug/l	2.5	0.22	1
n-Propylbenzene	ND		ug/l	0.50	0.17	1
1,2,3-Trichlorobenzene	0.43	J	ug/l	2.5	0.23	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-02
Client ID: TB_04182017
Sample Location: BOSTON, MA

Date Collected: 04/18/17 11:00
Date Received: 04/18/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18	1
Ethyl ether	ND		ug/l	2.5	0.16	1
Tert-Butyl Alcohol	ND		ug/l	10	1.4	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	101		70-130

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-02
 Client ID: TB_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C-SIM(M)
 Analytical Date: 04/25/17 16:26
 Analyst: PK

Date Collected: 04/18/17 11:00
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	3.0	0.76	1

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-02
 Client ID: TB_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 14,504.1
 Analytical Date: 04/19/17 18:41
 Analyst: SL

Date Collected: 04/18/17 11:00
 Date Received: 04/18/17
 Field Prep: Not Specified
 Extraction Method: EPA 504.1
 Extraction Date: 04/19/17 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.004	1	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	0.005	1	A

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-02
 Client ID: TB_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 5,624
 Analytical Date: 04/20/17 16:06
 Analyst: GT

Date Collected: 04/18/17 11:00
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	5.0	0.62	1
1,1-Dichloroethane	ND		ug/l	1.5	0.29	1
Chloroform	ND		ug/l	1.5	0.22	1
Carbon tetrachloride	ND		ug/l	1.0	0.32	1
1,2-Dichloropropane	ND		ug/l	3.5	0.27	1
Dibromochloromethane	ND		ug/l	1.0	0.33	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.24	1
2-Chloroethylvinyl ether	ND		ug/l	10	0.54	1
Tetrachloroethene	ND		ug/l	1.5	0.33	1
Chlorobenzene	ND		ug/l	3.5	0.30	1
Trichlorofluoromethane	ND		ug/l	5.0	0.46	1
1,2-Dichloroethane	ND		ug/l	1.5	0.32	1
1,1,1-Trichloroethane	ND		ug/l	2.0	0.30	1
Bromodichloromethane	ND		ug/l	1.0	0.25	1
trans-1,3-Dichloropropene	ND		ug/l	1.5	0.26	1
cis-1,3-Dichloropropene	ND		ug/l	1.5	0.32	1
Bromoform	ND		ug/l	1.0	0.32	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	0.22	1
Benzene	ND		ug/l	1.0	0.23	1
Toluene	ND		ug/l	1.0	0.32	1
Ethylbenzene	ND		ug/l	1.0	0.31	1
Chloromethane	ND		ug/l	5.0	0.64	1
Bromomethane	ND		ug/l	5.0	1.3	1
Vinyl chloride	ND		ug/l	1.0	0.30	1
Chloroethane	ND		ug/l	2.0	0.26	1
1,1-Dichloroethene	ND		ug/l	1.0	0.37	1
trans-1,2-Dichloroethene	ND		ug/l	1.5	0.33	1
cis-1,2-Dichloroethene ¹	ND		ug/l	1.0	0.29	1
Trichloroethene	ND		ug/l	1.0	0.33	1
1,2-Dichlorobenzene	ND		ug/l	5.0	0.26	1

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-02
 Client ID: TB_04182017
 Sample Location: BOSTON, MA

Date Collected: 04/18/17 11:00
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	5.0	0.25	1
1,4-Dichlorobenzene	ND		ug/l	5.0	0.26	1
p/m-Xylene ¹	ND		ug/l	2.0	0.58	1
o-xylene ¹	ND		ug/l	1.0	0.22	1
Xylenes, Total ¹	ND		ug/l	1.0	0.22	1
Styrene ¹	ND		ug/l	1.0	0.25	1
Acetone ¹	ND		ug/l	10	4.0	1
Carbon disulfide ¹	ND		ug/l	5.0	0.73	1
2-Butanone ¹	ND		ug/l	10	2.2	1
Vinyl acetate ¹	ND		ug/l	10	2.9	1
4-Methyl-2-pentanone ¹	ND		ug/l	10	1.8	1
2-Hexanone ¹	ND		ug/l	10	2.5	1
Acrolein ¹	ND		ug/l	8.0	1.3	1
Acrylonitrile ¹	ND		ug/l	10	0.97	1
Methyl tert butyl Ether ¹	ND		ug/l	10	0.27	1
Dibromomethane ¹	ND		ug/l	1.0	0.11	1
Tert-Butyl Alcohol ¹	ND		ug/l	100	6.0	1
Tertiary-Amyl Methyl Ether ¹	ND		ug/l	20	0.18	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	108		80-120
Fluorobenzene	108		80-120
4-Bromofluorobenzene	99		80-120

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
 Analytical Date: 04/19/17 17:38
 Analyst: SL

Extraction Method: EPA 504.1
 Extraction Date: 04/19/17 11:03

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01-02 Batch: WG995581-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.004	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	0.005	A

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,624
Analytical Date: 04/20/17 11:30
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG997012-4					
Methylene chloride	ND		ug/l	5.0	0.62
1,1-Dichloroethane	ND		ug/l	1.5	0.29
Chloroform	ND		ug/l	1.5	0.22
Carbon tetrachloride	ND		ug/l	1.0	0.32
1,2-Dichloropropane	ND		ug/l	3.5	0.27
Dibromochloromethane	ND		ug/l	1.0	0.33
1,1,2-Trichloroethane	ND		ug/l	1.5	0.24
2-Chloroethylvinyl ether	ND		ug/l	10	0.54
Tetrachloroethene	ND		ug/l	1.5	0.33
Chlorobenzene	ND		ug/l	3.5	0.30
Trichlorofluoromethane	ND		ug/l	5.0	0.46
1,2-Dichloroethane	ND		ug/l	1.5	0.32
1,1,1-Trichloroethane	ND		ug/l	2.0	0.30
Bromodichloromethane	ND		ug/l	1.0	0.25
trans-1,3-Dichloropropene	ND		ug/l	1.5	0.26
cis-1,3-Dichloropropene	ND		ug/l	1.5	0.32
Bromoform	ND		ug/l	1.0	0.32
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	0.22
Benzene	ND		ug/l	1.0	0.23
Toluene	ND		ug/l	1.0	0.32
Ethylbenzene	ND		ug/l	1.0	0.31
Chloromethane	ND		ug/l	5.0	0.64
Bromomethane	ND		ug/l	5.0	1.3
Vinyl chloride	ND		ug/l	1.0	0.30
Chloroethane	ND		ug/l	2.0	0.26
1,1-Dichloroethene	ND		ug/l	1.0	0.37
trans-1,2-Dichloroethene	ND		ug/l	1.5	0.33
cis-1,2-Dichloroethene ¹	ND		ug/l	1.0	0.29
Trichloroethene	ND		ug/l	1.0	0.33

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,624
 Analytical Date: 04/20/17 11:30
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG997012-4					
1,2-Dichlorobenzene	ND		ug/l	5.0	0.26
1,3-Dichlorobenzene	ND		ug/l	5.0	0.25
1,4-Dichlorobenzene	ND		ug/l	5.0	0.26
p/m-Xylene ¹	ND		ug/l	2.0	0.58
o-xylene ¹	ND		ug/l	1.0	0.22
Xylenes, Total ¹	ND		ug/l	1.0	0.22
Styrene ¹	ND		ug/l	1.0	0.25
Acetone ¹	ND		ug/l	10	4.0
Carbon disulfide ¹	ND		ug/l	5.0	0.73
2-Butanone ¹	ND		ug/l	10	2.2
Vinyl acetate ¹	ND		ug/l	10	2.9
4-Methyl-2-pentanone ¹	ND		ug/l	10	1.8
2-Hexanone ¹	ND		ug/l	10	2.5
Acrolein ¹	ND		ug/l	8.0	1.3
Acrylonitrile ¹	ND		ug/l	10	0.97
Methyl tert butyl Ether ¹	ND		ug/l	10	0.27
Dibromomethane ¹	ND		ug/l	1.0	0.11
Tert-Butyl Alcohol ¹	ND		ug/l	100	6.0
Tertiary-Amyl Methyl Ether ¹	ND		ug/l	20	0.18

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	104		80-120
Fluorobenzene	105		80-120
4-Bromofluorobenzene	96		80-120

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/25/17 14:46
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG997458-5					
Methylene chloride	ND		ug/l	3.0	0.68
1,1-Dichloroethane	ND		ug/l	0.75	0.21
Chloroform	ND		ug/l	0.75	0.16
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.8	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	0.50	0.18
Trichlorofluoromethane	ND		ug/l	2.5	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.17
Bromoform	ND		ug/l	2.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
Chloromethane	ND		ug/l	2.5	0.18
Bromomethane	0.26	J	ug/l	1.0	0.26
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	1.0	0.13
1,1-Dichloroethene	ND		ug/l	0.50	0.17
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/25/17 14:46
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG997458-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19
Methyl tert butyl ether	ND		ug/l	1.0	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
Dibromomethane	ND		ug/l	5.0	0.36
1,4-Dichlorobutane	ND		ug/l	5.0	0.46
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18
Styrene	ND		ug/l	1.0	0.36
Dichlorodifluoromethane	ND		ug/l	5.0	0.24
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	0.30
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	0.31
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
2-Hexanone	ND		ug/l	5.0	0.52
Ethyl methacrylate	ND		ug/l	5.0	0.61
Acrylonitrile	ND		ug/l	5.0	0.43
Bromochloromethane	ND		ug/l	2.5	0.15
Tetrahydrofuran	ND		ug/l	5.0	0.83
2,2-Dichloropropane	ND		ug/l	2.5	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
1,3-Dichloropropane	ND		ug/l	2.5	0.21
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16
Bromobenzene	ND		ug/l	2.5	0.15
n-Butylbenzene	ND		ug/l	0.50	0.19

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/25/17 14:46
Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG997458-5					
sec-Butylbenzene	ND		ug/l	0.50	0.18
tert-Butylbenzene	ND		ug/l	2.5	0.18
o-Chlorotoluene	ND		ug/l	2.5	0.17
p-Chlorotoluene	ND		ug/l	2.5	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35
Hexachlorobutadiene	ND		ug/l	0.50	0.22
Isopropylbenzene	ND		ug/l	0.50	0.19
p-Isopropyltoluene	ND		ug/l	0.50	0.19
Naphthalene	0.57	J	ug/l	2.5	0.22
n-Propylbenzene	ND		ug/l	0.50	0.17
1,2,3-Trichlorobenzene	0.47	J	ug/l	2.5	0.23
1,2,4-Trichlorobenzene	0.45	J	ug/l	2.5	0.22
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18
Ethyl ether	ND		ug/l	2.5	0.16
Tert-Butyl Alcohol	ND		ug/l	10	1.4
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	99		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 04/26/17 14:05
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG997825-5					
Methyl Methacrylate	ND		ug/l	2.5	0.32
iso-Butyl Alcohol	ND		ug/l	10	4.0
Ethyl Alcohol	ND		ug/l	250	14.
iso-Propyl Alcohol	ND		ug/l	100	8.5
n-Butyl Alcohol	ND		ug/l	100	8.0

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712207**Project Number:** 128868-006**Report Date:** 04/26/17**Method Blank Analysis**
Batch Quality Control

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

Analytical Date: 04/26/17 13:00

Analyst: BD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG997846-5					
1,4-Dioxane	ND		ug/l	3.0	0.76

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/26/17 13:00
Analyst: BD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG997849-5					
Methylene chloride	ND		ug/l	3.0	0.68
1,1-Dichloroethane	ND		ug/l	0.75	0.21
Chloroform	ND		ug/l	0.75	0.16
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.8	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	0.50	0.18
Trichlorofluoromethane	ND		ug/l	2.5	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.17
Bromoform	ND		ug/l	2.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
Chloromethane	ND		ug/l	2.5	0.18
Bromomethane	ND		ug/l	1.0	0.26
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	1.0	0.13
1,1-Dichloroethene	ND		ug/l	0.50	0.17
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/26/17 13:00
Analyst: BD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG997849-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19
Methyl tert butyl ether	ND		ug/l	1.0	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
Dibromomethane	ND		ug/l	5.0	0.36
1,4-Dichlorobutane	ND		ug/l	5.0	0.46
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18
Styrene	ND		ug/l	1.0	0.36
Dichlorodifluoromethane	ND		ug/l	5.0	0.24
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	0.30
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	0.31
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
2-Hexanone	ND		ug/l	5.0	0.52
Ethyl methacrylate	ND		ug/l	5.0	0.61
Acrylonitrile	ND		ug/l	5.0	0.43
Bromochloromethane	ND		ug/l	2.5	0.15
Tetrahydrofuran	ND		ug/l	5.0	0.83
2,2-Dichloropropane	ND		ug/l	2.5	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
1,3-Dichloropropane	ND		ug/l	2.5	0.21
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16
Bromobenzene	ND		ug/l	2.5	0.15
n-Butylbenzene	ND		ug/l	0.50	0.19

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/26/17 13:00
Analyst: BD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG997849-5					
sec-Butylbenzene	ND		ug/l	0.50	0.18
tert-Butylbenzene	ND		ug/l	2.5	0.18
o-Chlorotoluene	ND		ug/l	2.5	0.17
p-Chlorotoluene	ND		ug/l	2.5	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35
Hexachlorobutadiene	ND		ug/l	0.50	0.22
Isopropylbenzene	ND		ug/l	0.50	0.19
p-Isopropyltoluene	ND		ug/l	0.50	0.19
Naphthalene	0.55	J	ug/l	2.5	0.22
n-Propylbenzene	ND		ug/l	0.50	0.17
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23
1,2,4-Trichlorobenzene	0.35	J	ug/l	2.5	0.22
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18
Ethyl ether	ND		ug/l	2.5	0.16
Tert-Butyl Alcohol	ND		ug/l	10	1.4
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712207**Project Number:** 128868-006**Report Date:** 04/26/17**Method Blank Analysis
Batch Quality Control**

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

Analytical Date: 04/25/17 14:46

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02 Batch: WG997859-5					
1,4-Dioxane	ND		ug/l	3.0	0.76

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01-02 Batch: WG995581-2									
1,2-Dibromoethane	104		-		70-130	-			A
1,2-Dibromo-3-chloropropane	99		-		70-130	-			A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997012-3								
Methylene chloride	100		-		70-111	-		30
1,1-Dichloroethane	110		-		78-116	-		30
Chloroform	105		-		86-111	-		30
Carbon tetrachloride	110		-		60-112	-		30
1,2-Dichloropropane	105		-		83-113	-		30
Dibromochloromethane	90		-		58-129	-		30
1,1,2-Trichloroethane	95		-		80-118	-		30
2-Chloroethylvinyl ether	85		-		69-124	-		30
Tetrachloroethene	100		-		80-126	-		30
Chlorobenzene	85		-		80-126	-		30
Trichlorofluoromethane	100		-		83-128	-		30
1,2-Dichloroethane	105		-		82-110	-		30
1,1,1-Trichloroethane	110	Q	-		72-109	-		30
Bromodichloromethane	100		-		71-120	-		30
trans-1,3-Dichloropropene	100		-		73-106	-		30
cis-1,3-Dichloropropene	100		-		78-111	-		30
Bromoform	80		-		45-131	-		30
1,1,1,2-Tetrachloroethane	110		-		81-122	-		30
Benzene	105		-		84-116	-		30
Toluene	100		-		83-121	-		30
Ethylbenzene	90		-		84-123	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997012-3								
Chloromethane	100		-		70-144	-		30
Bromomethane	75		-		63-141	-		30
Vinyl chloride	105		-		56-118	-		30
Chloroethane	105		-		74-130	-		30
1,1-Dichloroethene	110		-		77-116	-		30
trans-1,2-Dichloroethene	110		-		81-121	-		30
cis-1,2-Dichloroethene ¹	105		-		85-110	-		30
Trichloroethene	105		-		84-118	-		30
1,2-Dichlorobenzene	170	Q	-		78-128	-		30
1,3-Dichlorobenzene	105		-		77-125	-		30
1,4-Dichlorobenzene	110		-		77-125	-		30
p/m-Xylene ¹	88		-		81-121	-		30
o-Xylene ¹	85		-		81-124	-		30
Styrene ¹	85		-		84-133	-		30
Acetone ¹	106		-		40-160	-		30
Carbon disulfide ¹	80		-		54-134	-		30
2-Butanone ¹	106		-		57-116	-		30
Vinyl acetate ¹	128		-		40-160	-		30
4-Methyl-2-pentanone ¹	94		-		79-125	-		30
2-Hexanone ¹	94		-		78-120	-		30
Acrolein ¹	115		-		40-160	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997012-3								
Acrylonitrile ¹	105		-		66-123	-		30
Methyl tert butyl ether ¹	100		-		57-126	-		30
Dibromomethane ¹	100		-		65-126	-		30
tert-Butyl Alcohol ¹	97		-		52-114	-		30
Tertiary-Amyl Methyl Ether ¹	100		-		66-111	-		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	102				80-120
Fluorobenzene	104				80-120
4-Bromofluorobenzene	95				80-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG997458-3 WG997458-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	100		110		70-130	10		20
Chloroform	92		100		70-130	8		20
Carbon tetrachloride	80		84		63-132	5		20
1,2-Dichloropropane	93		96		70-130	3		20
Dibromochloromethane	88		88		63-130	0		20
1,1,2-Trichloroethane	84		89		70-130	6		20
Tetrachloroethene	93		96		70-130	3		20
Chlorobenzene	93		97		75-130	4		25
Trichlorofluoromethane	83		89		62-150	7		20
1,2-Dichloroethane	85		90		70-130	6		20
1,1,1-Trichloroethane	84		91		67-130	8		20
Bromodichloromethane	86		93		67-130	8		20
trans-1,3-Dichloropropene	91		90		70-130	1		20
cis-1,3-Dichloropropene	90		94		70-130	4		20
1,1-Dichloropropene	91		94		70-130	3		20
Bromoform	86		89		54-136	3		20
1,1,2,2-Tetrachloroethane	84		94		67-130	11		20
Benzene	96		99		70-130	3		25
Toluene	96		100		70-130	4		25
Ethylbenzene	93		97		70-130	4		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG997458-3 WG997458-4								
Chloromethane	100		97		64-130	3		20
Bromomethane	96		110		39-139	14		20
Vinyl chloride	88		93		55-140	6		20
Chloroethane	99		110		55-138	11		20
1,1-Dichloroethene	92		99		61-145	7		25
Trichloroethene	90		92		70-130	2		25
1,2-Dichlorobenzene	98		110		70-130	12		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	96		100		70-130	4		20
Methyl tert butyl ether	83		93		63-130	11		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		100		70-130	5		20
cis-1,2-Dichloroethene	92		100		70-130	8		20
Dibromomethane	90		91		70-130	1		20
1,4-Dichlorobutane	89		95		70-130	7		20
1,2,3-Trichloropropane	93		86		64-130	8		20
Styrene	100		100		70-130	0		20
Dichlorodifluoromethane	72		78		36-147	8		20
Acetone	100		110		58-148	10		20
Carbon disulfide	91		100		51-130	9		20
2-Butanone	93		92		63-138	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG997458-3 WG997458-4								
Vinyl acetate	84		94		70-130	11		20
4-Methyl-2-pentanone	90		95		59-130	5		20
2-Hexanone	73		82		57-130	12		20
Ethyl methacrylate	87		90		70-130	3		20
Acrylonitrile	92		99		70-130	7		20
Bromochloromethane	89		96		70-130	8		20
Tetrahydrofuran	86		83		58-130	4		20
2,2-Dichloropropane	93		96		63-133	3		20
1,2-Dibromoethane	87		90		70-130	3		20
1,3-Dichloropropane	92		96		70-130	4		20
1,1,1,2-Tetrachloroethane	91		95		64-130	4		20
Bromobenzene	94		100		70-130	6		20
n-Butylbenzene	98		97		53-136	1		20
sec-Butylbenzene	95		99		70-130	4		20
tert-Butylbenzene	93		100		70-130	7		20
o-Chlorotoluene	95		99		70-130	4		20
p-Chlorotoluene	99		100		70-130	1		20
1,2-Dibromo-3-chloropropane	90		97		41-144	7		20
Hexachlorobutadiene	110		120		63-130	9		20
Isopropylbenzene	95		99		70-130	4		20
p-Isopropyltoluene	100		110		70-130	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG997458-3 WG997458-4								
Naphthalene	82		87		70-130	6		20
n-Propylbenzene	96		100		69-130	4		20
1,2,3-Trichlorobenzene	91		100		70-130	9		20
1,2,4-Trichlorobenzene	93		100		70-130	7		20
1,3,5-Trimethylbenzene	98		110		64-130	12		20
1,2,4-Trimethylbenzene	98		110		70-130	12		20
trans-1,4-Dichloro-2-butene	140	Q	140	Q	70-130	0		20
Ethyl ether	98		100		59-134	2		20
Tert-Butyl Alcohol	80		84		70-130	5		20
Tertiary-Amyl Methyl Ether	84		91		66-130	8		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	85		91		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	105		106		70-130
Dibromofluoromethane	98		108		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG997825-3 WG997825-4								
Methyl Methacrylate	95		103		70-130	8		20
iso-Butyl Alcohol	93		105		70-130	13		20
Ethyl Alcohol	98		120		70-130	21	Q	20
iso-Propyl Alcohol	95		113		70-130	17		20
n-Butyl Alcohol	83		105		70-130	24	Q	20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		103		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	98		95		70-130
Dibromofluoromethane	99		100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG997846-3 WG997846-4								
1,4-Dioxane	99		110		70-130	11		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG997849-3 WG997849-4								
Methylene chloride	100		110		70-130	10		20
1,1-Dichloroethane	100		110		70-130	10		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	100		100		63-132	0		20
1,2-Dichloropropane	100		99		70-130	1		20
Dibromochloromethane	98		100		63-130	2		20
1,1,2-Trichloroethane	99		96		70-130	3		20
Tetrachloroethene	110		110		70-130	0		20
Chlorobenzene	100		100		75-130	0		25
Trichlorofluoromethane	100		100		62-150	0		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	100		110		67-130	10		20
Bromodichloromethane	97		93		67-130	4		20
trans-1,3-Dichloropropene	94		96		70-130	2		20
cis-1,3-Dichloropropene	96		98		70-130	2		20
1,1-Dichloropropene	100		100		70-130	0		20
Bromoform	95		92		54-136	3		20
1,1,2,2-Tetrachloroethane	87		88		67-130	1		20
Benzene	100		100		70-130	0		25
Toluene	100		100		70-130	0		25
Ethylbenzene	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG997849-3 WG997849-4								
Chloromethane	87		84		64-130	4		20
Bromomethane	110		120		39-139	9		20
Vinyl chloride	90		92		55-140	2		20
Chloroethane	110		110		55-138	0		20
1,1-Dichloroethene	100		100		61-145	0		25
Trichloroethene	100		100		70-130	0		25
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
Methyl tert butyl ether	94		96		63-130	2		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	110		105		70-130	5		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Dibromomethane	99		95		70-130	4		20
1,4-Dichlorobutane	88		87		70-130	1		20
1,2,3-Trichloropropane	94		93		64-130	1		20
Styrene	105		105		70-130	0		20
Dichlorodifluoromethane	72		72		36-147	0		20
Acetone	86		100		58-148	15		20
Carbon disulfide	100		100		51-130	0		20
2-Butanone	91		84		63-138	8		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG997849-3 WG997849-4								
Vinyl acetate	90		89		70-130	1		20
4-Methyl-2-pentanone	85		88		59-130	3		20
2-Hexanone	79		80		57-130	1		20
Ethyl methacrylate	92		89		70-130	3		20
Acrylonitrile	99		86		70-130	14		20
Bromochloromethane	100		100		70-130	0		20
Tetrahydrofuran	87		65		58-130	29	Q	20
2,2-Dichloropropane	100		100		63-133	0		20
1,2-Dibromoethane	99		98		70-130	1		20
1,3-Dichloropropane	100		100		70-130	0		20
1,1,1,2-Tetrachloroethane	100		100		64-130	0		20
Bromobenzene	100		100		70-130	0		20
n-Butylbenzene	92		95		53-136	3		20
sec-Butylbenzene	97		96		70-130	1		20
tert-Butylbenzene	100		96		70-130	4		20
o-Chlorotoluene	98		94		70-130	4		20
p-Chlorotoluene	100		95		70-130	5		20
1,2-Dibromo-3-chloropropane	92		98		41-144	6		20
Hexachlorobutadiene	130		120		63-130	8		20
Isopropylbenzene	95		94		70-130	1		20
p-Isopropyltoluene	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG997849-3 WG997849-4								
Naphthalene	86		90		70-130	5		20
n-Propylbenzene	97		95		69-130	2		20
1,2,3-Trichlorobenzene	97		95		70-130	2		20
1,2,4-Trichlorobenzene	100		97		70-130	3		20
1,3,5-Trimethylbenzene	100		98		64-130	2		20
1,2,4-Trimethylbenzene	100		98		70-130	2		20
trans-1,4-Dichloro-2-butene	93		85		70-130	9		20
Ethyl ether	110		110		59-134	0		20
Tert-Butyl Alcohol	98		98		70-130	0		20
Tertiary-Amyl Methyl Ether	94		97		66-130	3		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		98		70-130
Toluene-d8	99		102		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	100		104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02 Batch: WG997859-3 WG997859-4								
1,4-Dioxane	100		100		70-130	0		25

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>	<i>Column</i>
Microextractables by GC - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG995581-3 QC Sample: L1712207-01 Client ID: B115D_04182017													
1,2-Dibromoethane	ND	0.249	0.257	103		-	-		65-135	-		20	A
1,2-Dibromo-3-chloropropane	ND	0.249	0.249	100		-	-		65-135	-		20	A

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-10 QC Sample: L1712543-02 Client ID: MS Sample												
Methylene chloride	ND	200	280	140	Q	-	-		70-111	-		30
1,1-Dichloroethane	ND	200	300	150	Q	-	-		78-116	-		30
Chloroform	ND	200	280	140	Q	-	-		86-111	-		30
Carbon tetrachloride	ND	200	300	150	Q	-	-		60-112	-		30
1,2-Dichloropropane	ND	200	280	140	Q	-	-		83-113	-		30
Dibromochloromethane	ND	200	220	110		-	-		58-129	-		30
1,1,2-Trichloroethane	ND	200	230	115		-	-		80-118	-		30
2-Chloroethylvinyl ether	ND	200	160	80		-	-		69-124	-		30
Tetrachloroethene	ND	200	230	115		-	-		80-126	-		30
Chlorobenzene	ND	200	220	110		-	-		80-126	-		30
Trichlorofluoromethane	ND	200	310	155	Q	-	-		83-128	-		30
1,2-Dichloroethane	ND	200	280	140	Q	-	-		82-110	-		30
1,1,1-Trichloroethane	ND	200	290	145	Q	-	-		72-109	-		30
Bromodichloromethane	ND	200	240	120		-	-		71-120	-		30
trans-1,3-Dichloropropene	ND	200	230	115	Q	-	-		73-106	-		30
cis-1,3-Dichloropropene	ND	200	230	115	Q	-	-		78-111	-		30
Bromoform	ND	200	190	95		-	-		45-131	-		30
1,1,2,2-Tetrachloroethane	ND	200	270	135	Q	-	-		81-122	-		30
Benzene	ND	200	280	140	Q	-	-		84-116	-		30
Toluene	ND	200	240	120		-	-		83-121	-		30
Ethylbenzene	ND	200	220	110		-	-		84-123	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-10 QC Sample: L1712543-02 Client ID: MS Sample												
Chloromethane	ND	200	370	185	Q	-	-		70-144	-		30
Bromomethane	ND	200	270	135		-	-		63-141	-		30
Vinyl chloride	ND	200	360	180	Q	-	-		56-118	-		30
Chloroethane	ND	200	320	160	Q	-	-		74-130	-		30
1,1-Dichloroethene	ND	200	300	150	Q	-	-		77-116	-		30
trans-1,2-Dichloroethene	ND	200	300	150	Q	-	-		81-121	-		30
cis-1,2-Dichloroethene ¹	ND	200	280	140	Q	-	-		85-110	-		30
Trichloroethene	ND	200	270	135	Q	-	-		84-118	-		30
1,2-Dichlorobenzene	ND	200	400	200	Q	-	-		78-128	-		30
1,3-Dichlorobenzene	ND	200	240	120		-	-		77-125	-		30
1,4-Dichlorobenzene	ND	200	250	125		-	-		77-125	-		30
p/m-Xylene ¹	ND	400	450	113		-	-		81-121	-		30
o-Xylene ¹	ND	200	220	110		-	-		81-124	-		30
Styrene ¹	ND	200	220	110		-	-		84-133	-		30
Acetone ¹	47.J	500	790	158		-	-		40-160	-		30
Carbon disulfide ¹	ND	200	220	110		-	-		54-134	-		30
2-Butanone ¹	ND	500	720	144	Q	-	-		57-116	-		30
Vinyl acetate ¹	ND	400	670	168	Q	-	-		40-160	-		30
4-Methyl-2-pentanone ¹	ND	500	600	120		-	-		79-125	-		30
2-Hexanone ¹	ND	500	600	120		-	-		78-120	-		30
Acrolein ¹	ND	400	530	133		-	-		40-160	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-10 QC Sample: L1712543-02 Client ID: MS Sample												
Acrylonitrile ¹	ND	400	580	145	Q	-	-		66-123	-		30
Dibromomethane ¹	ND	200	270	135	Q	-	-		65-126	-		30

<i>Surrogate</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
4-Bromofluorobenzene	94				80-120
Fluorobenzene	105				80-120
Pentafluorobenzene	104				80-120

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-9 QC Sample: L1712543-02 Client ID: DUP Sample						
Methylene chloride	ND	ND	ug/l	NC		30
1,1-Dichloroethane	ND	ND	ug/l	NC		30
Chloroform	ND	ND	ug/l	NC		30
Carbon tetrachloride	ND	ND	ug/l	NC		30
1,2-Dichloropropane	ND	ND	ug/l	NC		30
Dibromochloromethane	ND	ND	ug/l	NC		30
1,1,2-Trichloroethane	ND	ND	ug/l	NC		30
2-Chloroethylvinyl ether	ND	ND	ug/l	NC		30
Tetrachloroethene	ND	ND	ug/l	NC		30
Chlorobenzene	ND	ND	ug/l	NC		30
Trichlorofluoromethane	ND	ND	ug/l	NC		30
1,2-Dichloroethane	ND	ND	ug/l	NC		30
1,1,1-Trichloroethane	ND	ND	ug/l	NC		30
Bromodichloromethane	ND	ND	ug/l	NC		30
trans-1,3-Dichloropropene	ND	ND	ug/l	NC		30
cis-1,3-Dichloropropene	ND	ND	ug/l	NC		30
Bromoform	ND	ND	ug/l	NC		30
1,1,2,2-Tetrachloroethane	ND	ND	ug/l	NC		30
Benzene	ND	ND	ug/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-9 QC Sample: L1712543-02 Client ID: DUP Sample						
Toluene	ND	ND	ug/l	NC		30
Ethylbenzene	ND	ND	ug/l	NC		30
Chloromethane	ND	ND	ug/l	NC		30
Bromomethane	ND	ND	ug/l	NC		30
Vinyl chloride	ND	ND	ug/l	NC		30
Chloroethane	ND	ND	ug/l	NC		30
1,1-Dichloroethene	ND	ND	ug/l	NC		30
trans-1,2-Dichloroethene	ND	ND	ug/l	NC		30
cis-1,2-Dichloroethene ¹	ND	ND	ug/l	NC		30
Trichloroethene	ND	ND	ug/l	NC		30
1,2-Dichlorobenzene	ND	ND	ug/l	NC		30
1,3-Dichlorobenzene	ND	ND	ug/l	NC		30
1,4-Dichlorobenzene	ND	ND	ug/l	NC		30
p/m-Xylene ¹	ND	ND	ug/l	NC		30
o-Xylene ¹	ND	ND	ug/l	NC		30
Xylene (Total) ¹	ND	ND	ug/l	NC		30
Styrene ¹	ND	ND	ug/l	NC		30
Acetone ¹	47.J	44J	ug/l	NC		30
Carbon disulfide ¹	ND	ND	ug/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-9 QC Sample: L1712543-02 Client ID: DUP Sample						
2-Butanone ¹	ND	ND	ug/l	NC		30
Vinyl acetate ¹	ND	ND	ug/l	NC		30
4-Methyl-2-pentanone ¹	ND	ND	ug/l	NC		30
2-Hexanone ¹	ND	ND	ug/l	NC		30
Acrolein ¹	ND	ND	ug/l	NC		30
Acrylonitrile ¹	ND	ND	ug/l	NC		30
Dibromomethane ¹	ND	ND	ug/l	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	104		106		80-120
Fluorobenzene	105		107		80-120
4-Bromofluorobenzene	94		94		80-120

SEMIVOLATILES

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 04/24/17 13:03
 Analyst: SZ

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 04/19/17 08:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	8.1	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.66	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.67	1
1,2-Dichlorobenzene	ND		ug/l	2.0	0.73	1
1,3-Dichlorobenzene	ND		ug/l	2.0	0.69	1
1,4-Dichlorobenzene	ND		ug/l	2.0	0.71	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.4	1
2,4-Dinitrotoluene	ND		ug/l	5.0	0.84	1
2,6-Dinitrotoluene	ND		ug/l	5.0	1.1	1
Azobenzene	ND		ug/l	2.0	0.75	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.62	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.73	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.70	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.63	1
Hexachlorocyclopentadiene	ND		ug/l	20	7.8	1
Isophorone	ND		ug/l	5.0	0.60	1
Nitrobenzene	ND		ug/l	2.0	0.75	1
NDPA/DPA	ND		ug/l	2.0	0.64	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.70	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.91	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.3	1
Di-n-butylphthalate	ND		ug/l	5.0	0.69	1
Di-n-octylphthalate	ND		ug/l	5.0	1.1	1
Diethyl phthalate	ND		ug/l	5.0	0.63	1
Dimethyl phthalate	ND		ug/l	5.0	0.65	1
Biphenyl	ND		ug/l	2.0	0.76	1
Aniline	ND		ug/l	2.0	0.65	1
4-Chloroaniline	ND		ug/l	5.0	0.63	1
2-Nitroaniline	ND		ug/l	5.0	1.1	1
3-Nitroaniline	ND		ug/l	5.0	1.2	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
Client ID: B115D_04182017
Sample Location: BOSTON, MA

Date Collected: 04/18/17 15:30
Date Received: 04/18/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
4-Nitroaniline	ND		ug/l	5.0	1.3	1
Dibenzofuran	ND		ug/l	2.0	0.66	1
n-Nitrosodimethylamine	ND		ug/l	2.0	0.67	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.68	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.62	1
2-Chlorophenol	ND		ug/l	2.0	0.63	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.77	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.6	1
2-Nitrophenol	ND		ug/l	10	1.5	1
4-Nitrophenol	ND		ug/l	10	1.8	1
2,4-Dinitrophenol	ND		ug/l	20	5.5	1
4,6-Dinitro-o-cresol	ND		ug/l	10	2.1	1
Phenol	ND		ug/l	5.0	1.9	1
2-Methylphenol	ND		ug/l	5.0	1.0	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	1.1	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.72	1
Benzoic Acid	ND		ug/l	50	13.	1
Benzyl Alcohol	ND		ug/l	2.0	0.72	1
Carbazole	ND		ug/l	2.0	0.63	1
Pyridine	ND		ug/l	3.5	1.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	47		21-120
Phenol-d6	34		10-120
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	68		15-120
2,4,6-Tribromophenol	101		10-120
4-Terphenyl-d14	79		41-149

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 04/21/17 11:40
 Analyst: KL

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 04/19/17 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	0.04	1
2-Chloronaphthalene	ND		ug/l	0.20	0.04	1
Fluoranthene	ND		ug/l	0.20	0.04	1
Hexachlorobutadiene	ND		ug/l	0.50	0.04	1
Naphthalene	ND		ug/l	0.20	0.04	1
Benzo(a)anthracene	ND		ug/l	0.20	0.02	1
Benzo(a)pyrene	ND		ug/l	0.20	0.04	1
Benzo(b)fluoranthene	ND		ug/l	0.20	0.02	1
Benzo(k)fluoranthene	ND		ug/l	0.20	0.04	1
Chrysene	ND		ug/l	0.20	0.04	1
Acenaphthylene	ND		ug/l	0.20	0.04	1
Anthracene	ND		ug/l	0.20	0.04	1
Benzo(ghi)perylene	ND		ug/l	0.20	0.04	1
Fluorene	ND		ug/l	0.20	0.04	1
Phenanthrene	ND		ug/l	0.20	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.20	0.04	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.20	0.04	1
Pyrene	ND		ug/l	0.20	0.04	1
1-Methylnaphthalene	ND		ug/l	0.20	0.04	1
2-Methylnaphthalene	ND		ug/l	0.20	0.05	1
Pentachlorophenol	ND		ug/l	0.80	0.22	1
Hexachlorobenzene	ND		ug/l	0.80	0.03	1
Hexachloroethane	ND		ug/l	0.80	0.03	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712207**Project Number:** 128868-006**Report Date:** 04/26/17**SAMPLE RESULTS**

Lab ID: L1712207-01

Date Collected: 04/18/17 15:30

Client ID: B115D_04182017

Date Received: 04/18/17

Sample Location: BOSTON, MA

Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	43		21-120
Phenol-d6	33		10-120
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	69		15-120
2,4,6-Tribromophenol	91		10-120
4-Terphenyl-d14	73		41-149

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 5,625
 Analytical Date: 04/21/17 18:02
 Analyst: PS

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified
 Extraction Method: EPA 625
 Extraction Date: 04/19/17 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/l	2.0	0.71	1
Benzidine ¹	ND		ug/l	20	8.2	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.90	1
Hexachlorobenzene	ND		ug/l	2.0	0.66	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.55	1
2-Chloronaphthalene	ND		ug/l	2.0	0.79	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.3	1
2,4-Dinitrotoluene	ND		ug/l	5.0	0.87	1
2,6-Dinitrotoluene	ND		ug/l	5.0	1.1	1
Azobenzene ¹	ND		ug/l	2.0	0.60	1
Fluoranthene	ND		ug/l	2.0	0.64	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.67	1
4-Bromophenyl phenyl ether ¹	ND		ug/l	2.0	0.77	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.52	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.54	1
Hexachlorobutadiene	ND		ug/l	2.0	0.66	1
Hexachlorocyclopentadiene ¹	ND		ug/l	9.9	3.7	1
Hexachloroethane	ND		ug/l	2.0	0.74	1
Isophorone	ND		ug/l	5.0	0.78	1
Naphthalene	ND		ug/l	2.0	0.80	1
Nitrobenzene	ND		ug/l	2.0	0.68	1
NDPA/DPA ¹	ND		ug/l	2.0	0.72	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.53	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.3	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.1	1
Di-n-butylphthalate	ND		ug/l	5.0	0.96	1
Di-n-octylphthalate	ND		ug/l	5.0	0.99	1
Diethyl phthalate	ND		ug/l	5.0	0.73	1
Dimethyl phthalate	ND		ug/l	5.0	0.70	1
Benzo(a)anthracene	ND		ug/l	2.0	0.67	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712207**Project Number:** 128868-006**Report Date:** 04/26/17**SAMPLE RESULTS**

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(a)pyrene	ND		ug/l	2.0	0.62	1
Benzo(b)fluoranthene	ND		ug/l	2.0	0.64	1
Benzo(k)fluoranthene	ND		ug/l	2.0	0.67	1
Chrysene	ND		ug/l	2.0	0.68	1
Acenaphthylene	ND		ug/l	2.0	0.62	1
Anthracene	ND		ug/l	2.0	0.68	1
Benzo(ghi)perylene	ND		ug/l	2.0	0.71	1
Fluorene	ND		ug/l	2.0	0.66	1
Phenanthrene	ND		ug/l	2.0	0.66	1
Dibenzo(a,h)anthracene	ND		ug/l	2.0	0.67	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	0.72	1
Pyrene	ND		ug/l	2.0	0.62	1
4-Chloroaniline ¹	ND		ug/l	5.0	1.2	1
Dibenzofuran ¹	ND		ug/l	2.0	0.69	1
2-Methylnaphthalene ¹	ND		ug/l	2.0	0.76	1
n-Nitrosodimethylamine ¹	ND		ug/l	2.0	0.77	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.80	1
p-Chloro-m-cresol ¹	ND		ug/l	2.0	0.66	1
2-Chlorophenol	ND		ug/l	2.0	0.62	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.77	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.4	1
2-Nitrophenol	ND		ug/l	5.0	1.3	1
4-Nitrophenol	ND		ug/l	9.9	1.1	1
2,4-Dinitrophenol	ND		ug/l	20	8.0	1
4,6-Dinitro-o-cresol ¹	ND		ug/l	9.9	1.8	1
Pentachlorophenol	ND		ug/l	5.0	2.8	1
Phenol	ND		ug/l	5.0	0.74	1
2-Methylphenol ¹	ND		ug/l	5.0	1.0	1
3-Methylphenol/4-Methylphenol ¹	ND		ug/l	5.0	1.1	1
2,4,5-Trichlorophenol ¹	ND		ug/l	5.0	0.91	1
Benzoic Acid ¹	ND		ug/l	50	6.2	1
Benzyl Alcohol ¹	ND		ug/l	2.0	0.72	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712207**Project Number:** 128868-006**Report Date:** 04/26/17**SAMPLE RESULTS**

Lab ID: L1712207-01

Date Collected: 04/18/17 15:30

Client ID: B115D_04182017

Date Received: 04/18/17

Sample Location: BOSTON, MA

Field Prep: Not Specified

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	33		21-120
Phenol-d6	24		10-120
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	60		15-120
2,4,6-Tribromophenol	76		10-120
4-Terphenyl-d14	63		33-120

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,625
Analytical Date: 04/20/17 13:21
Analyst: ALS

Extraction Method: EPA 625
Extraction Date: 04/18/17 22:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG995416-1					
Acenaphthene	ND		ug/l	2.0	0.72
Benzidine ¹	ND		ug/l	20	8.3
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.91
Hexachlorobenzene	ND		ug/l	2.0	0.67
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.55
2-Chloronaphthalene	ND		ug/l	2.0	0.79
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.3
2,4-Dinitrotoluene	ND		ug/l	5.0	0.88
2,6-Dinitrotoluene	ND		ug/l	5.0	1.1
Azobenzene ¹	ND		ug/l	2.0	0.61
Fluoranthene	ND		ug/l	2.0	0.64
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.68
4-Bromophenyl phenyl ether ¹	ND		ug/l	2.0	0.78
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.54
Hexachlorobutadiene	ND		ug/l	2.0	0.67
Hexachlorocyclopentadiene ¹	ND		ug/l	10	3.7
Hexachloroethane	ND		ug/l	2.0	0.74
Isophorone	ND		ug/l	5.0	0.79
Naphthalene	ND		ug/l	2.0	0.81
Nitrobenzene	ND		ug/l	2.0	0.68
NDPA/DPA ¹	ND		ug/l	2.0	0.73
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.54
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.3
Butyl benzyl phthalate	ND		ug/l	5.0	1.1
Di-n-butylphthalate	ND		ug/l	5.0	0.97
Di-n-octylphthalate	ND		ug/l	5.0	0.99
Diethyl phthalate	ND		ug/l	5.0	0.73
Dimethyl phthalate	ND		ug/l	5.0	0.70

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,625
Analytical Date: 04/20/17 13:21
Analyst: ALS

Extraction Method: EPA 625
Extraction Date: 04/18/17 22:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG995416-1					
Benzo(a)anthracene	ND		ug/l	2.0	0.68
Benzo(a)pyrene	ND		ug/l	2.0	0.63
Benzo(b)fluoranthene	ND		ug/l	2.0	0.65
Benzo(k)fluoranthene	ND		ug/l	2.0	0.68
Chrysene	ND		ug/l	2.0	0.68
Acenaphthylene	ND		ug/l	2.0	0.63
Anthracene	ND		ug/l	2.0	0.69
Benzo(ghi)perylene	ND		ug/l	2.0	0.71
Fluorene	ND		ug/l	2.0	0.66
Phenanthrene	ND		ug/l	2.0	0.66
Dibenzo(a,h)anthracene	ND		ug/l	2.0	0.68
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	0.73
Pyrene	ND		ug/l	2.0	0.62
4-Chloroaniline ¹	ND		ug/l	5.0	1.2
Dibenzofuran ¹	ND		ug/l	2.0	0.69
2-Methylnaphthalene ¹	ND		ug/l	2.0	0.76
n-Nitrosodimethylamine ¹	ND		ug/l	2.0	0.78
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.80
p-Chloro-m-cresol ¹	ND		ug/l	2.0	0.66
2-Chlorophenol	ND		ug/l	2.0	0.62
2,4-Dichlorophenol	ND		ug/l	5.0	0.78
2,4-Dimethylphenol	ND		ug/l	5.0	1.4
2-Nitrophenol	ND		ug/l	5.0	1.3
4-Nitrophenol	ND		ug/l	10	1.1
2,4-Dinitrophenol	ND		ug/l	20	8.0
4,6-Dinitro-o-cresol ¹	ND		ug/l	10	1.9
Pentachlorophenol	ND		ug/l	5.0	2.8
Phenol	ND		ug/l	5.0	0.74
2-Methylphenol ¹	ND		ug/l	5.0	1.0

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,625
Analytical Date: 04/20/17 13:21
Analyst: ALS

Extraction Method: EPA 625
Extraction Date: 04/18/17 22:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG995416-1					
3-Methylphenol/4-Methylphenol ¹	ND		ug/l	5.0	1.1
2,4,5-Trichlorophenol ¹	ND		ug/l	5.0	0.92
Benzoic Acid ¹	ND		ug/l	50	6.2
Benzyl Alcohol ¹	ND		ug/l	2.0	0.72

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	29		21-120
Phenol-d6	22		10-120
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	56		15-120
2,4,6-Tribromophenol	65		10-120
4-Terphenyl-d14	68		33-120

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/23/17 16:49
Analyst: KV

Extraction Method: EPA 3510C
Extraction Date: 04/19/17 08:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG995507-1					
Acenaphthene	ND		ug/l	2.0	0.59
Benzidine	ND		ug/l	20	8.1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.66
Hexachlorobenzene	ND		ug/l	2.0	0.58
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.67
2-Chloronaphthalene	ND		ug/l	2.0	0.64
1,2-Dichlorobenzene	ND		ug/l	2.0	0.73
1,3-Dichlorobenzene	ND		ug/l	2.0	0.69
1,4-Dichlorobenzene	ND		ug/l	2.0	0.71
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.4
2,4-Dinitrotoluene	ND		ug/l	5.0	0.84
2,6-Dinitrotoluene	ND		ug/l	5.0	1.1
Azobenzene	ND		ug/l	2.0	0.75
Fluoranthene	ND		ug/l	2.0	0.57
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.62
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.73
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.70
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.63
Hexachlorobutadiene	ND		ug/l	2.0	0.72
Hexachlorocyclopentadiene	ND		ug/l	20	7.8
Hexachloroethane	ND		ug/l	2.0	0.68
Isophorone	ND		ug/l	5.0	0.60
Naphthalene	ND		ug/l	2.0	0.68
Nitrobenzene	ND		ug/l	2.0	0.75
NDPA/DPA	ND		ug/l	2.0	0.64
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.70
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.91
Butyl benzyl phthalate	ND		ug/l	5.0	1.3
Di-n-butylphthalate	ND		ug/l	5.0	0.69

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/23/17 16:49
Analyst: KV

Extraction Method: EPA 3510C
Extraction Date: 04/19/17 08:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG995507-1					
Di-n-octylphthalate	ND		ug/l	5.0	1.1
Diethyl phthalate	ND		ug/l	5.0	0.63
Dimethyl phthalate	ND		ug/l	5.0	0.65
Benzo(a)anthracene	ND		ug/l	2.0	0.61
Benzo(a)pyrene	ND		ug/l	2.0	0.54
Benzo(b)fluoranthene	ND		ug/l	2.0	0.64
Benzo(k)fluoranthene	ND		ug/l	2.0	0.60
Chrysene	ND		ug/l	2.0	0.54
Acenaphthylene	ND		ug/l	2.0	0.66
Anthracene	ND		ug/l	2.0	0.64
Benzo(ghi)perylene	ND		ug/l	2.0	0.61
Fluorene	ND		ug/l	2.0	0.62
Phenanthrene	ND		ug/l	2.0	0.61
Dibenzo(a,h)anthracene	ND		ug/l	2.0	0.55
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	0.71
Pyrene	ND		ug/l	2.0	0.57
Biphenyl	ND		ug/l	2.0	0.76
Aniline	ND		ug/l	2.0	0.65
4-Chloroaniline	ND		ug/l	5.0	0.63
1-Methylnaphthalene	ND		ug/l	2.0	0.67
2-Nitroaniline	ND		ug/l	5.0	1.1
3-Nitroaniline	ND		ug/l	5.0	1.2
4-Nitroaniline	ND		ug/l	5.0	1.3
Dibenzofuran	ND		ug/l	2.0	0.66
2-Methylnaphthalene	ND		ug/l	2.0	0.72
n-Nitrosodimethylamine	ND		ug/l	2.0	0.67
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.68
p-Chloro-m-cresol	ND		ug/l	2.0	0.62
2-Chlorophenol	ND		ug/l	2.0	0.63

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/23/17 16:49
Analyst: KV

Extraction Method: EPA 3510C
Extraction Date: 04/19/17 08:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG995507-1					
2,4-Dichlorophenol	ND		ug/l	5.0	0.77
2,4-Dimethylphenol	ND		ug/l	5.0	1.6
2-Nitrophenol	ND		ug/l	10	1.5
4-Nitrophenol	ND		ug/l	10	1.8
2,4-Dinitrophenol	ND		ug/l	20	5.5
4,6-Dinitro-o-cresol	ND		ug/l	10	2.1
Pentachlorophenol	ND		ug/l	10	3.4
Phenol	ND		ug/l	5.0	1.9
2-Methylphenol	ND		ug/l	5.0	1.0
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	1.1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.72
Benzoic Acid	ND		ug/l	50	13.
Benzyl Alcohol	ND		ug/l	2.0	0.72
Carbazole	ND		ug/l	2.0	0.63
Pyridine	ND		ug/l	3.5	1.9

Tentatively Identified Compounds

No Tentatively Identified Compounds ND ug/l

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 04/23/17 16:49
Analyst: KV

Extraction Method: EPA 3510C
Extraction Date: 04/19/17 08:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG995507-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	36		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	83		15-120
2,4,6-Tribromophenol	95		10-120
4-Terphenyl-d14	92		41-149

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 04/21/17 08:22
Analyst: KL

Extraction Method: EPA 3510C
Extraction Date: 04/19/17 08:18

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG995509-1					
Acenaphthene	ND		ug/l	0.10	0.04
2-Chloronaphthalene	ND		ug/l	0.20	0.04
Fluoranthene	ND		ug/l	0.20	0.04
Hexachlorobutadiene	ND		ug/l	0.50	0.04
Naphthalene	ND		ug/l	0.20	0.04
Benzo(a)anthracene	ND		ug/l	0.20	0.02
Benzo(a)pyrene	ND		ug/l	0.20	0.04
Benzo(b)fluoranthene	ND		ug/l	0.20	0.02
Benzo(k)fluoranthene	ND		ug/l	0.20	0.04
Chrysene	ND		ug/l	0.20	0.04
Acenaphthylene	ND		ug/l	0.20	0.04
Anthracene	ND		ug/l	0.20	0.04
Benzo(ghi)perylene	ND		ug/l	0.20	0.04
Fluorene	ND		ug/l	0.20	0.04
Phenanthrene	ND		ug/l	0.20	0.02
Dibenzo(a,h)anthracene	ND		ug/l	0.20	0.04
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.20	0.04
Pyrene	ND		ug/l	0.20	0.04
1-Methylnaphthalene	ND		ug/l	0.20	0.04
2-Methylnaphthalene	ND		ug/l	0.20	0.05
Pentachlorophenol	ND		ug/l	0.80	0.22
Hexachlorobenzene	ND		ug/l	0.80	0.03
Hexachloroethane	ND		ug/l	0.80	0.03

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 04/21/17 08:22
Analyst: KL

Extraction Method: EPA 3510C
Extraction Date: 04/19/17 08:18

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG995509-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		21-120
Phenol-d6	39		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	78		15-120
2,4,6-Tribromophenol	90		10-120
4-Terphenyl-d14	83		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG995416-2								
Acenaphthene	68		-		47-145	-		30
1,2,4-Trichlorobenzene	69		-		44-142	-		30
2-Chloronaphthalene	71		-		60-118	-		30
2,4-Dinitrotoluene	84		-		39-139	-		30
2,6-Dinitrotoluene	80		-		50-158	-		30
Fluoranthene	74		-		26-137	-		30
4-Chlorophenyl phenyl ether	74		-		25-158	-		30
n-Nitrosodi-n-propylamine	72		-		1-230	-		30
Butyl benzyl phthalate	75		-		1-152	-		30
Anthracene	71		-		27-133	-		30
Pyrene	74		-		52-115	-		30
P-Chloro-M-Cresol ¹	74		-		22-147	-		30
2-Chlorophenol	65		-		23-134	-		30
2-Nitrophenol	75		-		29-182	-		30
4-Nitrophenol	52		-		1-132	-		30
2,4-Dinitrophenol	74		-		1-191	-		30
Pentachlorophenol	75		-		14-176	-		30
Phenol	31		-		5-112	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
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Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG995416-2

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
2-Fluorophenol	38				21-120
Phenol-d6	31				10-120
Nitrobenzene-d5	63				23-120
2-Fluorobiphenyl	65				15-120
2,4,6-Tribromophenol	76				10-120
4-Terphenyl-d14	66				33-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG995507-2 WG995507-3								
Acenaphthene	72		69		37-111	4		30
Benidine	0	Q	0	Q	10-75	NC		30
1,2,4-Trichlorobenzene	70		66		39-98	6		30
Hexachlorobenzene	84		81		40-140	4		30
Bis(2-chloroethyl)ether	70		64		40-140	9		30
2-Chloronaphthalene	75		72		40-140	4		30
1,2-Dichlorobenzene	65		61		40-140	6		30
1,3-Dichlorobenzene	63		59		40-140	7		30
1,4-Dichlorobenzene	64		59		36-97	8		30
3,3'-Dichlorobenzidine	43		45		40-140	5		30
2,4-Dinitrotoluene	86		83		48-143	4		30
2,6-Dinitrotoluene	87		82		40-140	6		30
Azobenzene	72		68		40-140	6		30
Fluoranthene	80		76		40-140	5		30
4-Chlorophenyl phenyl ether	78		75		40-140	4		30
4-Bromophenyl phenyl ether	85		78		40-140	9		30
Bis(2-chloroisopropyl)ether	62		58		40-140	7		30
Bis(2-chloroethoxy)methane	76		71		40-140	7		30
Hexachlorobutadiene	67		63		40-140	6		30
Hexachlorocyclopentadiene	66		62		40-140	6		30
Hexachloroethane	62		57		40-140	8		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG995507-2 WG995507-3								
Isophorone	75		70		40-140	7		30
Naphthalene	68		66		40-140	3		30
Nitrobenzene	72		69		40-140	4		30
NDPA/DPA	74		71		40-140	4		30
n-Nitrosodi-n-propylamine	72		67		29-132	7		30
Bis(2-ethylhexyl)phthalate	78		73		40-140	7		30
Butyl benzyl phthalate	80		75		40-140	6		30
Di-n-butylphthalate	79		75		40-140	5		30
Di-n-octylphthalate	78		73		40-140	7		30
Diethyl phthalate	78		73		40-140	7		30
Dimethyl phthalate	83		79		40-140	5		30
Benzo(a)anthracene	74		70		40-140	6		30
Benzo(a)pyrene	76		71		40-140	7		30
Benzo(b)fluoranthene	76		73		40-140	4		30
Benzo(k)fluoranthene	78		72		40-140	8		30
Chrysene	74		71		40-140	4		30
Acenaphthylene	76		74		45-123	3		30
Anthracene	75		70		40-140	7		30
Benzo(ghi)perylene	81		76		40-140	6		30
Fluorene	77		72		40-140	7		30
Phenanthrene	78		74		40-140	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG995507-2 WG995507-3								
Dibenzo(a,h)anthracene	81		75		40-140	8		30
Indeno(1,2,3-cd)pyrene	81		75		40-140	8		30
Pyrene	79		74		26-127	7		30
Biphenyl	80		78		40-140	3		30
Aniline	23	Q	28	Q	40-140	20		30
4-Chloroaniline	52		49		40-140	6		30
1-Methylnaphthalene	68		67		41-103	1		30
2-Nitroaniline	95		91		52-143	4		30
3-Nitroaniline	74		66		25-145	11		30
4-Nitroaniline	83		78		51-143	6		30
Dibenzofuran	74		71		40-140	4		30
2-Methylnaphthalene	72		70		40-140	3		30
n-Nitrosodimethylamine	45		39		22-74	14		30
2,4,6-Trichlorophenol	85		82		30-130	4		30
p-Chloro-m-cresol	79		75		23-97	5		30
2-Chlorophenol	73		65		27-123	12		30
2,4-Dichlorophenol	82		75		30-130	9		30
2,4-Dimethylphenol	21	Q	25	Q	30-130	17		30
2-Nitrophenol	87		82		30-130	6		30
4-Nitrophenol	53		50		10-80	6		30
2,4-Dinitrophenol	103		100		20-130	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG995507-2 WG995507-3								
4,6-Dinitro-o-cresol	102		98		20-164	4		30
Pentachlorophenol	91		81		9-103	12		30
Phenol	36		34		12-110	6		30
2-Methylphenol	60		57		30-130	5		30
3-Methylphenol/4-Methylphenol	64		59		30-130	8		30
2,4,5-Trichlorophenol	88		85		30-130	3		30
Benzoic Acid	46		38		10-164	19		30
Benzyl Alcohol	65		59		26-116	10		30
Carbazole	78		73		55-144	7		30
Pyridine	14		18		10-66	25		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	53		47		21-120
Phenol-d6	38		34		10-120
Nitrobenzene-d5	77		71		23-120
2-Fluorobiphenyl	78		75		15-120
2,4,6-Tribromophenol	92		89		10-120
4-Terphenyl-d14	84		78		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG995509-2 WG995509-3								
Acenaphthene	59		68		37-111	14		40
2-Chloronaphthalene	61		72		40-140	17		40
Fluoranthene	60		70		40-140	15		40
Hexachlorobutadiene	57		65		40-140	13		40
Naphthalene	58		67		40-140	14		40
Benzo(a)anthracene	63		74		40-140	16		40
Benzo(a)pyrene	61		72		40-140	17		40
Benzo(b)fluoranthene	66		77		40-140	15		40
Benzo(k)fluoranthene	61		70		40-140	14		40
Chrysene	63		76		40-140	19		40
Acenaphthylene	61		73		40-140	18		40
Anthracene	64		74		40-140	14		40
Benzo(ghi)perylene	64		76		40-140	17		40
Fluorene	50		58		40-140	15		40
Phenanthrene	62		71		40-140	14		40
Dibenzo(a,h)anthracene	68		80		40-140	16		40
Indeno(1,2,3-cd)pyrene	68		80		40-140	16		40
Pyrene	60		69		26-127	14		40
1-Methylnaphthalene	57		67		40-140	16		40
2-Methylnaphthalene	62		72		40-140	15		40
Pentachlorophenol	68		81		9-103	17		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG995509-2 WG995509-3								
Hexachlorobenzene	63		74		40-140	16		40
Hexachloroethane	52		56		40-140	7		40

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
2-Fluorophenol	45		50		21-120
Phenol-d6	35		39		10-120
Nitrobenzene-d5	71		79		23-120
2-Fluorobiphenyl	72		84		15-120
2,4,6-Tribromophenol	85		104		10-120
4-Terphenyl-d14	73		83		41-149

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995416-3 QC Sample: L1711957-01 Client ID: MS Sample												
Acenaphthene	ND	40.8	24	59		-	-		47-145	-		30
1,2,4-Trichlorobenzene	ND	40.8	25	61		-	-		44-142	-		30
2-Chloronaphthalene	ND	40.8	25	61		-	-		60-118	-		30
2,4-Dinitrotoluene	ND	40.8	28	69		-	-		39-139	-		30
2,6-Dinitrotoluene	ND	40.8	28	69		-	-		50-158	-		30
Fluoranthene	ND	40.8	18	44		-	-		26-137	-		30
4-Chlorophenyl phenyl ether	ND	40.8	25	61		-	-		25-158	-		30
n-Nitrosodi-n-propylamine	ND	40.8	25	61		-	-		1-230	-		30
Butyl benzyl phthalate	ND	40.8	26	64		-	-		1-152	-		30
Anthracene	ND	40.8	25	61		-	-		27-133	-		30
Pyrene	ND	40.8	25	61		-	-		52-115	-		30
P-Chloro-M-Cresol ¹	ND	40.8	26	64		-	-		22-147	-		30
2-Chlorophenol	ND	40.8	24	59		-	-		23-134	-		30
2-Nitrophenol	ND	40.8	28	69		-	-		29-182	-		30
4-Nitrophenol	ND	40.8	20	49		-	-		1-132	-		30
2,4-Dinitrophenol	ND	40.8	27	66		-	-		1-191	-		30
Pentachlorophenol	ND	40.8	29	71		-	-		14-176	-		30
Phenol	ND	40.8	12	29		-	-		5-112	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
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Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995416-3 QC Sample: L1711957-01 Client ID: MS Sample

<i>Surrogate</i>	<i>MS</i>		<i>MSD</i>		<i>Acceptance Criteria</i>
	<i>% Recovery</i>	<i>Qualifier</i>	<i>% Recovery</i>	<i>Qualifier</i>	
2,4,6-Tribromophenol	66				10-120
2-Fluorobiphenyl	55				15-120
2-Fluorophenol	35				21-120
4-Terphenyl-d14	55				33-120
Nitrobenzene-d5	54				23-120
Phenol-d6	30				10-120

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Semivolatiles by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995416-4 QC Sample: L1712064-01 Client ID: DUP						
Sample						
Acenaphthene	ND	ND	ug/l	NC		30
Benzidine ¹	ND	ND	ug/l	NC		30
1,2,4-Trichlorobenzene	ND	ND	ug/l	NC		30
Hexachlorobenzene	ND	ND	ug/l	NC		30
Bis(2-chloroethyl)ether	ND	ND	ug/l	NC		30
2-Chloronaphthalene	ND	ND	ug/l	NC		30
3,3'-Dichlorobenzidine	ND	ND	ug/l	NC		30
2,4-Dinitrotoluene	ND	ND	ug/l	NC		30
2,6-Dinitrotoluene	ND	ND	ug/l	NC		30
Azobenzene ¹	ND	ND	ug/l	NC		30
Fluoranthene	ND	ND	ug/l	NC		30
4-Chlorophenyl phenyl ether	ND	ND	ug/l	NC		30
4-Bromophenyl phenyl ether ¹	ND	ND	ug/l	NC		30
Bis(2-chloroisopropyl)ether	ND	ND	ug/l	NC		30
Bis(2-chloroethoxy)methane	ND	ND	ug/l	NC		30
Hexachlorobutadiene	ND	ND	ug/l	NC		30
Hexachlorocyclopentadiene ¹	ND	ND	ug/l	NC		30
Hexachloroethane	ND	ND	ug/l	NC		30
Isophorone	ND	ND	ug/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Semivolatiles Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995416-4 QC Sample: L1712064-01 Client ID: DUP Sample						
Naphthalene	ND	ND	ug/l	NC		30
Nitrobenzene	ND	ND	ug/l	NC		30
NitrosoDiPhenylAmine(NDPA)/DPA ¹	ND	ND	ug/l	NC		30
n-Nitrosodi-n-propylamine	ND	ND	ug/l	NC		30
Bis(2-Ethylhexyl)phthalate	ND	ND	ug/l	NC		30
Butyl benzyl phthalate	ND	ND	ug/l	NC		30
Di-n-butylphthalate	ND	ND	ug/l	NC		30
Di-n-octylphthalate	ND	ND	ug/l	NC		30
Diethyl phthalate	ND	ND	ug/l	NC		30
Dimethyl phthalate	ND	ND	ug/l	NC		30
Benzo(a)anthracene	ND	ND	ug/l	NC		30
Benzo(a)pyrene	ND	ND	ug/l	NC		30
Benzo(b)fluoranthene	ND	ND	ug/l	NC		30
Benzo(k)fluoranthene	ND	ND	ug/l	NC		30
Chrysene	ND	ND	ug/l	NC		30
Acenaphthylene	ND	ND	ug/l	NC		30
Anthracene	ND	ND	ug/l	NC		30
Benzo(ghi)perylene	ND	ND	ug/l	NC		30
Fluorene	ND	ND	ug/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Semivolatle Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995416-4 QC Sample: L1712064-01 Client ID: DUP Sample						
Phenanthrene	ND	ND	ug/l	NC		30
Dibenzo(a,h)anthracene	ND	ND	ug/l	NC		30
Indeno(1,2,3-cd)Pyrene	ND	ND	ug/l	NC		30
Pyrene	ND	ND	ug/l	NC		30
Biphenyl ¹	ND	ND	ug/l	NC		30
Aniline ¹	ND	ND	ug/l	NC		30
4-Chloroaniline ¹	ND	ND	ug/l	NC		30
1-Methylnaphthalene ¹	ND	ND	ug/l	NC		30
2-Nitroaniline ¹	ND	ND	ug/l	NC		30
3-Nitroaniline ¹	ND	ND	ug/l	NC		30
4-Nitroaniline ¹	ND	ND	ug/l	NC		30
Dibenzofuran ¹	ND	ND	ug/l	NC		30
2-Methylnaphthalene ¹	ND	ND	ug/l	NC		30
Acetophenone ¹	ND	ND	ug/l	NC		30
n-Nitrosodimethylamine ¹	ND	ND	ug/l	NC		30
2,4,6-Trichlorophenol	ND	ND	ug/l	NC		30
P-Chloro-M-Cresol ¹	ND	ND	ug/l	NC		30
2-Chlorophenol	ND	ND	ug/l	NC		30
2,4-Dichlorophenol	ND	ND	ug/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Semivolatle Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995416-4 QC Sample: L1712064-01 Client ID: DUP Sample						
2,4-Dimethylphenol	ND	ND	ug/l	NC		30
2-Nitrophenol	ND	ND	ug/l	NC		30
4-Nitrophenol	ND	ND	ug/l	NC		30
2,4-Dinitrophenol	ND	ND	ug/l	NC		30
4,6-Dinitro-o-cresol ¹	ND	ND	ug/l	NC		30
Pentachlorophenol	ND	ND	ug/l	NC		30
Phenol	ND	ND	ug/l	NC		30
2-Methylphenol ¹	ND	ND	ug/l	NC		30
3-Methylphenol/4-Methylphenol ¹	ND	ND	ug/l	NC		30
2,4,5-Trichlorophenol ¹	ND	ND	ug/l	NC		30
Benzoic Acid ¹	ND	ND	ug/l	NC		30
Benzyl Alcohol ¹	ND	ND	ug/l	NC		30
Carbazole ¹	ND	ND	ug/l	NC		30
Pyridine ¹	ND	ND	ug/l	NC		30
n-Decane ¹	ND	ND	ug/l	NC		30
Octadecane (C18) ¹	ND	ND	ug/l	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
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Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995416-4 QC Sample: L1712064-01 Client ID: DUP Sample						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	39		30		21-120
Phenol-d6	29		23		10-120
Nitrobenzene-d5	63		53		23-120
2-Fluorobiphenyl	64		57		15-120
2,4,6-Tribromophenol	80		73		10-120
4-Terphenyl-d14	66		61		33-120

PCBS

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
 Client ID: B115D_04182017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 5,608
 Analytical Date: 04/23/17 23:39
 Analyst: HT

Date Collected: 04/18/17 15:30
 Date Received: 04/18/17
 Field Prep: Not Specified
 Extraction Method: EPA 608
 Extraction Date: 04/21/17 23:49
 Cleanup Method: EPA 3665A
 Cleanup Date: 04/22/17
 Cleanup Method: EPA 3660B
 Cleanup Date: 04/22/17

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.287	0.048	1	A
Aroclor 1221	ND		ug/l	0.287	0.064	1	A
Aroclor 1232	ND		ug/l	0.287	0.028	1	A
Aroclor 1242	ND		ug/l	0.287	0.032	1	A
Aroclor 1248	ND		ug/l	0.287	0.032	1	A
Aroclor 1254	ND		ug/l	0.287	0.049	1	A
Aroclor 1260	ND		ug/l	0.230	0.052	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	85		30-150	A
Decachlorobiphenyl	66		30-150	A

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,608
 Analytical Date: 04/23/17 23:52
 Analyst: HT

Extraction Method: EPA 608
 Extraction Date: 04/21/17 23:49
 Cleanup Method: EPA 3665A
 Cleanup Date: 04/22/17
 Cleanup Method: EPA 3660B
 Cleanup Date: 04/22/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG996562-1						
Aroclor 1016	ND		ug/l	0.250	0.042	A
Aroclor 1221	ND		ug/l	0.250	0.056	A
Aroclor 1232	ND		ug/l	0.250	0.024	A
Aroclor 1242	ND		ug/l	0.250	0.028	A
Aroclor 1248	ND		ug/l	0.250	0.028	A
Aroclor 1254	ND		ug/l	0.250	0.043	A
Aroclor 1260	ND		ug/l	0.200	0.045	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		30-150	A
Decachlorobiphenyl	70		30-150	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG996562-2									
Aroclor 1016	116		-		40-140	-		50	A
Aroclor 1260	113		-		40-140	-		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81				30-150	A
Decachlorobiphenyl	71				30-150	A

Matrix Spike Analysis Batch Quality Control

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>	<i>Column</i>
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG996562-4 QC Sample: L1706390-34 Client ID: MS Sample													
Aroclor 1016	ND	3.12	3.64	116		-	-		40-140	-		50	A
Aroclor 1260	ND	3.12	3.52	113		-	-		40-140	-		50	A

<i>Surrogate</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>	<i>Column</i>
2,4,5,6-Tetrachloro-m-xylene	82				30-150	A
Decachlorobiphenyl	67				30-150	A



Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG996562-5 QC Sample: L1706390-34 Client ID: DUP Sample						
Aroclor 1016	ND	ND	ug/l	NC		50 A
Aroclor 1221	ND	ND	ug/l	NC		50 A
Aroclor 1232	ND	ND	ug/l	NC		50 A
Aroclor 1242	ND	ND	ug/l	NC		50 A
Aroclor 1248	ND	ND	ug/l	NC		50 A
Aroclor 1254	ND	ND	ug/l	NC		50 A
Aroclor 1260	ND	ND	ug/l	NC		50 A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		82		30-150	A
Decachlorobiphenyl	66		47		30-150	A

METALS

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
Client ID: B115D_04182017
Sample Location: BOSTON, MA
Matrix: Water

Date Collected: 04/18/17 15:30
Date Received: 04/18/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	0.00141	J	mg/l	0.00400	0.00042	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Arsenic, Total	0.00183		mg/l	0.00100	0.00016	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Chromium, Total	0.00701		mg/l	0.00100	0.00017	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Copper, Total	0.00355		mg/l	0.00100	0.00038	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Iron, Total	0.102		mg/l	0.050	0.009	1	04/19/17 10:10	04/20/17 16:20	EPA 3005A	19,200.7	PS
Lead, Total	0.00055		mg/l	0.00050	0.00034	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Mercury, Total	ND		mg/l	0.00020	0.00006	1	04/19/17 14:03	04/20/17 15:13	EPA 245.1	3,245.1	MG
Nickel, Total	0.00148	J	mg/l	0.00200	0.00055	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Selenium, Total	ND		mg/l	0.00500	0.00173	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Silver, Total	ND		mg/l	0.00040	0.00026	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Zinc, Total	0.00462	J	mg/l	0.01000	0.00341	1	04/19/17 10:10	04/22/17 10:51	EPA 3005A	3,200.8	BV
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	589		mg/l	0.660	NA	1	04/19/17 10:10	04/20/17 18:28	EPA 3005A	19,200.7	AB



Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG995549-1									
Iron, Total	ND	mg/l	0.050	0.009	1	04/19/17 10:10	04/20/17 13:45	19,200.7	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG995549-1									
Hardness	ND	mg/l	0.660	NA	1	04/19/17 10:10	04/20/17 18:20	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG995653-1									
Mercury, Total	ND	mg/l	0.00020	0.00006	1	04/19/17 14:03	04/20/17 14:50	3,245.1	MG

Prep Information

Digestion Method: EPA 245.1

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst	
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG996069-1										
Antimony, Total	0.00123	J	mg/l	0.00400	0.00042	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV
Arsenic, Total	0.00046	J	mg/l	0.00100	0.00016	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV
Chromium, Total	ND		mg/l	0.00100	0.00017	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV
Copper, Total	ND		mg/l	0.00100	0.00038	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV
Lead, Total	ND		mg/l	0.00050	0.00034	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV



Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712207

Project Number: 128868-006

Report Date: 04/26/17

Method Blank Analysis Batch Quality Control

Nickel, Total	ND	mg/l	0.00200	0.00055	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV
Selenium, Total	ND	mg/l	0.00500	0.00173	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV
Silver, Total	ND	mg/l	0.00040	0.00026	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV
Zinc, Total	ND	mg/l	0.01000	0.00341	1	04/19/17 10:10	04/22/17 10:24	3,200.8	BV

Prep Information

 Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG995549-2								
Iron, Total	101		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG995549-2								
Hardness	109		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG995653-2								
Mercury, Total	100		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG996069-2								
Antimony, Total	101		-		85-115	-		
Arsenic, Total	108		-		85-115	-		
Cadmium, Total	116	Q	-		85-115	-		
Chromium, Total	105		-		85-115	-		
Copper, Total	107		-		85-115	-		
Lead, Total	107		-		85-115	-		
Nickel, Total	106		-		85-115	-		
Selenium, Total	117	Q	-		85-115	-		
Silver, Total	104		-		85-115	-		
Zinc, Total	113		-		85-115	-		



Matrix Spike Analysis Batch Quality Control

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG995549-3 QC Sample: L1711616-01 Client ID: MS Sample												
Iron, Total	4.07	1	4.91	84	-	-	-	-	75-125	-	-	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG995549-3 QC Sample: L1711616-01 Client ID: MS Sample												
Hardness	302.	66.2	355	80	-	-	-	-	75-125	-	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG995549-7 QC Sample: L1711798-01 Client ID: MS Sample												
Iron, Total	0.151	1	1.14	99	-	-	-	-	75-125	-	-	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG995549-7 QC Sample: L1711798-01 Client ID: MS Sample												
Hardness	168.	66.2	224	85	-	-	-	-	75-125	-	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG995653-3 QC Sample: L1711900-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00485	97	-	-	-	-	70-130	-	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG996069-3 QC Sample: L1700004-71 Client ID: MS Sample												
Antimony, Total	0.00544J	0.5	0.518	104	-	-	-	-	70-130	-	-	20
Arsenic, Total	ND	0.12	0.130	108	-	-	-	-	70-130	-	-	20
Cadmium, Total	ND	0.051	0.0566	111	-	-	-	-	70-130	-	-	20
Chromium, Total	ND	0.2	0.208	104	-	-	-	-	70-130	-	-	20
Copper, Total	0.0404	0.25	0.298	103	-	-	-	-	70-130	-	-	20
Lead, Total	0.00529J	0.51	0.544	107	-	-	-	-	70-130	-	-	20
Nickel, Total	ND	0.5	0.517	103	-	-	-	-	70-130	-	-	20
Selenium, Total	ND	0.12	0.134	112	-	-	-	-	70-130	-	-	20
Silver, Total	ND	0.05	0.0510	102	-	-	-	-	70-130	-	-	20
Zinc, Total	0.0618J	0.5	0.600	120	-	-	-	-	70-130	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712207

Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG995549-4 QC Sample: L1711616-01 Client ID: DUP Sample						
Iron, Total	4.07	4.06	mg/l	0		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG995653-4 QC Sample: L1711900-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG996069-4 QC Sample: L1700004-71 Client ID: DUP Sample						
Antimony, Total	0.00544J	ND	mg/l	NC		20
Arsenic, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.0404	0.0365	mg/l	10		20
Lead, Total	0.00529J	0.00502J	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	0.0618J	0.0549J	mg/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

SAMPLE RESULTS

Lab ID: L1712207-01
Client ID: B115D_04182017
Sample Location: BOSTON, MA
Matrix: Water

Date Collected: 04/18/17 15:30
Date Received: 04/18/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	16.		mg/l	5.0	NA	1	-	04/19/17 11:50	121,2540D	DW
Cyanide, Total	0.002	J	mg/l	0.005	0.001	1	04/19/17 17:46	04/20/17 13:37	121,4500CN-CE	DE
Chlorine, Total Residual	ND		mg/l	0.02	0.01	1	-	04/19/17 00:05	121,4500CL-D	AS
Nitrogen, Ammonia	0.224		mg/l	0.075	0.022	1	04/19/17 20:00	04/20/17 22:20	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	5.20	1.61	1.3	04/20/17 14:45	04/20/17 19:30	74,1664A	ML
Phenolics, Total	ND		mg/l	0.030	0.010	1	04/20/17 14:18	04/21/17 12:40	4,420.1	AW
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	04/19/17 00:25	04/19/17 00:43	1,7196A	VB
Anions by Ion Chromatography - Westborough Lab										
Chloride	566.		mg/l	12.5	1.35	25	-	04/19/17 19:09	44,300.0	AU



Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG995422-1										
Chlorine, Total Residual	ND		mg/l	0.02	0.01	1	-	04/19/17 00:05	121,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG995425-1										
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	04/19/17 00:25	04/19/17 00:42	1,7196A	VB
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG995465-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/19/17 11:50	121,2540D	DW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG995717-1										
Nitrogen, Ammonia	ND		mg/l	0.075	0.022	1	04/19/17 20:00	04/20/17 22:09	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG995718-1										
Cyanide, Total	0.001	J	mg/l	0.005	0.001	1	04/19/17 17:46	04/20/17 13:20	121,4500CN-CE	DE
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG995808-1										
Chloride	ND		mg/l	0.500	0.054	1	-	04/19/17 17:21	44,300.0	AU
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG996062-1										
Phenolics, Total	ND		mg/l	0.030	0.010	1	04/20/17 14:18	04/21/17 12:24	4,420.1	AW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG996072-1										
TPH, SGT-HEM	ND		mg/l	4.00	1.24	1	04/20/17 14:45	04/20/17 19:30	74,1664A	ML

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG995422-2								
Chlorine, Total Residual	101		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG995425-2								
Chromium, Hexavalent	101		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG995717-2								
Nitrogen, Ammonia	96		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG995718-2								
Cyanide, Total	93		-		90-110	-		
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG995808-2								
Chloride	104		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG996062-2								
Phenolics, Total	98		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG996072-2								
TPH	85		-		64-132	-		34



Matrix Spike Analysis Batch Quality Control

Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995422-4 QC Sample: L1712207-01 Client ID: B115D_04182017												
Chlorine, Total Residual	ND	0.248	0.25	101	-	-	-	-	80-120	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995425-4 QC Sample: L1712207-01 Client ID: B115D_04182017												
Chromium, Hexavalent	ND	0.1	0.108	108	-	-	-	-	85-115	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995717-4 QC Sample: L1712207-01 Client ID: B115D_04182017												
Nitrogen, Ammonia	0.224	4	3.97	94	-	-	-	-	80-120	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995718-4 QC Sample: L1711801-01 Client ID: MS Sample												
Cyanide, Total	0.003J	0.2	0.163	82	Q	-	-	-	90-110	-	-	30
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995808-3 QC Sample: L1712168-01 Client ID: MS Sample												
Chloride	16.7	4	20.3	91	-	-	-	-	90-110	-	-	18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG996062-4 QC Sample: L1700004-69 Client ID: MS Sample												
Phenolics, Total	ND	0.4	0.49	122	-	-	-	-	70-130	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG996072-4 QC Sample: L1712290-02 Client ID: MS Sample												
TPH	ND	22.2	17.4	78	-	-	-	-	64-132	-	-	34

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995422-3 QC Sample: L1712207-01 Client ID: B115D_04182017						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995425-3 QC Sample: L1712207-01 Client ID: B115D_04182017						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995717-3 QC Sample: L1712207-01 Client ID: B115D_04182017						
Nitrogen, Ammonia	0.224	0.216	mg/l	4		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995718-3 QC Sample: L1712207-01 Client ID: B115D_04182017						
Cyanide, Total	0.002J	0.002J	mg/l	NC		30
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG995808-4 QC Sample: L1712168-01 Client ID: DUP Sample						
Chloride	16.7	16.6	mg/l	1		18
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG996062-3 QC Sample: L1700004-69 Client ID: DUP Sample						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG996072-3 QC Sample: L1712290-01 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler

B Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1712207-01A	Vial HCl preserved	B	N/A	4.0	Y	Absent	8260-SIM(14),8260(14)
L1712207-01B	Vial HCl preserved	B	N/A	4.0	Y	Absent	8260-SIM(14),8260(14)
L1712207-01C	Vial HCl preserved	B	N/A	4.0	Y	Absent	8260-SIM(14),8260(14)
L1712207-01D	Vial Na2S2O3 preserved	B	N/A	4.0	Y	Absent	624(3)
L1712207-01E	Vial Na2S2O3 preserved	B	N/A	4.0	Y	Absent	624(3)
L1712207-01F	Vial Na2S2O3 preserved	B	N/A	4.0	Y	Absent	624(3)
L1712207-01G	Vial Na2S2O3 preserved	B	N/A	4.0	Y	Absent	504(14)
L1712207-01H	Vial Na2S2O3 preserved	B	N/A	4.0	Y	Absent	504(14)
L1712207-01I	Plastic 250ml HNO3 preserved	B	<2	4.0	Y	Absent	CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),HARDU(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L1712207-01J	Plastic 250ml NaOH preserved	B	>12	4.0	Y	Absent	TCN-4500(14)
L1712207-01K	Plastic 500ml H2SO4 preserved	B	<2	4.0	Y	Absent	NH3-4500(28)
L1712207-01L	Plastic 950ml unpreserved	B	8	4.0	Y	Absent	CL-300(28),HEXCR-7196(1),TRC-4500(1)
L1712207-01M	Plastic 950ml unpreserved	B	8	4.0	Y	Absent	TSS-2540(7)
L1712207-01N	Amber 1000ml H2SO4 preserved	B	<2	4.0	Y	Absent	TPHENOL-420(28)
L1712207-01O	Amber 1000ml unpreserved	B	8	4.0	Y	Absent	8270TCL(7),8270TCL-SIM(7)
L1712207-01Q	Amber 1000ml unpreserved	B	8	4.0	Y	Absent	8270TCL(7),8270TCL-SIM(7)
L1712207-01R	Amber 1000ml Na2S2O3	B	8	4.0	Y	Absent	625(7)
L1712207-01S	Amber 1000ml Na2S2O3	B	8	4.0	Y	Absent	625(7)
L1712207-01T	Amber 1000ml Na2S2O3	B	8	4.0	Y	Absent	PCB-608(7)
L1712207-01U	Amber 1000ml Na2S2O3	B	8	4.0	Y	Absent	PCB-608(7)
L1712207-01V	Amber 1000ml HCl preserved	B	N/A	4.0	Y	Absent	TPH-1664(28)
L1712207-01W	Amber 1000ml HCl preserved	B	N/A	4.0	Y	Absent	TPH-1664(28)
L1712207-01X	Amber 500ml Na Sulfite/NaHSO3 pr	B	3	4.0	Y	Absent	HOLD-1,4DIOX(7)
L1712207-01Y	Amber 500ml Na Sulfite/NaHSO3 pr	B	3	4.0	Y	Absent	HOLD-1,4DIOX(7)
L1712207-01Z	Vial unpreserved	B	N/A	4.0	Y	Absent	HOLD-8260(14)

*Values in parentheses indicate holding time in days

Project Name: BOSTON CHILDREN'S HOPSITAL**Project Number:** 128868-006**Lab Number:** L1712207**Report Date:** 04/26/17**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1712207-02A	Vial HCl preserved	B	N/A	4.0	Y	Absent	8260-SIM(14),8260(14)
L1712207-02B	Vial Na2S2O3 preserved	B	N/A	4.0	Y	Absent	624(3)
L1712207-02C	Vial Na2S2O3 preserved	B	N/A	4.0	Y	Absent	504(14)

*Values in parentheses indicate holding time in days



Project Name: BOSTON CHILDREN'S HOPSITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

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

Report Format: DU Report with 'J' Qualifiers



Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

Data Qualifiers

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

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712207
Report Date: 04/26/17

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.
- 4 Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.
- 5 Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).
- 14 Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.
- 19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 74 Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

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

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



Certification Information

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

Westborough Facility

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

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

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

EPA 300: DW: Bromide

EPA 6860: NPW and SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

EPA 9012B: NPW: Total Cyanide

EPA 9050A: NPW: Specific Conductance

SM3500: NPW: Ferrous Iron

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

SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS

EPA 3005A NPW

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

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water

EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**

EPA 624: Volatile Halocarbons & Aromatics,

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

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

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water

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

Non-Potable Water


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


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


EPA 245.1 Hg.

SM2340B

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

 Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193	CHAIN OF CUSTODY Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288	Service Centers Brewer, ME 04412 Portsmouth, NH 03801 Mahwah, NJ 07430 Albany, NY 12205 Tonawanda, NY 14150 Holmes, PA 19043	Page <u>1</u> of <u>2</u>	Date Rec'd in Lab <u>4/18/17</u>	ALPHA Job # <u>L1718807</u>																																																																																																																						
		Project Information Project Name: <u>Boston Children's Hospital (BCCB)</u> Project Location: <u>Boston, MA</u> Project # <u>128868-001 128868-006</u> (Use Project name as Project #) <input type="checkbox"/>	Deliverables <input checked="" type="checkbox"/> Email <input type="checkbox"/> Fax <input type="checkbox"/> EQulS (1 File) <input checked="" type="checkbox"/> EQulS (4 File) <input type="checkbox"/> Other:	Billing Information <input type="checkbox"/> Same as Client Info PO #																																																																																																																							
H&A Information H&A Client: <u>Jonathan Thibault</u> H&A Address: <u>465 Medford Street</u> Suite 2200, Boston, MA 02129 H&A Phone: <u>617.680.2293</u> H&A Fax: _____ H&A Email: <u>jthibault@haleyaldrich.com</u>	Project Manager: <u>L. Vanzler</u> ALPHAQuote #: Turn-Around Time Standard <input checked="" type="checkbox"/> Due Date: Rush (only if pre approved) <input type="checkbox"/> # of Days:	Regulatory Requirements (Program/Criteria) Note: Select State from menu & identify criteria.	Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> Other:																																																																																																																								
These samples have been previously analyzed by Alpha <input type="checkbox"/>		ANALYSIS		Sample Filtration <input type="checkbox"/> Done <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please Specify below)																																																																																																																							
Other project specific requirements/comments: Sample submitted for 2017 NPDES RGP permit application; please follow appropriate testing methods and minimum detection levels as required by EPA.		Please specify Metals or TAL.		Total Bottles																																																																																																																							
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 CHAIN OF CUSTODY Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193	Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288	Service Centers Brewer, ME 04412 Portsmouth, NH 03801 Mahwah, NJ 07430 Albany, NY 12205 Tonawanda, NY 14150 Holmes, PA 19043	Page <u>1</u> of <u>2</u>	Date Rec'd in Lab <u>4/18/17</u>	ALPHA Job # <u>L1710007</u>			
		Project Information Project Name: <u>Boston Children's Hospital (BCCB)</u> Project Location: <u>Boston, MA</u> Project # <u>128868-001</u> (Use Project name as Project #) <input type="checkbox"/>		Deliverables <input checked="" type="checkbox"/> Email <input type="checkbox"/> Fax <input type="checkbox"/> EQulS (1 File) <input checked="" type="checkbox"/> EQulS (4 File) <input type="checkbox"/> Other:		Billing Information <input type="checkbox"/> Same as Client Info PO #		
		H&A Information H&A Client: <u>Jonathan Thibault</u> H&A Address: <u>465 Medford Street</u> Suite 2200, Boston, MA 02129 H&A Phone: <u>617.680.2293</u> H&A Fax: _____ H&A Email: <u>jthibault@haleyaldrich.com</u>		Project Manager: <u>L. Vanzler</u> ALPHAQuote #: _____ Turn-Around Time Standard <input checked="" type="checkbox"/> Due Date: _____ Rush (only if pre approved) <input type="checkbox"/> # of Days: _____		Regulatory Requirements (Program/Criteria) Note: Select State from menu & identify criteria.		
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		Relinquished By: <u>AAc</u> Date/Time <u>4/18/17 1806</u>		Received By: <u>[Signature]</u> Date/Time <u>4/18/17 1806</u>				
Document ID: 20455 Rev 1 (1/28/2016)								

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TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3268

Service Centers
Brewer, ME 04412 Portsmouth, NH 03801 Mahwah, NJ 07430
Albany, NY 12205
Tonawanda, NY 14150 Holmes, PA 19043

Page 2
of 2

Date Rec'd in Lab 4/18/17

ALPHA Job #
L17/2707

Project Information

Project Name: Boston Children's Hospital (BCCB)

Project Location: Boston, MA

Project # 128868-001

(Use Project name as Project #)

Project Manager: L. Vanzler

ALPHAQuote #:

Turn-Around Time

Standard Due Date:

Rush (only if pre approved) # of Days:

Deliverables

Email Fax

EQulS (1 File) EQulS (4 File)

Other:

Billing Information

Same as Client Info

PO #

H&A Information

H&A Client: Jonathan Thibault

H&A Address: 465 Medford Street

Suite 2200, Boston, MA 02129

H&A Phone: 617.680.2293

H&A Fax:

H&A Email: jthibault@haleyaldrich.com

Regulatory Requirements (Program/Criteria)

Project Manager: L. Vanzler

ALPHAQuote #:

Turn-Around Time

Standard Due Date:

Rush (only if pre approved) # of Days:

Regulatory Requirements (Program/Criteria)

Project Manager: L. Vanzler

ALPHAQuote #:

Turn-Around Time

Standard Due Date:

Rush (only if pre approved) # of Days:

Disposal Site Information

Please identify below location of applicable disposal facilities.

Disposal Facility:

NJ NY

Other:

These samples have been previously analyzed by Alpha

Other project specific requirements/comments:

Sample submitted for 2017 NPDES RGP permit application; please follow appropriate testing methods and minimum detection levels as required by EPA.

Please specify Metals or TAL.

ANALYSIS

9. TSS 2540	10. Hex Cr 7196	11. Total Cyanide 4500	12. Total Phenols 420	13. EDB 504	14. pH	15. Hardness	16. Temperature
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Sample Filtration

Done
 Lab to do
 Lab to do

(Please Specify below)

Sample Specific Comments

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10007-02	TB_04182017	"	1100	Aq	MJD					X				<input type="checkbox"/> Done <input type="checkbox"/> Lab to do <input type="checkbox"/> Lab to do	FAZ-140:exame 122 2.5cc ml Amber w/ 16hr preserve

Preservative Code:
A = None
B = HCl
C = HNO₃
D = H₂SO₄
E = NaOH
F = MeOH
G = NaHSO₄
H = Na₂S₂O₃
K/E = Zn Ac/NaOH
O = Other

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

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	P	P	P	A	Y
Preservative	A	A	A	D	H

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Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	4/18/17 1616	AAL	4/18/17 1615
AAL	4/18/17 1800	<i>[Signature]</i>	4/18/17 1500



ANALYTICAL REPORT

Lab Number:	L1712403
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Lee Vanzler
Phone:	(617) 886-7561
Project Name:	BOSTON CHILDREN'S HOSPITAL
Project Number:	128868-006
Report Date:	04/27/17

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

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



Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1712403-01	B115S_04192017	WATER	BOSTON, MA	04/19/17 14:05	04/19/17
L1712403-02	TB_04192017	WATER	BOSTON, MA	04/19/17 12:00	04/19/17

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

Case Narrative

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

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

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

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

HOLD POLICY

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

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

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.


Volatile Organics by Method 624

The WG997012-3 LCS recovery for 1,1,1-trichloroethane (110%), associated with L1712403-01 and -02 (all samples), is outside Alpha's acceptance criteria, but within the acceptance criteria specified in the method.

The WG997012-3 LCS recovery, associated with L1712403-01 and -02 (all samples), is above the acceptance criteria for 1,2-dichlorobenzene (170%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

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

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 04/27/17

ORGANICS

VOLATILES

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-01
 Client ID: B115S_04192017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 04/26/17 15:29
 Analyst: PK

Date Collected: 04/19/17 14:05
 Date Received: 04/19/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS - Westborough Lab						
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Ethanol	ND		ug/l	250	14.	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	102		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-01
 Client ID: B115S_04192017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 04/26/17 20:14
 Analyst: PK

Date Collected: 04/19/17 14:05
 Date Received: 04/19/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.68	1
1,1-Dichloroethane	0.30	J	ug/l	0.75	0.21	1
Chloroform	1.9		ug/l	0.75	0.16	1
Carbon tetrachloride	6.4		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.8	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	43		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	6.3		ug/l	2.5	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.17	1
Bromoform	ND		ug/l	2.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	0.70		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	0.27	J	ug/l	0.50	0.17	1
Chloromethane	ND		ug/l	2.5	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
1,2-Dichloroethene, Total	5.2		ug/l	0.50	0.16	1
Trichloroethene	3.4		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712403**Project Number:** 128868-006**Report Date:** 04/27/17**SAMPLE RESULTS**

Lab ID: L1712403-01

Date Collected: 04/19/17 14:05

Client ID: B115S_04192017

Date Received: 04/19/17

Sample Location: BOSTON, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
Methyl tert butyl ether	0.41	J	ug/l	1.0	0.17	1
p/m-Xylene	0.92	J	ug/l	1.0	0.33	1
o-Xylene	0.50	J	ug/l	1.0	0.33	1
Xylenes, Total	1.4	J	ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	5.2		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	5.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Tetrahydrofuran	ND		ug/l	5.0	0.83	1
2,2-Dichloropropane	ND		ug/l	2.5	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
1,3-Dichloropropane	ND		ug/l	2.5	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	2.5	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	ND		ug/l	0.50	0.18	1
tert-Butylbenzene	ND		ug/l	2.5	0.18	1
o-Chlorotoluene	ND		ug/l	2.5	0.17	1
p-Chlorotoluene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
p-Isopropyltoluene	ND		ug/l	0.50	0.19	1
Naphthalene	ND		ug/l	2.5	0.22	1
n-Propylbenzene	ND		ug/l	0.50	0.17	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-01
 Client ID: B115S_04192017
 Sample Location: BOSTON, MA

Date Collected: 04/19/17 14:05
 Date Received: 04/19/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18	1
Ethyl ether	ND		ug/l	2.5	0.16	1
Tert-Butyl Alcohol	ND		ug/l	10	1.4	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	105		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-01
 Client ID: B115S_04192017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 1,8260C-SIM(M)
 Analytical Date: 04/26/17 20:14
 Analyst: MM

Date Collected: 04/19/17 14:05
 Date Received: 04/19/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	4.5		ug/l	3.0	0.76	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-01
 Client ID: B115S_04192017
 Sample Location: BOSTON, MA
 Matrix: Water
 Analytical Method: 5,624
 Analytical Date: 04/20/17 18:07
 Analyst: GT

Date Collected: 04/19/17 14:05
 Date Received: 04/19/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	5.0	0.62	1
1,1-Dichloroethane	ND		ug/l	1.5	0.29	1
Chloroform	2.1		ug/l	1.5	0.22	1
Carbon tetrachloride	7.0		ug/l	1.0	0.32	1
1,2-Dichloropropane	ND		ug/l	3.5	0.27	1
Dibromochloromethane	ND		ug/l	1.0	0.33	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.24	1
2-Chloroethylvinyl ether	ND		ug/l	10	0.54	1
Tetrachloroethene	40		ug/l	1.5	0.33	1
Chlorobenzene	ND		ug/l	3.5	0.30	1
Trichlorofluoromethane	6.8		ug/l	5.0	0.46	1
1,2-Dichloroethane	ND		ug/l	1.5	0.32	1
1,1,1-Trichloroethane	ND		ug/l	2.0	0.30	1
Bromodichloromethane	ND		ug/l	1.0	0.25	1
trans-1,3-Dichloropropene	ND		ug/l	1.5	0.26	1
cis-1,3-Dichloropropene	ND		ug/l	1.5	0.32	1
Bromoform	ND		ug/l	1.0	0.32	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	0.22	1
Benzene	0.62	J	ug/l	1.0	0.23	1
Toluene	ND		ug/l	1.0	0.32	1
Ethylbenzene	ND		ug/l	1.0	0.31	1
Chloromethane	ND		ug/l	5.0	0.64	1
Bromomethane	ND		ug/l	5.0	1.3	1
Vinyl chloride	ND		ug/l	1.0	0.30	1
Chloroethane	ND		ug/l	2.0	0.26	1
1,1-Dichloroethene	ND		ug/l	1.0	0.37	1
trans-1,2-Dichloroethene	ND		ug/l	1.5	0.33	1
cis-1,2-Dichloroethene ¹	4.9		ug/l	1.0	0.29	1
Trichloroethene	3.6		ug/l	1.0	0.33	1
1,2-Dichlorobenzene	ND		ug/l	5.0	0.26	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-01
 Client ID: B115S_04192017
 Sample Location: BOSTON, MA

Date Collected: 04/19/17 14:05
 Date Received: 04/19/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	5.0	0.25	1
1,4-Dichlorobenzene	ND		ug/l	5.0	0.26	1
p/m-Xylene ¹	ND		ug/l	2.0	0.58	1
o-xylene ¹	ND		ug/l	1.0	0.22	1
Xylenes, Total ¹	ND		ug/l	1.0	0.22	1
Styrene ¹	ND		ug/l	1.0	0.25	1
Acetone ¹	ND		ug/l	10	4.0	1
Carbon disulfide ¹	ND		ug/l	5.0	0.73	1
2-Butanone ¹	ND		ug/l	10	2.2	1
Vinyl acetate ¹	ND		ug/l	10	2.9	1
4-Methyl-2-pentanone ¹	ND		ug/l	10	1.8	1
2-Hexanone ¹	ND		ug/l	10	2.5	1
Acrolein ¹	ND		ug/l	8.0	1.3	1
Acrylonitrile ¹	ND		ug/l	10	0.97	1
Methyl tert butyl Ether ¹	ND		ug/l	10	0.27	1
Dibromomethane ¹	ND		ug/l	1.0	0.11	1
Tert-Butyl Alcohol ¹	ND		ug/l	100	6.0	1
Tertiary-Amyl Methyl Ether ¹	ND		ug/l	20	0.18	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	108		80-120
Fluorobenzene	108		80-120
4-Bromofluorobenzene	95		80-120

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712403**Project Number:** 128868-006**Report Date:** 04/27/17**SAMPLE RESULTS**

Lab ID: L1712403-02
Client ID: TB_04192017
Sample Location: BOSTON, MA
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 04/26/17 20:47
Analyst: MM

Date Collected: 04/19/17 12:00
Date Received: 04/19/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	0.68	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
Chloroform	ND		ug/l	0.75	0.16	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.8	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.17	1
Bromoform	ND		ug/l	2.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
Chloromethane	ND		ug/l	2.5	0.18	1
Bromomethane	ND		ug/l	1.0	0.26	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	1.0	0.13	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712403**Project Number:** 128868-006**Report Date:** 04/27/17**SAMPLE RESULTS**

Lab ID: L1712403-02

Date Collected: 04/19/17 12:00

Client ID: TB_04192017

Date Received: 04/19/17

Sample Location: BOSTON, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Dibromomethane	ND		ug/l	5.0	0.36	1
1,4-Dichlorobutane	ND		ug/l	5.0	0.46	1
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18	1
Styrene	ND		ug/l	1.0	0.36	1
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	0.31	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Ethyl methacrylate	ND		ug/l	5.0	0.61	1
Acrylonitrile	ND		ug/l	5.0	0.43	1
Bromochloromethane	ND		ug/l	2.5	0.15	1
Tetrahydrofuran	ND		ug/l	5.0	0.83	1
2,2-Dichloropropane	ND		ug/l	2.5	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
1,3-Dichloropropane	ND		ug/l	2.5	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16	1
Bromobenzene	ND		ug/l	2.5	0.15	1
n-Butylbenzene	ND		ug/l	0.50	0.19	1
sec-Butylbenzene	ND		ug/l	0.50	0.18	1
tert-Butylbenzene	ND		ug/l	2.5	0.18	1
o-Chlorotoluene	ND		ug/l	2.5	0.17	1
p-Chlorotoluene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
Hexachlorobutadiene	ND		ug/l	0.50	0.22	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
p-Isopropyltoluene	ND		ug/l	0.50	0.19	1
Naphthalene	ND		ug/l	2.5	0.22	1
n-Propylbenzene	ND		ug/l	0.50	0.17	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-02
 Client ID: TB_04192017
 Sample Location: BOSTON, MA

Date Collected: 04/19/17 12:00
 Date Received: 04/19/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18	1
Ethyl ether	ND		ug/l	2.5	0.16	1
Tert-Butyl Alcohol	ND		ug/l	10	1.4	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	104		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-02
Client ID: TB_04192017
Sample Location: BOSTON, MA
Matrix: Water
Analytical Method: 1,8260C-SIM(M)
Analytical Date: 04/26/17 20:47
Analyst: MM

Date Collected: 04/19/17 12:00
Date Received: 04/19/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	3.0	0.76	1

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712403**Project Number:** 128868-006**Report Date:** 04/27/17**SAMPLE RESULTS**

Lab ID: L1712403-02
Client ID: TB_04192017
Sample Location: BOSTON, MA
Matrix: Water
Analytical Method: 5,624
Analytical Date: 04/20/17 16:39
Analyst: GT

Date Collected: 04/19/17 12:00
Date Received: 04/19/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	5.0	0.62	1
1,1-Dichloroethane	ND		ug/l	1.5	0.29	1
Chloroform	ND		ug/l	1.5	0.22	1
Carbon tetrachloride	ND		ug/l	1.0	0.32	1
1,2-Dichloropropane	ND		ug/l	3.5	0.27	1
Dibromochloromethane	ND		ug/l	1.0	0.33	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.24	1
2-Chloroethylvinyl ether	ND		ug/l	10	0.54	1
Tetrachloroethene	ND		ug/l	1.5	0.33	1
Chlorobenzene	ND		ug/l	3.5	0.30	1
Trichlorofluoromethane	ND		ug/l	5.0	0.46	1
1,2-Dichloroethane	ND		ug/l	1.5	0.32	1
1,1,1-Trichloroethane	ND		ug/l	2.0	0.30	1
Bromodichloromethane	ND		ug/l	1.0	0.25	1
trans-1,3-Dichloropropene	ND		ug/l	1.5	0.26	1
cis-1,3-Dichloropropene	ND		ug/l	1.5	0.32	1
Bromoform	ND		ug/l	1.0	0.32	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	0.22	1
Benzene	ND		ug/l	1.0	0.23	1
Toluene	ND		ug/l	1.0	0.32	1
Ethylbenzene	ND		ug/l	1.0	0.31	1
Chloromethane	ND		ug/l	5.0	0.64	1
Bromomethane	ND		ug/l	5.0	1.3	1
Vinyl chloride	ND		ug/l	1.0	0.30	1
Chloroethane	ND		ug/l	2.0	0.26	1
1,1-Dichloroethene	ND		ug/l	1.0	0.37	1
trans-1,2-Dichloroethene	ND		ug/l	1.5	0.33	1
cis-1,2-Dichloroethene ¹	ND		ug/l	1.0	0.29	1
Trichloroethene	ND		ug/l	1.0	0.33	1
1,2-Dichlorobenzene	ND		ug/l	5.0	0.26	1

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

SAMPLE RESULTS

Lab ID: L1712403-02
 Client ID: TB_04192017
 Sample Location: BOSTON, MA

Date Collected: 04/19/17 12:00
 Date Received: 04/19/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	5.0	0.25	1
1,4-Dichlorobenzene	ND		ug/l	5.0	0.26	1
p/m-Xylene ¹	ND		ug/l	2.0	0.58	1
o-xylene ¹	ND		ug/l	1.0	0.22	1
Xylenes, Total ¹	ND		ug/l	1.0	0.22	1
Styrene ¹	ND		ug/l	1.0	0.25	1
Acetone ¹	ND		ug/l	10	4.0	1
Carbon disulfide ¹	ND		ug/l	5.0	0.73	1
2-Butanone ¹	ND		ug/l	10	2.2	1
Vinyl acetate ¹	ND		ug/l	10	2.9	1
4-Methyl-2-pentanone ¹	ND		ug/l	10	1.8	1
2-Hexanone ¹	ND		ug/l	10	2.5	1
Acrolein ¹	ND		ug/l	8.0	1.3	1
Acrylonitrile ¹	ND		ug/l	10	0.97	1
Methyl tert butyl Ether ¹	ND		ug/l	10	0.27	1
Dibromomethane ¹	ND		ug/l	1.0	0.11	1
Tert-Butyl Alcohol ¹	ND		ug/l	100	6.0	1
Tertiary-Amyl Methyl Ether ¹	ND		ug/l	20	0.18	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	105		80-120
Fluorobenzene	105		80-120
4-Bromofluorobenzene	96		80-120

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,624
Analytical Date: 04/20/17 11:30
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG997012-4					
Methylene chloride	ND		ug/l	5.0	0.62
1,1-Dichloroethane	ND		ug/l	1.5	0.29
Chloroform	ND		ug/l	1.5	0.22
Carbon tetrachloride	ND		ug/l	1.0	0.32
1,2-Dichloropropane	ND		ug/l	3.5	0.27
Dibromochloromethane	ND		ug/l	1.0	0.33
1,1,2-Trichloroethane	ND		ug/l	1.5	0.24
2-Chloroethylvinyl ether	ND		ug/l	10	0.54
Tetrachloroethene	ND		ug/l	1.5	0.33
Chlorobenzene	ND		ug/l	3.5	0.30
Trichlorofluoromethane	ND		ug/l	5.0	0.46
1,2-Dichloroethane	ND		ug/l	1.5	0.32
1,1,1-Trichloroethane	ND		ug/l	2.0	0.30
Bromodichloromethane	ND		ug/l	1.0	0.25
trans-1,3-Dichloropropene	ND		ug/l	1.5	0.26
cis-1,3-Dichloropropene	ND		ug/l	1.5	0.32
Bromoform	ND		ug/l	1.0	0.32
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	0.22
Benzene	ND		ug/l	1.0	0.23
Toluene	ND		ug/l	1.0	0.32
Ethylbenzene	ND		ug/l	1.0	0.31
Chloromethane	ND		ug/l	5.0	0.64
Bromomethane	ND		ug/l	5.0	1.3
Vinyl chloride	ND		ug/l	1.0	0.30
Chloroethane	ND		ug/l	2.0	0.26
1,1-Dichloroethene	ND		ug/l	1.0	0.37
trans-1,2-Dichloroethene	ND		ug/l	1.5	0.33
cis-1,2-Dichloroethene ¹	ND		ug/l	1.0	0.29
Trichloroethene	ND		ug/l	1.0	0.33

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,624
 Analytical Date: 04/20/17 11:30
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG997012-4					
1,2-Dichlorobenzene	ND		ug/l	5.0	0.26
1,3-Dichlorobenzene	ND		ug/l	5.0	0.25
1,4-Dichlorobenzene	ND		ug/l	5.0	0.26
p/m-Xylene ¹	ND		ug/l	2.0	0.58
o-xylene ¹	ND		ug/l	1.0	0.22
Xylenes, Total ¹	ND		ug/l	1.0	0.22
Styrene ¹	ND		ug/l	1.0	0.25
Acetone ¹	ND		ug/l	10	4.0
Carbon disulfide ¹	ND		ug/l	5.0	0.73
2-Butanone ¹	ND		ug/l	10	2.2
Vinyl acetate ¹	ND		ug/l	10	2.9
4-Methyl-2-pentanone ¹	ND		ug/l	10	1.8
2-Hexanone ¹	ND		ug/l	10	2.5
Acrolein ¹	ND		ug/l	8.0	1.3
Acrylonitrile ¹	ND		ug/l	10	0.97
Methyl tert butyl Ether ¹	ND		ug/l	10	0.27
Dibromomethane ¹	ND		ug/l	1.0	0.11
Tert-Butyl Alcohol ¹	ND		ug/l	100	6.0
Tertiary-Amyl Methyl Ether ¹	ND		ug/l	20	0.18

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	104		80-120
Fluorobenzene	105		80-120
4-Bromofluorobenzene	96		80-120

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 04/26/17 14:05
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG997825-5					
Methyl Methacrylate	ND		ug/l	2.5	0.32
iso-Butyl Alcohol	ND		ug/l	10	4.0
Ethyl Alcohol	ND		ug/l	250	14.
iso-Propyl Alcohol	ND		ug/l	100	8.5
n-Butyl Alcohol	ND		ug/l	100	8.0

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130

Project Name: BOSTON CHILDREN'S HOSPITAL**Lab Number:** L1712403**Project Number:** 128868-006**Report Date:** 04/27/17**Method Blank Analysis
Batch Quality Control**

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

Analytical Date: 04/26/17 13:00

Analyst: BD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-02 Batch: WG997846-5					
1,4-Dioxane	ND		ug/l	3.0	0.76

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 04/26/17 13:00
Analyst: BD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG997849-5					
Methylene chloride	ND		ug/l	3.0	0.68
1,1-Dichloroethane	ND		ug/l	0.75	0.21
Chloroform	ND		ug/l	0.75	0.16
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.8	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	0.50	0.18
Trichlorofluoromethane	ND		ug/l	2.5	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.17
Bromoform	ND		ug/l	2.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
Chloromethane	ND		ug/l	2.5	0.18
Bromomethane	ND		ug/l	1.0	0.26
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	1.0	0.13
1,1-Dichloroethene	ND		ug/l	0.50	0.17
1,2-Dichloroethene, Total	ND		ug/l	0.50	0.16
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/26/17 13:00
Analyst: BD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG997849-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19
Methyl tert butyl ether	ND		ug/l	1.0	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
Dibromomethane	ND		ug/l	5.0	0.36
1,4-Dichlorobutane	ND		ug/l	5.0	0.46
1,2,3-Trichloropropane	ND		ug/l	5.0	0.18
Styrene	ND		ug/l	1.0	0.36
Dichlorodifluoromethane	ND		ug/l	5.0	0.24
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	0.30
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	0.31
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
2-Hexanone	ND		ug/l	5.0	0.52
Ethyl methacrylate	ND		ug/l	5.0	0.61
Acrylonitrile	ND		ug/l	5.0	0.43
Bromochloromethane	ND		ug/l	2.5	0.15
Tetrahydrofuran	ND		ug/l	5.0	0.83
2,2-Dichloropropane	ND		ug/l	2.5	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
1,3-Dichloropropane	ND		ug/l	2.5	0.21
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.16
Bromobenzene	ND		ug/l	2.5	0.15
n-Butylbenzene	ND		ug/l	0.50	0.19

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/26/17 13:00
Analyst: BD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG997849-5					
sec-Butylbenzene	ND		ug/l	0.50	0.18
tert-Butylbenzene	ND		ug/l	2.5	0.18
o-Chlorotoluene	ND		ug/l	2.5	0.17
p-Chlorotoluene	ND		ug/l	2.5	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35
Hexachlorobutadiene	ND		ug/l	0.50	0.22
Isopropylbenzene	ND		ug/l	0.50	0.19
p-Isopropyltoluene	ND		ug/l	0.50	0.19
Naphthalene	0.55	J	ug/l	2.5	0.22
n-Propylbenzene	ND		ug/l	0.50	0.17
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23
1,2,4-Trichlorobenzene	0.35	J	ug/l	2.5	0.22
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.17
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.18
Ethyl ether	ND		ug/l	2.5	0.16
Tert-Butyl Alcohol	ND		ug/l	10	1.4
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	0.28

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997012-3								
Methylene chloride	100		-		70-111	-		30
1,1-Dichloroethane	110		-		78-116	-		30
Chloroform	105		-		86-111	-		30
Carbon tetrachloride	110		-		60-112	-		30
1,2-Dichloropropane	105		-		83-113	-		30
Dibromochloromethane	90		-		58-129	-		30
1,1,2-Trichloroethane	95		-		80-118	-		30
2-Chloroethylvinyl ether	85		-		69-124	-		30
Tetrachloroethene	100		-		80-126	-		30
Chlorobenzene	85		-		80-126	-		30
Trichlorofluoromethane	100		-		83-128	-		30
1,2-Dichloroethane	105		-		82-110	-		30
1,1,1-Trichloroethane	110	Q	-		72-109	-		30
Bromodichloromethane	100		-		71-120	-		30
trans-1,3-Dichloropropene	100		-		73-106	-		30
cis-1,3-Dichloropropene	100		-		78-111	-		30
Bromoform	80		-		45-131	-		30
1,1,2,2-Tetrachloroethane	110		-		81-122	-		30
Benzene	105		-		84-116	-		30
Toluene	100		-		83-121	-		30
Ethylbenzene	90		-		84-123	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997012-3								
Chloromethane	100		-		70-144	-		30
Bromomethane	75		-		63-141	-		30
Vinyl chloride	105		-		56-118	-		30
Chloroethane	105		-		74-130	-		30
1,1-Dichloroethene	110		-		77-116	-		30
trans-1,2-Dichloroethene	110		-		81-121	-		30
cis-1,2-Dichloroethene ¹	105		-		85-110	-		30
Trichloroethene	105		-		84-118	-		30
1,2-Dichlorobenzene	170	Q	-		78-128	-		30
1,3-Dichlorobenzene	105		-		77-125	-		30
1,4-Dichlorobenzene	110		-		77-125	-		30
p/m-Xylene ¹	88		-		81-121	-		30
o-Xylene ¹	85		-		81-124	-		30
Styrene ¹	85		-		84-133	-		30
Acetone ¹	106		-		40-160	-		30
Carbon disulfide ¹	80		-		54-134	-		30
2-Butanone ¹	106		-		57-116	-		30
Vinyl acetate ¹	128		-		40-160	-		30
4-Methyl-2-pentanone ¹	94		-		79-125	-		30
2-Hexanone ¹	94		-		78-120	-		30
Acrolein ¹	115		-		40-160	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712403

Report Date: 04/27/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997012-3								
Acrylonitrile ¹	105		-		66-123	-		30
Methyl tert butyl ether ¹	100		-		57-126	-		30
Dibromomethane ¹	100		-		65-126	-		30
tert-Butyl Alcohol ¹	97		-		52-114	-		30
Tertiary-Amyl Methyl Ether ¹	100		-		66-111	-		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	102				80-120
Fluorobenzene	104				80-120
4-Bromofluorobenzene	95				80-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712403

Report Date: 04/27/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG997825-3 WG997825-4								
Methyl Methacrylate	95		103		70-130	8		20
iso-Butyl Alcohol	93		105		70-130	13		20
Ethyl Alcohol	98		120		70-130	21	Q	20
iso-Propyl Alcohol	95		113		70-130	17		20
n-Butyl Alcohol	83		105		70-130	24	Q	20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		103		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	98		95		70-130
Dibromofluoromethane	99		100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-02 Batch: WG997846-3 WG997846-4								
1,4-Dioxane	99		110		70-130	11		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997849-3 WG997849-4								
Methylene chloride	100		110		70-130	10		20
1,1-Dichloroethane	100		110		70-130	10		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	100		100		63-132	0		20
1,2-Dichloropropane	100		99		70-130	1		20
Dibromochloromethane	98		100		63-130	2		20
1,1,2-Trichloroethane	99		96		70-130	3		20
Tetrachloroethene	110		110		70-130	0		20
Chlorobenzene	100		100		75-130	0		25
Trichlorofluoromethane	100		100		62-150	0		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	100		110		67-130	10		20
Bromodichloromethane	97		93		67-130	4		20
trans-1,3-Dichloropropene	94		96		70-130	2		20
cis-1,3-Dichloropropene	96		98		70-130	2		20
1,1-Dichloropropene	100		100		70-130	0		20
Bromoform	95		92		54-136	3		20
1,1,2,2-Tetrachloroethane	87		88		67-130	1		20
Benzene	100		100		70-130	0		25
Toluene	100		100		70-130	0		25
Ethylbenzene	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997849-3 WG997849-4								
Chloromethane	87		84		64-130	4		20
Bromomethane	110		120		39-139	9		20
Vinyl chloride	90		92		55-140	2		20
Chloroethane	110		110		55-138	0		20
1,1-Dichloroethene	100		100		61-145	0		25
Trichloroethene	100		100		70-130	0		25
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
Methyl tert butyl ether	94		96		63-130	2		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	110		105		70-130	5		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Dibromomethane	99		95		70-130	4		20
1,4-Dichlorobutane	88		87		70-130	1		20
1,2,3-Trichloropropane	94		93		64-130	1		20
Styrene	105		105		70-130	0		20
Dichlorodifluoromethane	72		72		36-147	0		20
Acetone	86		100		58-148	15		20
Carbon disulfide	100		100		51-130	0		20
2-Butanone	91		84		63-138	8		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997849-3 WG997849-4								
Vinyl acetate	90		89		70-130	1		20
4-Methyl-2-pentanone	85		88		59-130	3		20
2-Hexanone	79		80		57-130	1		20
Ethyl methacrylate	92		89		70-130	3		20
Acrylonitrile	99		86		70-130	14		20
Bromochloromethane	100		100		70-130	0		20
Tetrahydrofuran	87		65		58-130	29	Q	20
2,2-Dichloropropane	100		100		63-133	0		20
1,2-Dibromoethane	99		98		70-130	1		20
1,3-Dichloropropane	100		100		70-130	0		20
1,1,1,2-Tetrachloroethane	100		100		64-130	0		20
Bromobenzene	100		100		70-130	0		20
n-Butylbenzene	92		95		53-136	3		20
sec-Butylbenzene	97		96		70-130	1		20
tert-Butylbenzene	100		96		70-130	4		20
o-Chlorotoluene	98		94		70-130	4		20
p-Chlorotoluene	100		95		70-130	5		20
1,2-Dibromo-3-chloropropane	92		98		41-144	6		20
Hexachlorobutadiene	130		120		63-130	8		20
Isopropylbenzene	95		94		70-130	1		20
p-Isopropyltoluene	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG997849-3 WG997849-4								
Naphthalene	86		90		70-130	5		20
n-Propylbenzene	97		95		69-130	2		20
1,2,3-Trichlorobenzene	97		95		70-130	2		20
1,2,4-Trichlorobenzene	100		97		70-130	3		20
1,3,5-Trimethylbenzene	100		98		64-130	2		20
1,2,4-Trimethylbenzene	100		98		70-130	2		20
trans-1,4-Dichloro-2-butene	93		85		70-130	9		20
Ethyl ether	110		110		59-134	0		20
Tert-Butyl Alcohol	98		98		70-130	0		20
Tertiary-Amyl Methyl Ether	94		97		66-130	3		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		98		70-130
Toluene-d8	99		102		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	100		104		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-10 QC Sample: L1712543-02 Client ID: MS Sample												
Methylene chloride	ND	200	280	140	Q	-	-		70-111	-		30
1,1-Dichloroethane	ND	200	300	150	Q	-	-		78-116	-		30
Chloroform	ND	200	280	140	Q	-	-		86-111	-		30
Carbon tetrachloride	ND	200	300	150	Q	-	-		60-112	-		30
1,2-Dichloropropane	ND	200	280	140	Q	-	-		83-113	-		30
Dibromochloromethane	ND	200	220	110		-	-		58-129	-		30
1,1,2-Trichloroethane	ND	200	230	115		-	-		80-118	-		30
2-Chloroethylvinyl ether	ND	200	160	80		-	-		69-124	-		30
Tetrachloroethene	ND	200	230	115		-	-		80-126	-		30
Chlorobenzene	ND	200	220	110		-	-		80-126	-		30
Trichlorofluoromethane	ND	200	310	155	Q	-	-		83-128	-		30
1,2-Dichloroethane	ND	200	280	140	Q	-	-		82-110	-		30
1,1,1-Trichloroethane	ND	200	290	145	Q	-	-		72-109	-		30
Bromodichloromethane	ND	200	240	120		-	-		71-120	-		30
trans-1,3-Dichloropropene	ND	200	230	115	Q	-	-		73-106	-		30
cis-1,3-Dichloropropene	ND	200	230	115	Q	-	-		78-111	-		30
Bromoform	ND	200	190	95		-	-		45-131	-		30
1,1,2,2-Tetrachloroethane	ND	200	270	135	Q	-	-		81-122	-		30
Benzene	ND	200	280	140	Q	-	-		84-116	-		30
Toluene	ND	200	240	120		-	-		83-121	-		30
Ethylbenzene	ND	200	220	110		-	-		84-123	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Lab Number: L1712403

Project Number: 128868-006

Report Date: 04/27/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-10 QC Sample: L1712543-02 Client ID: MS Sample												
Chloromethane	ND	200	370	185	Q	-	-		70-144	-		30
Bromomethane	ND	200	270	135		-	-		63-141	-		30
Vinyl chloride	ND	200	360	180	Q	-	-		56-118	-		30
Chloroethane	ND	200	320	160	Q	-	-		74-130	-		30
1,1-Dichloroethene	ND	200	300	150	Q	-	-		77-116	-		30
trans-1,2-Dichloroethene	ND	200	300	150	Q	-	-		81-121	-		30
cis-1,2-Dichloroethene ¹	ND	200	280	140	Q	-	-		85-110	-		30
Trichloroethene	ND	200	270	135	Q	-	-		84-118	-		30
1,2-Dichlorobenzene	ND	200	400	200	Q	-	-		78-128	-		30
1,3-Dichlorobenzene	ND	200	240	120		-	-		77-125	-		30
1,4-Dichlorobenzene	ND	200	250	125		-	-		77-125	-		30
p/m-Xylene ¹	ND	400	450	113		-	-		81-121	-		30
o-Xylene ¹	ND	200	220	110		-	-		81-124	-		30
Styrene ¹	ND	200	220	110		-	-		84-133	-		30
Acetone ¹	47.J	500	790	158		-	-		40-160	-		30
Carbon disulfide ¹	ND	200	220	110		-	-		54-134	-		30
2-Butanone ¹	ND	500	720	144	Q	-	-		57-116	-		30
Vinyl acetate ¹	ND	400	670	168	Q	-	-		40-160	-		30
4-Methyl-2-pentanone ¹	ND	500	600	120		-	-		79-125	-		30
2-Hexanone ¹	ND	500	600	120		-	-		78-120	-		30
Acrolein ¹	ND	400	530	133		-	-		40-160	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-10 QC Sample: L1712543-02 Client ID: MS Sample												
Acrylonitrile ¹	ND	400	580	145	Q	-	-		66-123	-		30
Dibromomethane ¹	ND	200	270	135	Q	-	-		65-126	-		30

<i>Surrogate</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
4-Bromofluorobenzene	94				80-120
Fluorobenzene	105				80-120
Pentafluorobenzene	104				80-120

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712403

Report Date: 04/27/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-9 QC Sample: L1712543-02 Client ID: DUP Sample						
Methylene chloride	ND	ND	ug/l	NC		30
1,1-Dichloroethane	ND	ND	ug/l	NC		30
Chloroform	ND	ND	ug/l	NC		30
Carbon tetrachloride	ND	ND	ug/l	NC		30
1,2-Dichloropropane	ND	ND	ug/l	NC		30
Dibromochloromethane	ND	ND	ug/l	NC		30
1,1,2-Trichloroethane	ND	ND	ug/l	NC		30
2-Chloroethylvinyl ether	ND	ND	ug/l	NC		30
Tetrachloroethene	ND	ND	ug/l	NC		30
Chlorobenzene	ND	ND	ug/l	NC		30
Trichlorofluoromethane	ND	ND	ug/l	NC		30
1,2-Dichloroethane	ND	ND	ug/l	NC		30
1,1,1-Trichloroethane	ND	ND	ug/l	NC		30
Bromodichloromethane	ND	ND	ug/l	NC		30
trans-1,3-Dichloropropene	ND	ND	ug/l	NC		30
cis-1,3-Dichloropropene	ND	ND	ug/l	NC		30
Bromoform	ND	ND	ug/l	NC		30
1,1,2,2-Tetrachloroethane	ND	ND	ug/l	NC		30
Benzene	ND	ND	ug/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712403

Report Date: 04/27/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-9 QC Sample: L1712543-02 Client ID: DUP Sample						
Toluene	ND	ND	ug/l	NC		30
Ethylbenzene	ND	ND	ug/l	NC		30
Chloromethane	ND	ND	ug/l	NC		30
Bromomethane	ND	ND	ug/l	NC		30
Vinyl chloride	ND	ND	ug/l	NC		30
Chloroethane	ND	ND	ug/l	NC		30
1,1-Dichloroethene	ND	ND	ug/l	NC		30
trans-1,2-Dichloroethene	ND	ND	ug/l	NC		30
cis-1,2-Dichloroethene ¹	ND	ND	ug/l	NC		30
Trichloroethene	ND	ND	ug/l	NC		30
1,2-Dichlorobenzene	ND	ND	ug/l	NC		30
1,3-Dichlorobenzene	ND	ND	ug/l	NC		30
1,4-Dichlorobenzene	ND	ND	ug/l	NC		30
p/m-Xylene ¹	ND	ND	ug/l	NC		30
o-Xylene ¹	ND	ND	ug/l	NC		30
Xylene (Total) ¹	ND	ND	ug/l	NC		30
Styrene ¹	ND	ND	ug/l	NC		30
Acetone ¹	47.J	44J	ug/l	NC		30
Carbon disulfide ¹	ND	ND	ug/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: BOSTON CHILDREN'S HOSPITAL

Project Number: 128868-006

Lab Number: L1712403

Report Date: 04/27/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG997012-9 QC Sample: L1712543-02 Client ID: DUP Sample						
2-Butanone ¹	ND	ND	ug/l	NC		30
Vinyl acetate ¹	ND	ND	ug/l	NC		30
4-Methyl-2-pentanone ¹	ND	ND	ug/l	NC		30
2-Hexanone ¹	ND	ND	ug/l	NC		30
Acrolein ¹	ND	ND	ug/l	NC		30
Acrylonitrile ¹	ND	ND	ug/l	NC		30
Dibromomethane ¹	ND	ND	ug/l	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	104		106		80-120
Fluorobenzene	105		107		80-120
4-Bromofluorobenzene	94		94		80-120

Project Name: BOSTON CHILDREN'S HOSPITAL**Project Number:** 128868-006**Lab Number:** L1712403**Report Date:** 04/27/17**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

Cooler Information Custody Seal**Cooler**

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1712403-01A	Vial HCl preserved	A	N/A	5.8	Y	Absent	8260-SIM(14),8260(14)
L1712403-01B	Vial HCl preserved	A	N/A	5.8	Y	Absent	8260-SIM(14),8260(14)
L1712403-01C	Vial HCl preserved	A	N/A	5.8	Y	Absent	8260-SIM(14),8260(14)
L1712403-01D	Vial Na2S2O3 preserved	A	N/A	5.8	Y	Absent	624(3)
L1712403-01E	Vial Na2S2O3 preserved	A	N/A	5.8	Y	Absent	624(3)
L1712403-01F	Vial Na2S2O3 preserved	A	N/A	5.8	Y	Absent	624(3)
L1712403-01G	Amber 1000ml unpreserved	A	7	5.8	Y	Absent	HOLD-8270(7)
L1712403-01H	Amber 1000ml unpreserved	A	7	5.8	Y	Absent	HOLD-8270(7)
L1712403-01I	Amber 1000ml Na2S2O3	A	7	5.8	Y	Absent	HOLD-625(7)
L1712403-01J	Amber 1000ml Na2S2O3	A	7	5.8	Y	Absent	HOLD-625(7)
L1712403-02A	Vial Na2S2O3 preserved	A	N/A	5.8	Y	Absent	624(3)
L1712403-02B	Vial HCl preserved	A	N/A	5.8	Y	Absent	8260-SIM(14),8260(14)

*Values in parentheses indicate holding time in days

Project Name: BOSTON CHILDREN'S HOSPITAL
Project Number: 128868-006

Lab Number: L1712403
Report Date: 04/27/17

GLOSSARY

Acronyms

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

Footnotes

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

Terms

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

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

Data Qualifiers

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

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Data Qualifiers

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

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 5 Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).

LIMITATION OF LIABILITIES

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

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



Certification Information

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

Westborough Facility

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

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

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

EPA 300: DW: Bromide

EPA 6860: NPW and SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

EPA 9012B: NPW: Total Cyanide

EPA 9050A: NPW: Specific Conductance

SM3500: NPW: Ferrous Iron

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

SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS

EPA 3005A NPW

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

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

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

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water

EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**

EPA 624: Volatile Halocarbons & Aromatics,

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

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

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water

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

Non-Potable Water

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

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

EPA 245.1 Hg.

SM2340B

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

