



AECOM  
250 Apollo Drive  
Chelmsford, MA 01824

978.905.2100 tel  
978.905.2101 fax

*via e-mail*

July 13, 2015

US Environmental Protection Agency  
Dewatering GP Processing  
Industrial Permit Unit (OEP 06-4)  
5 Post Office Square – Suite 100  
Boston, MA 02109-3912  
[GeneralPermit.Dewatering@epa.gov](mailto:GeneralPermit.Dewatering@epa.gov)

**Subject: Notice of Intent for Coverage Under the Dewatering General Permit  
BMR-650 E Kendall B LLC Site, Cambridge, MA**

Dear Sir or Madam,

On behalf of BMR-650 E Kendall B LLC ("BMR"), AECOM herein submits this Notice of Intent (NOI) for coverage under the General Permit for Dewatering Activity Discharges (MAG070000) (Dewatering General Permit - DGP), which became effective on May 20, 2015 for the BMR-650 E Kendall B LLC site located at 650 East Kendall Street in Cambridge, Massachusetts. This site is currently authorized under the expired DGP (Permit No. MAG070352) to conduct long-term dewatering activities to prevent flooding of the building basement.

If you have any questions or need additional information, please do not hesitate to contact either of the undersigned at AECOM at 978.589.3000.

Yours sincerely,

Neeraj Ghai  
Project Manager  
[Neeraj.ghai@aecom.com](mailto:Neeraj.ghai@aecom.com)

Jennifer Atkins  
Project Specialist  
[jennifer.atkins@aecom.com](mailto:jennifer.atkins@aecom.com)

cc: Mass DEP, Div. of Watershed Management  
K. Slein, BMR

## II. Suggested Notice of Intent (NOI) Format

### 1. General facility information. Please provide the following information about the facility.

<b>a) Name of facility:</b> BMR-650 E Kendall B LLC		<b>Mailing Address for the Facility:</b> 17190 Bernardo Center Drive, San Diego, CA 92128	
<b>b) Location Address of the Facility (if different from mailing address):</b> 650 E Kendall Street Cambridge, MA 02142	<b>Facility Location</b>  <b>longitude:</b> -71.0819 <b>latitude:</b> 42.3647	<b>Type of Business:</b> Office Building	
		<b>Facility SIC codes:</b> N/A	
<b>c) Name of facility owner:</b> BMR-650 E Kendall B LLC <b>Owner's email:</b> john.bonanno@biomedrealty.com <b>Owner's Tel #:</b> (858) 485-9840 <b>Owner's Fax #:</b> (858) 485-9843 <b>Address of owner (if different from facility address)</b> 17190 Bernardo Center Drive, San Diego, CA 92128  <b>Owner is (check one):</b> 1. Federal _____ 2. State _____ 3. Private _____ 4. Other <input checked="" type="checkbox"/> (Describe) limited liability company			
<b>Legal name of Operator, if not owner:</b> AECOM Technical Services, Inc. <b>Operator Contact Name:</b> Neeraj Ghai, Project Manager <b>Operator Tel Number:</b> (978) 905-2100 <b>Fax Number:</b> (978) 905-2101 <b>Operator's email:</b> neeraj.ghai@aecom.com <b>Operator Address (if different from owner)</b> 250 Apollo Drive, Chelmsford, MA 01824			
<b>d) Attach a topographic map indicating the location of the facility and the outfall(s) to the receiving water. Map attached?</b> <input checked="" type="checkbox"/>			
<b>e) Check Yes or No for the following:</b> 1. Has a prior NPDES permit been granted for the discharge? Yes <input checked="" type="checkbox"/> No _____ If Yes, Permit Number: DGP Authorization No. MAG070352 2. Is the discharge a "new discharger" as defined by 40 CFR Section 122.2? Yes _____ No <input checked="" type="checkbox"/> 3. Is the facility covered by an individual NPDES permit? Yes _____ No <input checked="" type="checkbox"/> If Yes, Permit Number _____ 4. Is there a pending application on file with EPA for this discharge? Yes _____ No <input checked="" type="checkbox"/> If Yes, date of submittal: _____			

**2. Discharge information. Please provide information about the discharge, (attaching additional sheets as needed)**

a) Name of receiving water into which discharge will occur: Charles River via the Broad Canal  
State Water Quality Classification: Class B Freshwater: X Marine Water: \_\_\_\_\_

b) Describe the discharge activities for which the owner/applicant is seeking coverage:

1. Construction dewatering of groundwater intrusion and/or storm water accumulation. See Attachment 1
- ✓ 2. Short-term or long-term dewatering of foundation sumps.
3. Other.

c) Number of outfalls 1

For each outfall:

d) Estimate the maximum daily and average monthly flow of the discharge (in gallons per day – GPD). Max Daily Flow 5,415 GPD  
Average Monthly Flow 3,584 GPD

e.) What is the maximum and minimum monthly pH of the discharge (in s.u.)? Max pH 7.55 Min pH 6.55

f.) Identify the source of the discharge (i.e. potable water, surface water, or groundwater). If groundwater, the facility shall submit effluent test results, as required in Section 4.4.5 of the General Permit. Groundwater - see Attachment 1 and Tables 1 and 2

g.) What treatment does the wastewater receive prior to discharge? Preliminary settling in two chambered vault

h.) Is the discharge continuous? Yes ✓ No \_\_\_\_\_ If no, is the discharge periodic (P) (occurs regularly, i.e., monthly or seasonally, but is not continuous all year) or intermittent (I) (occurs sometimes but not regularly) or both (B) \_\_\_\_\_

If (P), number of days or months per year of the discharge \_\_\_\_\_ and the specific months of discharge \_\_\_\_\_;

If (I), number of days/year there is a discharge \_\_\_\_\_

Is the discharge temporary? Yes \_\_\_\_\_ No ✓

If yes, approximate start date of dewatering \_\_\_\_\_ approximate end date of dewatering \_\_\_\_\_

i.) Latitude and longitude of each discharge within 100 feet (See [http://www.epa.gov/tri/report/siting\\_tool](http://www.epa.gov/tri/report/siting_tool)): Outfall 1: long. -71.0831 lat. 42.3629; Outfall 2: long. \_\_\_\_\_ lat. \_\_\_\_\_; Outfall 3: long. \_\_\_\_\_ lat. \_\_\_\_\_.

j.) If the source of the discharge is potable water, please provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water and attach any calculation sheets used to support stream flow and dilution calculations \_\_\_\_\_ cfs N/A - not potable water  
(See Appendix VIII for equations and additional information)

MASSACHUSETTS FACILITIES: See Section 3.4 and Appendix 1 of the General Permit for more information on Areas of Critical Environmental Concern (ACEC):

- k.) Does the discharge occur in an ACEC? Yes \_\_\_\_\_ No ☒   
If yes, provide the name of the ACEC: \_\_\_\_\_

**3. Contaminant Information**

- a) Are any pH neutralization and/or dechlorination chemicals used in the discharge? If so, include the chemical name and manufacturer; maximum and average daily quantity used as well as the maximum and average daily expected concentrations (mg/l) in the discharge, and the vendor's reported aquatic toxicity (NOAEL and/or LC<sub>50</sub> in percent for aquatic organism(s)). No chemicals to be used.   
b) Please report any known remediation activities or water-quality issues in the vicinity of the discharge.

**4. Determination of Endangered Species Act Eligibility: Provide documentation of ESA eligibility as required at Part 3.4 and Appendix IV. In addition, respond to the following questions.**

- a) Which of the three eligibility criteria listed in Appendix IV, Criterion (A, B, or C) have you met? A \_\_\_\_\_   
b) Please attach documentation with your NOI supporting your response. Please see Appendix IV for acceptable documentation See Attachment 2

**5. Documentation of National Historic Preservation Act requirements: Please respond to the following questions:**

- a) See Screening Process in Appendix III and respond to questions regarding your site and any historic properties listed or eligible for listing on the National Register of Historic Places. Question 1: Yes ☒ No \_\_\_\_\_ ; Question 2: No ☒ Yes \_\_\_\_\_ See Attachment 3   
b) Have any State or Tribal historic preservation officers been consulted in this determination? Yes \_\_\_\_\_ or No ☒ If yes, attach the results of the consultation(s).   
c) Which of the three National Historic Preservation Act eligibility criterion listed in Appendix III, Criterion (A, B, or C) have you met? A \_\_\_\_\_   
d) Is the project located on property of religious or cultural significance to an Indian Tribe? Yes \_\_\_\_\_ or No ☒ If yes, provide that name of the Indian Tribe associated with the property. \_\_\_\_\_

**6. Supplemental Information: Please provide any supplemental information. Attach any analytical data used to support the application. Attach any certification(s) required by the general permit**

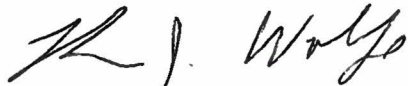
**7. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22 (see below) including the following certification:**

I certify under penalty of law that (1) no biocides or other chemical additives except for those used for pH adjustment and/or dechlorination are used in the dewatering system; (2) the discharge consists solely of dewatering and authorized pH adjustment and/or dechlorination chemicals; (3) the discharge does not come in contact with any raw materials, intermediate product, water product or finished product; (4) if the discharge of dewatering subsequently mixes with other permitted wastewater (i.e. stormwater) prior to discharging to the receiving water, any monitoring provided under this permit will be only for dewatering discharge; (5) where applicable, the facility has complied with the requirements of this permit specific to the Endangered Species Act and National Historic Preservation Act; and (6) this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate 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, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Facility Name: BMR-650 E Kendall B LLC

Operator signature:



Print Full Name and Title: Brian J. Wolfe, Vice President

Date: July 10, 2015

Federal regulations require this application to be signed as follows:

1. For a corporation, by a principal executive officer of at least the level of vice president;
2. For partnership or sole proprietorship, by a general partner or the proprietor, respectively, or,
3. For a municipality, State, Federal or other public facility, by either a principal executive officer or ranking elected official.

APPROVED  
BIOMED REALTY LEGAL  


## Tables

**Table 1 - Summary of Effluent Data - June 2012 through May 2015**  
**Notice of Intent for Coverage under the 2015 Discharge General Permit (MAG07000)**  
**BMR-650 E Kendall B LLC Site**  
**650 Kendall Street, Cambridge, MA**

Parameter	pH (s.u.)	Total Suspended Solids (mg/L)
<b>Effluent Limit</b>	<b>6.5-8.3</b>	<b>50 (avg. monthly) 100 (max. daily)</b>
6/11/2012	6.92	<b>4</b>
7/3/2012	6.87	<b>12</b>
8/6/2012	7.11	<b>9</b>
9/5/2012	6.62	<b>12</b>
10/1/2012	7.40	<b>22</b>
11/13/2012	7.10	<b>37</b>
12/5/2012	6.99	<b>36</b>
1/9/2013	6.99	<b>24</b>
2/4/2013	6.81	<b>14</b>
3/6/2013	6.92	<b>19</b>
4/2/2013	6.84	<b>19</b>
5/9/2013	6.97	<b>47</b>

Parameter	pH (s.u.)	Total Suspended Solids (mg/L)
<b>Effluent Limit</b>	<b>6.5-8.3</b>	<b>50 (avg. monthly) 100 (max. daily)</b>
6/3/2013	7.40	<b>15</b>
7/8/2013	6.94	<b>24</b>
8/7/2013	6.92	<b>24</b>
9/3/2013	6.82	<b>24</b>
10/7/2013	7.21	<b>18</b>
11/4/2013	7.19	<b>19</b>
12/2/2013	6.55	<b>16</b>
1/8/2014	7.15	<b>19</b>
2/4/2014	7.25	<b>10</b>
3/4/2014	7.15	<b>19</b>
4/9/2014	7.17	<b>15</b>
5/6/2014	7.33	<b>17</b>

Parameter	pH (s.u.)	Total Suspended Solids (mg/L)
<b>Effluent Limit</b>	<b>6.5-8.3</b>	<b>50 (avg. monthly) 100 (max. daily)</b>
6/2/2014	7.14	<b>18</b>
7/9/2014	7.07	<b>16</b>
8/1/2014	7.21	<b>20</b>
9/19/2014	7.13	<b>19</b>
10/1/2014	6.80	<b>15</b>
11/17/2014	7.21	<b>13</b>
12/1/2014	7.14	<b>9</b>
1/2/2015	7.55	<b>8</b>
2/1/2015	7.09	<b>12</b>
3/3/2015	7.01	<b>11</b>
4/2/2015	7.06	<b>14</b>
5/4/2015	7.04	<b>9.0</b>

**Notes:**

mg/L = milligrams per liter

s.u. = standard units

**Bold** = Detection

= Exceedance of Effluent Limit

**Table 2 - Summary of Effluent Data - Sampline per NOI**  
**Notice of Intent for Coverage under the 2015 Discharge General Permit (MAG07000)**  
**BMR-650 E Kendall B LLC Site**  
**650 Kendall Street, Cambridge, MA**

<b>Parameter</b>	<b>Units</b>	<b>Effluent 5/4/2015</b>
Chloride	mg/L	<b>3880</b>
Antimony	mg/L	<b>0.000468</b>
Arsenic	mg/L	<b>0.00691</b>
Cadmium	mg/L	<0.00025
Chromium, total	mg/L	<0.00165
Chromium VI	mg/L	<0.005
Copper	mg/L	<b>0.0147</b>
Iron	mg/L	<b>4.60</b>
Lead	mg/L	<0.00025
Mercury	mg/L	<0.00020
Nickel	mg/L	<b>0.00741</b>
Silver	mg/L	<0.00025
Zinc	mg/L	<0.00485

<b>Parameter</b>	<b>Units</b>	<b>Canal Water 5/4/2015</b>
Hardness	mg/L CaCO <sub>3</sub>	<b>85.4</b>

**Notes:**

mg/L = milligrams per liter

s.u. = standard units

**Detection**



## Figures

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BMR- 50 E Kendall %LLC  
Kendall Square  
650 Kendall St., Cambridge, MA

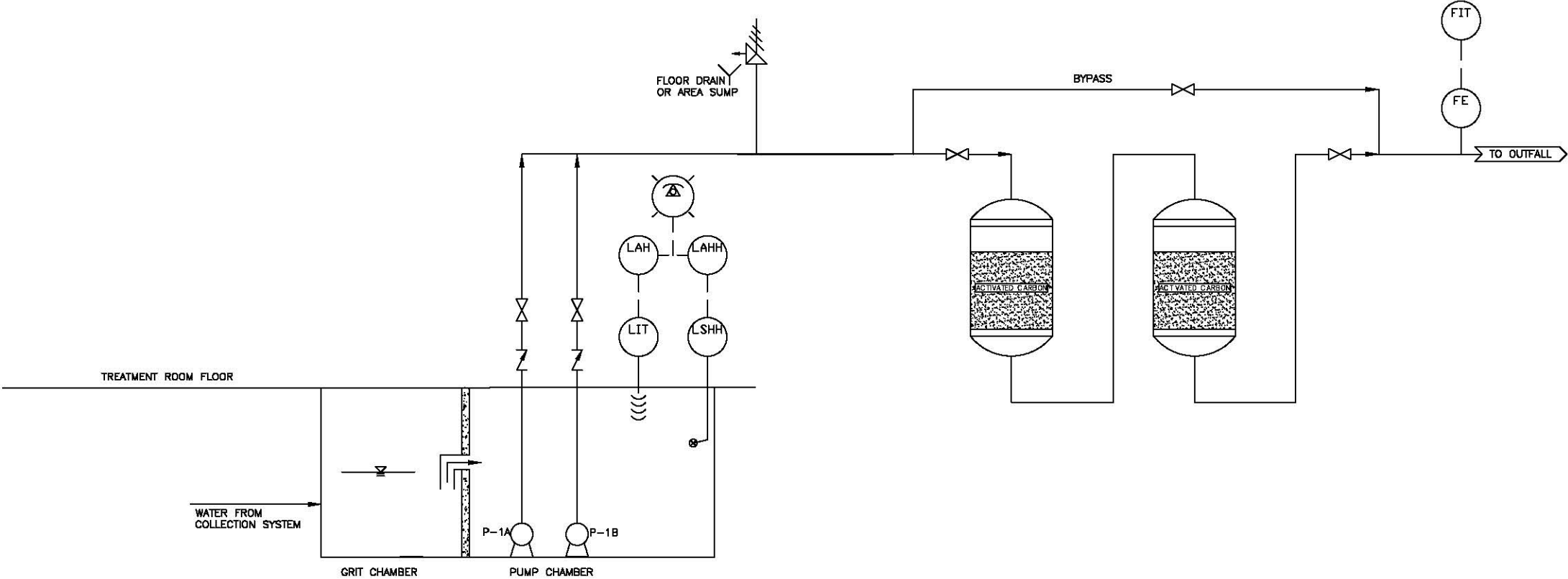
Site Location

DATE: 12/2010

DRWN: H.K.M.

Figure 1

File: J:\Rem\_Eng\Project Files\BMR\650 Kendall\NOL Dewatering\_GenPermit\_2015\PTD.dwg Layout: ANSL-BI-LJ User: shankarank Plotted: Jun 17, 2015 - 11:30am Xref's:



AECOM

NOTICE OF INTENT 650 KENDALL ST CAMBRIDGE, MA			SUMP DEWATERING PROCESS FLOW DIAGRAM	
DATE: 06/17/15	DRWN: KS			FIGURE: 2

## **Attachment 1**

### **Supplemental Information for Dewatering General Permit Notice of Intent**



**Attachment 1****Notice of Intent for Coverage under the 2015 Discharge General Permit (MAG07000)****BMR-650 E Kendall B LLC Site****650 Kendall Street, Cambridge, MA**2.b) Describe the discharge activities:

This Notice of Intent (NOI) is for the long-term dewatering of building sumps to prevent inundation of the building's basement by groundwater. This dewatering system is currently permitted under the Massachusetts Dewatering General Permit (DGP) under Authorization # MAG070352, issued on May 20, 2010.

Groundwater is pumped from one sump in the garage of the building at 650 Kendall Street, Cambridge, MA. The extracted groundwater flows through a grit chamber to allow settling of particulates. The extracted groundwater then discharges to a storm drain system which discharges to the Broad Canal which enters the Charles River. The grit chamber provides sufficient settling for particulate matter.

2.f) Discharge source data:

Table 1 summarizes the discharge data for pH and Total Suspended Solids (TSS) collected since June 2012.

Because this discharge consists of groundwater, an effluent sample was collected in May 2015 analyzed for the following additional parameters in order to satisfy the NOI requirements under Section 4.4.5 of the Dewatering General Permit.

**Dewatering General Permit NOI Additional Parameters Analyzed in May 2015**

Chloride Iron Antimony Lead Arsenic Mercury Cadmium Nickle Chromium, total Chromium VI Copper	Silver Zinc
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A sample of the receiving water was also analyzed for hardness.

These results are included on Tables 1 and 2.

## **Attachment 2**

### **Endangered Species Act Eligibility**



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Ecological Services Field Office  
70 COMMERCIAL STREET, SUITE 300  
CONCORD, NH 3301  
PHONE: (603)223-2541 FAX: (603)223-0104  
URL: [www.fws.gov/newengland](http://www.fws.gov/newengland)

Consultation Code: 05E1NE00-2015-SLI-0431

May 04, 2015

Event Code: 05E1NE00-2015-E-00708

Project Name: BMR Kendall Square NPDES

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](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





United States Department of Interior  
Fish and Wildlife Service

Project name: BMR Kendall Square NPDES

## Official Species List

### Provided by:

New England Ecological Services Field Office

70 COMMERCIAL STREET, SUITE 300

CONCORD, NH 3301

(603) 223-2541

<http://www.fws.gov/newengland>

**Consultation Code:** 05E1NE00-2015-SLI-0431

**Event Code:** 05E1NE00-2015-E-00708

**Project Type:** \*\* OTHER \*\*

**Project Name:** BMR Kendall Square NPDES

**Project Description:** Renewal of coverage under the USEPA Dewatering General Permit (DGP) (MAG070000) for two buildings that perform long-term discharge from dewatering of basements. Discharge is to the Broad Canal which flows to the Cambridge River. We are completing the NOIs for continuing coverage under the DGP.

**Please Note:** The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior  
Fish and Wildlife Service

Project name: BMR Kendall Square NPDES

### Project Location Map:



**Project Coordinates:** MULTIPOLYGON (((-71.0837396979332 42.363427374912796, -71.0830208659172 42.364418289914916, -71.08012408018112 42.36402985309656, -71.08056396245956 42.36242058926453, -71.08203381299973 42.362785253646265, -71.0837396979332 42.363427374912796)))

**Project Counties:** Middlesex, MA



United States Department of Interior  
Fish and Wildlife Service

Project name: BMR Kendall Square NPDES

## Endangered Species Act Species List

There are a total of 0 threatened or endangered 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. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

There are no listed species identified for the vicinity of your project.



United States Department of Interior  
Fish and Wildlife Service

Project name: BMR Kendall Square NPDES

## **Critical habitats that lie within your project area**

There are no critical habitats within your project area.

## **Attachment 3**

### **Historic Preservation Determination**

**Attachment 3**

**Notice of Intent for Coverage under the 2015 Discharge General Permit (MAG07000)**

**BMR-650 E Kendall B LLC Site**

**650 Kendall Street, Cambridge, MA**

**5. National Historic Preservation Act**

This page documents the National Historic Preservation Act requirements for the Notice of Intent for coverage under the 2015 Dewatering General Permit (DGP) for the BMR-650 E Kendall B LLC Site at 650 Kendall Street, Cambridge, MA.

Per Appendix III of the 2015 DGP, the answer to Question 1 is yes. The facility is an existing facility authorized by the previous permit and does include any planned activities that involve subsurface land disturbance.

On this basis, per Appendix III of the 2015 DGP, the project has “no potential to cause effects” to historical resources.

## **Attachment 4**

### **Laboratory Reports**

Report Date:  
19-May-15 12:45



SPECTRUM ANALYTICAL, INC.

## Laboratory Report

AECOM Environment  
250 Apollo Drive  
Chelmsford, MA 01824  
Attn: Neeraj Ghai

Project: 650 East Kendall Loc B - Cambridge, MA  
Project #: 60221068-101A

- ☒ Final Report  
☐ Re-Issued Report  
☐ Revised Report

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC06923-01	Sys-Effluent	Ground Water	04-May-15 08:25	04-May-15 16:45

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

Massachusetts # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87936  
Maine # MA138  
New Hampshire # 2538  
New Jersey # MA011  
New York # 11393  
Pennsylvania # 68-04426/68-02924  
Rhode Island # LAO00098  
USDA # S-51435



Authorized by:

Nicole Leja  
Laboratory Director

Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 8 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

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

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



## CASE NARRATIVE:

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

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

The samples were received 1.5 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

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

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

## EPA 300.0

### Samples:

SC06923-01      *Sys-Effluent*

---

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

Chloride

## SW846 6020A

### Laboratory Control Samples:

1509107 BS/BSD

---

Cadmium percent recoveries (83/87) are outside individual acceptance criteria (85-115), but within overall method allowances.

All reported results of the following samples are considered to have a potentially low bias:

Sys-Effluent

### Samples:

SC06923-01      *Sys-Effluent*

---

MRL raised to correlate to batch QC reporting limits.

Chromium

Zinc

## Sample Acceptance Check Form

Client: AECOM Environment - Chelmsford, MA  
Project: 650 East Kendall Loc B - Cambridge, MA / 60221068-101A  
Work Order: SC06923  
Sample(s) received on: 5/4/2015

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

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sample Identification

Sys-Effluent

SC06923-01

Client Project #

60221068-101A

Matrix

Ground Water

Collection Date/Time

04-May-15 08:25

Received

04-May-15

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>MDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Analyst</i>	<i>Batch</i>	<i>Cert.</i>
<b>Total Metals by EPA 200/6000 Series Methods</b>													
	Preservation	Field Preserved		N/A			1	EPA 200/6000 methods			LNB	1509056	
<b>Total Metals by EPA 6000/7000 Series Methods</b>													
7440-22-4	Silver	< 0.00025		mg/l	0.00025	0.00003	1	SW846 6020A	13-May-15	15-May-15	edt	1509107	
7440-38-2	Arsenic	0.00691		mg/l	0.00025	0.00010	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.000250		mg/l	0.000250	0.000015	1	"	"	"	"	"	
7440-47-3	Chromium	< 0.00165	R06	mg/l	0.00165	0.00004	1	"	"	"	"	"	
7440-50-8	Copper	0.0147		mg/l	0.00025	0.00003	1	"	"	18-May-15	"	"	
7439-89-6	Iron	4.60		mg/l	0.0300	0.0163	1	SW846 6010C	"	14-May-15	edt	1509108	
7440-02-0	Nickel	0.00741		mg/l	0.00025	0.00003	1	SW846 6020A	"	15-May-15	edt	1509107	
7439-92-1	Lead	< 0.00025		mg/l	0.00025	0.000008	1	"	"	"	"	"	
7440-36-0	Antimony	0.000468		mg/l	0.000250	0.000055	1	"	"	"	"	"	
7440-66-6	Zinc	< 0.00485	R06	mg/l	0.00485	0.00030	1	"	"	"	"	"	
<b>Total Metals by EPA 200 Series Methods</b>													
7439-97-6	Mercury	< 0.00020		mg/l	0.00020	0.00009	1	EPA 245.1/7470A	13-May-15	18-May-15	YR	1509109	X
<b>General Chemistry Parameters</b>													
16887-00-6	Chloride	3,880	D, GS1	mg/l	100	32.1	100	EPA 300.0	12-May-15	13-May-15	DJB	1509270	X
18540-29-9	Hexavalent Chromium	< 0.005		mg/l	0.005	0.002	1	SM3500-Cr-B/7196A	04-May-15 17:50	04-May-15 18:00	CAA/T	1508612	
	pH	7.04	pH	pH Units			1	ASTM D 1293-99B	04-May-15 17:48	12-May-15 18:42	TN	1508611	X
	Total Suspended Solids	9.0		mg/l	5.0	2.8	1	SM2540D	05-May-15	06-May-15	CMB	1508648	X

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

**Total Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1509107 - SW846 3005A</b>										
<b><u>Blank (1509107-BLK1)</u></b>					<u>Prepared: 13-May-15 Analyzed: 15-May-15</u>					
Nickel	< 0.00025		mg/l	0.00025						
Silver	< 0.00025		mg/l	0.00025						
Arsenic	< 0.00025		mg/l	0.00025						
Chromium	< 0.00165		mg/l	0.00165						
Lead	< 0.00025		mg/l	0.00025						
Antimony	< 0.000250		mg/l	0.000250						
Zinc	< 0.00485		mg/l	0.00485						
Copper	< 0.00025		mg/l	0.00025						
Cadmium	< 0.000250		mg/l	0.000250						
<b><u>LCS (1509107-BS1)</u></b>					<u>Prepared: 13-May-15 Analyzed: 15-May-15</u>					
Silver	<b>0.0443</b>		mg/l	0.00025	0.0500		89	85-115		
Copper	<b>0.0469</b>		mg/l	0.00025	0.0500		94	85-115		
Zinc	<b>0.0449</b>		mg/l	0.00485	0.0500		90	85-115		
Antimony	<b>0.0462</b>		mg/l	0.000250	0.0500		92	85-115		
Lead	<b>0.0474</b>		mg/l	0.00025	0.0500		95	85-115		
Nickel	<b>0.0434</b>		mg/l	0.00025	0.0500		87	85-115		
Chromium	<b>0.0459</b>		mg/l	0.00165	0.0500		92	85-115		
Cadmium	<b>0.0415</b>	QM9	mg/l	0.000250	0.0500		83	85-115		
Arsenic	<b>0.0461</b>		mg/l	0.00025	0.0500		92	85-115		
<b><u>LCS Dup (1509107-BSD1)</u></b>					<u>Prepared: 13-May-15 Analyzed: 15-May-15</u>					
Silver	<b>0.0465</b>		mg/l	0.00025	0.0500		93	85-115	5	20
Antimony	<b>0.0477</b>		mg/l	0.000250	0.0500		95	85-115	3	20
Lead	<b>0.0488</b>		mg/l	0.00025	0.0500		98	85-115	3	20
Copper	<b>0.0549</b>		mg/l	0.00025	0.0500		110	85-115	16	20
Nickel	<b>0.0443</b>		mg/l	0.00025	0.0500		89	85-115	2	20
Chromium	<b>0.0475</b>		mg/l	0.00165	0.0500		95	85-115	3	20
Arsenic	<b>0.0471</b>		mg/l	0.00025	0.0500		94	85-115	2	20
Zinc	<b>0.0507</b>		mg/l	0.00485	0.0500		101	85-115	12	20
Cadmium	<b>0.0433</b>		mg/l	0.000250	0.0500		87	85-115	4	20
<b>Batch 1509108 - SW846 3005A</b>										
<b><u>Blank (1509108-BLK1)</u></b>					<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>					
Iron	< 0.0300		mg/l	0.0300						
<b><u>LCS (1509108-BS1)</u></b>					<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>					
Iron	<b>2.59</b>		mg/l	0.0300	2.50		104	85-115		
<b><u>LCS Dup (1509108-BSD1)</u></b>					<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>					
Iron	<b>2.66</b>		mg/l	0.0300	2.50		106	85-115	3	20

# Total Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1509109 - EPA200/SW7000 Series</b>										
<b><u>Blank (1509109-BLK1)</u></b>								<u>Prepared: 13-May-15 Analyzed: 18-May-15</u>		
Mercury	< 0.00020		mg/l	0.00020						
<b><u>LCS (1509109-BS1)</u></b>								<u>Prepared: 13-May-15 Analyzed: 18-May-15</u>		
Mercury	<b>0.00440</b>		mg/l	0.00020	0.00500		88	85-115		

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## General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1508611 - General Preparation</b>										
<u><b>Duplicate (1508611-DUP1)</b></u>				<u><b>Source: SC06923-01</b></u>				<u>Prepared: 04-May-15 Analyzed: 12-May-15</u>		
pH	7.05		pH Units			7.04			0.1	5
<u><b>Reference (1508611-SRM1)</b></u>								<u>Prepared: 04-May-15 Analyzed: 12-May-15</u>		
pH	6.00		pH Units		6.00		100	97.5-102.5		
<u><b>Reference (1508611-SRM2)</b></u>								<u>Prepared: 04-May-15 Analyzed: 12-May-15</u>		
pH	6.02		pH Units		6.00		100	97.5-102.5		
<b>Batch 1508612 - General Preparation</b>										
<u><b>Blank (1508612-BLK1)</b></u>								<u>Prepared &amp; Analyzed: 04-May-15</u>		
Hexavalent Chromium	< 0.005		mg/l	0.005						
<u><b>LCS (1508612-BS1)</b></u>								<u>Prepared &amp; Analyzed: 04-May-15</u>		
Hexavalent Chromium	0.054		mg/l	0.005	0.0500		108	90-111		
<u><b>Calibration Blank (1508612-CCB1)</b></u>								<u>Prepared &amp; Analyzed: 04-May-15</u>		
Hexavalent Chromium	-0.0006		mg/l							
<u><b>Calibration Blank (1508612-CCB2)</b></u>								<u>Prepared &amp; Analyzed: 04-May-15</u>		
Hexavalent Chromium	-0.0005		mg/l							
<u><b>Calibration Check (1508612-CCV1)</b></u>								<u>Prepared &amp; Analyzed: 04-May-15</u>		
Hexavalent Chromium	0.054		mg/l	0.005	0.0500		108	90-110		
<u><b>Calibration Check (1508612-CCV2)</b></u>								<u>Prepared &amp; Analyzed: 04-May-15</u>		
Hexavalent Chromium	0.054		mg/l	0.005	0.0500		107	90-110		
<u><b>Reference (1508612-SRM1)</b></u>								<u>Prepared &amp; Analyzed: 04-May-15</u>		
Hexavalent Chromium	0.023		mg/l	0.005	0.0250		92	85-115		
<b>Batch 1508648 - General Preparation</b>										
<u><b>Blank (1508648-BLK1)</b></u>								<u>Prepared: 05-May-15 Analyzed: 06-May-15</u>		
Total Suspended Solids	< 5.0		mg/l	5.0						
<u><b>LCS (1508648-BS1)</b></u>								<u>Prepared: 05-May-15 Analyzed: 06-May-15</u>		
Total Suspended Solids	90.0		mg/l	50.0	100		90	90-110		
<b>Batch 1509270 - General Preparation</b>										
<u><b>Blank (1509270-BLK1)</b></u>								<u>Prepared: 12-May-15 Analyzed: 13-May-15</u>		
Chloride	< 1.00		mg/l	1.00						
<u><b>LCS (1509270-BS1)</b></u>								<u>Prepared: 12-May-15 Analyzed: 13-May-15</u>		
Chloride	20.5		mg/l	1.00	20.0		103	90-110		
<u><b>Reference (1509270-SRM1)</b></u>								<u>Prepared: 12-May-15 Analyzed: 13-May-15</u>		
Chloride	26.3		mg/l	1.00	25.0		105	90-110		

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

## Notes and Definitions

D	Data reported from a dilution
GS1	Sample dilution required for high concentration of target analytes to be within the instrument calibration range.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
R06	MRL raised to correlate to batch QC reporting limits.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.

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

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

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

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

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

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

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

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

Validated by:  
June O'Connor  
Nicole Leja  
Rebecca Merz







# CHAIN OF CUSTODY RECORD

Page 2 of 2

## Special Handling:

☒ Standard TAT - 7 to 10 business days

☐ Rush TAT - Date Needed: \_\_\_\_\_

All TATs subject to laboratory approval

Min. 24-hr notification needed for rushes

Samples disposed after 60 days unless otherwise instructed.

Report To: Neeraj Ghai  
Chelmsford MA 01824

Invoice To: AECOM  
250 Apollo Drive  
Chelmsford MA 01824

Project No: 60221068-101A  
Site Name: Loc. B 650 East Kendall

Telephone #: 978-905-2100  
Project Mgr: Neeraj Ghai

P.O. No.: \_\_\_\_\_ Quote/RQN: \_\_\_\_\_

Location: Cambridge State: MA  
Sampler(s): Eddie Zygarowski

F=Field Filtered 1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid  
7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=Deionized Water 10=H<sub>3</sub>PO<sub>4</sub> 11= \_\_\_\_\_ 12= \_\_\_\_\_

## List Preservative Code below:

4 4 4

## QA/QC Reporting Notes:

\* additional charges may apply

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water

O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas

X1= \_\_\_\_\_ X2= \_\_\_\_\_ X3= \_\_\_\_\_

## Containers

## Analysis

Check if chlorinated

MA DEP MCP CAM Report? ☐ Yes ☐ No

CT DPH RCP Report? ☐ Yes ☐ No

☒ Standard ☐ No QC

☐ DQA\*

☐ ASP A\* ☐ ASP B\*

☐ NJ Reduced\* ☐ NJ Full\*

☐ Tier II\* ☐ Tier IV\*

☐ Other: \_\_\_\_\_

State-specific reporting standards:

G= Grab		C= Composite		Type	Matrix	Containers				Analysis				Check if chlorinated
Lab ID:	Sample ID:	Date:	Time:			# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Chloride, PH, TSS	Metals 6090 *	Total Mercury	Hexavalent Chromium	
06923-01	Sys. Effluent	5/4/15	8:25	G	GW				2	✓	✓	✓	✓	<input type="checkbox"/>
														<input type="checkbox"/>
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														<input type="checkbox"/>

Standard TAT

\* Ag, As, Cd, Cr, Cu, Ni, Pb, Sb, Zn + Fe by Gold - EM 5/5

Relinquished by:	Received by:	Date:	Time:	Temp °C
<u>Eddie Zygarowski</u>	<u>M...</u>	<u>5/4/15</u>	<u>12:55 PM</u>	<u>1.5</u>
<u>M...</u>	<u>Orme</u>	<u>5/4/15</u>	<u>1645</u>	<u>0</u>
				<u>1.5</u>
				<u>01</u>

☒ EDD format: EQULS  
☒ E-mail to: jennifer.atkins@aecom.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken  
☐ Ambient ☐ Iced ☒ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen



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

<i>Laboratory ID</i>	<i>Client ID</i>	<i>Analysis</i>	<i>Added</i>
SC06923-01	Sys-Effluent	Total Antimony by ICPMS	5/5/2015
SC06923-01	Sys-Effluent	Total Arsenic by ICPMS	5/5/2015
SC06923-01	Sys-Effluent	Total Cadmium by ICPMS	5/5/2015
SC06923-01	Sys-Effluent	Total Chromium by ICPMS	5/5/2015
SC06923-01	Sys-Effluent	Total Copper by ICPMS	5/5/2015
SC06923-01	Sys-Effluent	Total Iron by ICP	5/5/2015
SC06923-01	Sys-Effluent	Total Lead by ICPMS	5/5/2015
SC06923-01	Sys-Effluent	Total Nickel by ICPMS	5/5/2015
SC06923-01	Sys-Effluent	Total Silver by ICPMS	5/5/2015
SC06923-01	Sys-Effluent	Total Zinc by ICPMS	5/5/2015

Report Date:  
18-May-15 09:40



SPECTRUM ANALYTICAL, INC.

## Laboratory Report

- ☒ Final Report  
☐ Re-Issued Report  
☐ Revised Report

AECOM Environment  
250 Apollo Drive  
Chelmsford, MA 01824  
Attn: Neeraj Ghai

Project: Cambridge Canal - Cambridge, MA  
Project #: 60221068-101A

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC07004-01	Canal	Ground Water	04-May-15 09:15	04-May-15 16:45

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

Massachusetts # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87936  
Maine # MA138  
New Hampshire # 2538  
New Jersey # MA011  
New York # 11393  
Pennsylvania # 68-04426/68-02924  
Rhode Island # LAO00098  
USDA # S-51435



Authorized by:

Nicole Leja  
Laboratory Director

Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 6 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

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

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

**CASE NARRATIVE:**

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

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

The samples were received 1.5 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

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

**There is no relevant protocol-specific QC and/or performance standards non-conformances to report.**

## Sample Acceptance Check Form

Client: AECOM Environment - Chelmsford, MA  
Project: Cambridge Canal - Cambridge, MA / 60221068-101A  
Work Order: SC07004  
Sample(s) received on: 5/4/2015

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

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sample Identification**Canal**

SC07004-01

Client Project #

60221068-101A

Matrix

Ground Water

Collection Date/Time

04-May-15 09:15

Received

04-May-15

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>MDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Analyst</i>	<i>Batch</i>	<i>Cert.</i>
<b>Total Metals by EPA 200/6000 Series Methods</b>													
	Preservation	Field Preserved		N/A			1	EPA 200/6000 methods			LNB	1508884	
<b>Total Metals by EPA 6000/7000 Series Methods</b>													
7440-70-2	Calcium	24.3		mg/l	0.200	0.0469	1	SW846 6010C	13-May-15	14-May-15	edt	1509108	
7439-95-4	Magnesium	6.03		mg/l	0.0200	0.0031	1	"	"	"	"	"	
<b>General Chemistry Parameters</b>													
	Hardness	85.4	HD	mg/l CaCO3	0.582	0.130	1	SM 2340B	13-May-15	14-May-15	edt	[CALC]	

# **Total Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1509108 - SW846 3005A</b>										
<b><u>Blank (1509108-BLK1)</u></b>										
								<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>		
Magnesium	< 0.0200		mg/l	0.0200						
Calcium	< 0.200		mg/l	0.200						
<b><u>LCS (1509108-BS1)</u></b>								<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>		
Magnesium	<b>2.61</b>		mg/l	0.0200	2.50		104	85-115		
Calcium	<b>14.0</b>		mg/l	0.200	12.5		112	85-115		
<b><u>LCS Dup (1509108-BSD1)</u></b>								<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>		
Magnesium	<b>2.67</b>		mg/l	0.0200	2.50		107	85-115	2	20
Calcium	<b>13.9</b>		mg/l	0.200	12.5		111	85-115	0.6	20
<b><u>Duplicate (1509108-DUP1)</u></b>				<b><u>Source: SC07004-01</u></b>				<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>		
Magnesium	<b>5.94</b>		mg/l	0.0200		6.03			1	20
Calcium	<b>23.6</b>		mg/l	0.200		24.3			3	20
<b><u>Matrix Spike (1509108-MS1)</u></b>				<b><u>Source: SC07004-01</u></b>				<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>		
Magnesium	<b>8.20</b>		mg/l	0.0200	2.50	6.03	87	75-125		
Calcium	<b>35.5</b>		mg/l	0.200	12.5	24.3	90	75-125		
<b><u>Matrix Spike Dup (1509108-MSD1)</u></b>				<b><u>Source: SC07004-01</u></b>				<u>Prepared: 13-May-15 Analyzed: 14-May-15</u>		
Magnesium	<b>8.81</b>		mg/l	0.0200	2.50	6.03	111	75-125	7	20
Calcium	<b>38.9</b>		mg/l	0.200	12.5	24.3	117	75-125	9	20
<b><u>Post Spike (1509108-PS1)</u></b>				<b><u>Source: SC07004-01</u></b>				<u>Prepared: 13-May-15 Analyzed: 15-May-15</u>		
Magnesium	<b>9.03</b>		mg/l	0.0200	2.50	6.03	120	80-120		
Calcium	<b>39.0</b>		mg/l	0.200	12.5	24.3	118	80-120		

## Notes and Definitions

dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
HD	Total Hardness is a calculation based on the reported values of Ca and Mg.

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

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

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

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

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

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

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

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

Validated by:  
June O'Connor





# CHAIN OF CUSTODY RECORD

Page 2 of 2

## Special Handling:

☒ Standard TAT - 7 to 10 business days

☐ Rush TAT - Date Needed: \_\_\_\_\_

All TATs subject to laboratory approval

Min. 24-hr notification needed for rushes

Samples disposed after 60 days unless otherwise instructed.

Report To: Neeraj Ghaw  
Chelmsford MA 01827

Invoice To: AECOM  
250 Apollo Dr.  
Chelmsford MA 01824

Project No: 60221068-101A

Site Name: Cambridge Canal

Location: Cambridge State: MA

Sampler(s): Eddie Zygarowicz

Telephone #: 978-905-2100  
Project Mgr: Neeraj Ghaw

P.O. No.: \_\_\_\_\_ Quote/RQN: \_\_\_\_\_

F=Field Filtered 1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid  
7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=Deionized Water 10=H<sub>3</sub>PO<sub>4</sub> 11= \_\_\_\_\_ 12= \_\_\_\_\_

## List Preservative Code below:

4 \_\_\_\_\_

## QA/QC Reporting Notes:

\* additional charges may apply

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water

O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas

X1= \_\_\_\_\_ X2= \_\_\_\_\_ X3= \_\_\_\_\_

G= Grab

C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	hardness	Check if chlorinated
Sc07004-c1	Canal	5/4/15	9:15	G	GW				2	✓	

Standard TAT

Relinquished by:

Received by:

Date:

Time:

Temp °C

☒ EDD format:

☒ E-mail to:

Observed

Correction Factor

Corrected

IR ID #

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken

☐ Ambient ☐ Iced ☒ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen