



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
BOSTON, MA 02109-3912

CERTIFIED MAIL RETURN RECEIPT REQUESTED

APR 20 2012

Marc Ciampa
Project Manager
P. Caliacco Corporation
1373 Washington Street
Weymouth, MA 02189

Re: Authorization to discharge under the Remediation General Permit (RGP) –
MAG910000. CAM 017 Drainage Improvements site located at Land Boulevard &
Binney Street, Cambridge, MA 02142, Middlesex County; Authorization # MAG910530

Dear Mr. Ciampa:

Based on the review of a Notice of Intent (NOI) submitted on behalf of your company P. Caliacco Corporation by the firm Environmental Management Professionals, Inc., for work which will be performed for the City of Cambridge, Massachusetts at site referenced above, the U.S. Environmental Protection Agency (EPA) hereby authorizes you, as the named Operator, to discharge in accordance with the provisions of the RGP at that site. Your authorization number is listed above.

The checklist enclosed with this RGP authorization indicates the pollutants which you are required to monitor. Also indicated on the checklist are the effluent limits, test methods and minimum levels (MLs) for each pollutant. Please note that the checklist does not represent the complete requirements of the RGP. Operators must comply with all of the applicable requirements of this permit, including influent and effluent monitoring, narrative water quality standards, record keeping, and reporting requirements, found in Parts I and II, and Appendices I – VIII of the RGP. See EPA's website for the complete RGP and other information at: <http://www.epa.gov/region1/npdes/mass.html#dgp>.

Please note the enclosed checklist includes parameters that exceeded Appendix III limits. The checklist also includes other parameters for which your laboratory reports indicated there was insufficient sensitivity to detect these parameters at the minimum levels established in Appendix VI of the RGP.

Also, please note that the metals included on the checklist are dilution dependent pollutants and subject to limitations based on selected dilution ranges and technology-based ceiling limitations. For each parameter the dilution factor 253 for this site is within a dilution range greater than one hundred (>100), established in the RGP. (See the RGP

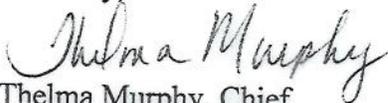
Appendix IV for Massachusetts facilities). Therefore, the limits for arsenic of 540 ug/L, trivalent chromium of 1,710 ug/L, hexavalent chromium of 1,140 ug/L, and iron of 5,000 ug/L, are required to achieve permit compliance at your site.

Finally, please note the checklist of pollutants attached to this authorization is subject to a recertification if the operations at the site result in a discharge lasting longer than six months. A recertification can be submitted to EPA within six (6) to twelve (12) months of operations in accordance with the 2010 RGP regulations.

This general permit and authorization to discharge will expire on September 9, 2015. You have reported that this project will terminate on March 16, 2013. If for any reason the discharge terminates sooner you are required to submit a Notice of Termination (NOT) to the attention of the contact person indicated below within 30 days of project completion.

Thank you in advance for your cooperation in this matter. Please contact Victor Alvarez at 617-918-1572 or Alvarez.Victor@epa.gov, if you have any questions.

Sincerely,



Thelma Murphy, Chief
Storm Water and Construction
Permits Section

Enclosure

cc: Kathleen Keohane, MassDEP
Lisa Peterson, City of Cambridge DPW
Edward M. Patch, EMP, Inc.

**2010 Remediation General Permit
Summary of Monitoring Parameters^[1]**

NPDES Authorization Number:	MAG910530
Authorization Issued:	April, 2012
Facility/Site Name:	CAM 017 DRAINAGE IMPROVEMENTS
Facility/Site Address:	Land Boulevard & Binney Street, Cambridge MA 02142, Middlesex County.
	Email address of owner: ooriordan@cambridgema.gov
Legal Name of Operator:	P. Caliacco Corporation
Operator contact name, title, and Address:	Marc Ciampa Project Manager, 1373 Washington Street, Weymouth, MA 02189, Norfolk County
	Email: MCIAMPA@PCALIACCO.COM
Estimated date of Completion:	March 16, 2013
Category and Sub-Category:	Category III- Contaminated Construction Dewatering. Sub-category A& B. General Urban Fill Sites and Known Contaminated Sites
RGP Termination Date:	September 10, 2015
Receiving Water:	Charles River

Monitoring & Limits are applicable if checked. All samples are to be collected as grab samples

	<u>Parameter</u>	<u>Effluent Limit/Method#/ML</u> (All Effluent Limits are shown as Daily Maximum Limit, unless denoted by a **, in that case it will be a Monthly Average Limit)
✓	1. Total Suspended Solids (TSS)	30 milligrams/liter (mg/L) **, 50 mg/L for hydrostatic testing **, Me#60.2/ML5ug/L
	2. Total Residual Chlorine (TRC) ¹	Freshwater = 11 ug/L ** Saltwater = 7.5 ug/L **/ Me#330.5/ML 20ug/L
	3. Total Petroleum Hydrocarbons (TPH)	5.0 mg/L/ Me# 1664A/ML 5.0mg/L
	4. Cyanide (CN) ^{2, 3}	Freshwater = 5.2 ug/l ** Saltwater = 1.0 ug/L **/ Me#335.4/ML 10ug/L
	5. Benzene (B)	5ug/L /50.0 ug/L for hydrostatic testing only/ Me#8260C/ML 2 ug/L
	6. Toluene (T)	(limited as ug/L total BTEX)/ Me#8260C/ML 2ug/L
	7. Ethylbenzene (E)	(limited as ug/L total BTEX) Me#8260C/ML 2ug/L
	8. (m,p,o) Xylenes (X)	(limited as ug/L total BTEX) Me#8260C/ML 2ug/L

	Parameter	Effluent Limit/Method#/ML (All Effluent Limits are shown as Daily Maximum Limit, unless denoted by a **, in that case it will be a Monthly Average Limit)
	9. Total Benzene, Toluene, Ethyl Benzene, and Xylenes (BTEX) ⁴	100 ug/L/ Me#8260C/ ML 2ug/L
	10. Ethylene Dibromide (EDB) (1,2- Dibromoethane)	0.05 ug/l/ Me#8260C/ ML 10ug/L
	11. Methyl-tert-Butyl Ether (MtBE)	70.0 ug/l/Me#8260C/ML 10ug/L
	12.tert-Butyl Alcohol (TBA) (TertiaryButanol)	Monitor Only(ug/L)/Me#8260C/ML 10ug/L
	13. tert-Amyl Methyl Ether (TAME)	Monitor Only(ug/L)/Me#8260C/ML 10ug/L
	14. Naphthalene ⁵	20 ug/L /Me#8260C/ML 2ug/L
	15. Carbon Tetrachloride	4.4 ug/L /Me#8260C/ ML 5ug/L
	16. 1,2 Dichlorobenzene (o-DCB)	600 ug/L /Me#8260C/ ML 5ug/L
	17. 1,3 Dichlorobenzene (m-DCB)	320 ug/L /Me#8260C/ ML 5ug/L
	18. 1,4 Dichlorobenzene (p-DCB)	5.0 ug/L /Me#8260C/ ML 5ug/L
	18a. Total dichlorobenzene	763 ug/L - NH only /Me#8260C/ ML 5ug/L
	19. 1,1 Dichloroethane (DCA)	70 ug/L /Me#8260C/ ML 5ug/L
	20. 1,2 Dichloroethane (DCA)	5.0 ug/L /Me#8260C/ ML 5ug/L
	21. 1,1 Dichloroethene (DCE)	3.2 ug/L/Me#8260C/ ML 5ug/L
	22. cis-1,2 Dichloroethene (DCE)	70 ug/L/Me#8260C/ ML 5ug/L
	23. Methylene Chloride	4.6 ug/L/Me#8260C/ ML 5ug/L
	24. Tetrachloroethene (PCE)	5.0 ug/L/Me#8260C/ ML 5ug/L
	25. 1,1,1 Trichloro-ethane (TCA)	200 ug/L/Me#8260C/ ML 5ug/L
	26. 1,1,2 Trichloro-ethane (TCA)	5.0 ug/L /Me#8260C/ ML 5ug/L
	27. Trichloroethene (TCE)	5.0 ug/L /Me#8260C/ ML 5ug/L
	28. Vinyl Chloride (Chloroethene)	2.0 ug/L /Me#8260C/ ML 5ug/L
	29. Acetone	Monitor Only(ug/L)/Me#8260C/ML 50ug/L
	30. 1,4 Dioxane	Monitor Only /Me#1624C/ML 50ug/L
✓	31. Total Phenols	300 ug/L Me#420.1&420.2/ML 2 ug/L/ Me# 420.4 /ML 50ug/L
	32. Pentachlorophenol (PCP)	1.0 ug/L /Me#8270D/ML 5ug/L, Me#604 &625/ML 10ug/L
	33. Total Phthalates (Phthalate esters) ⁶	3.0 ug/L ** /Me#8270D/ML 5ug/L, Me#606/ML 10ug/L& Me#625/ML 5ug/L
	34. Bis (2-Ethylhexyl) Phthalate [Di- (ethylhexyl) Phthalate]	6.0 ug/L /Me#8270D/ML 5ug/L, Me#606/ML 10ug/L & Me#625/ML 5ug/L

	<u>Parameter</u>	<u>Effluent Limit/Method#/ML</u> (All Effluent Limits are shown as Daily Maximum Limit, unless denoted by a **, in that case it will be a Monthly Average Limit)
✓	35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)	10.0 ug/L
✓	a. Benzo(a) Anthracene ⁷	0.0038 ug/L /Me#8270D/ ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	b. Benzo(a) Pyrene ⁷	0.0038 ug/L /Me#8270D/ ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	c. Benzo(b)Fluoranthene ⁷	0.0038 ug/L /Me#8270D/ ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	d. Benzo(k)Fluoranthene ⁷	0.0038 ug/L /Me#8270D/ ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	e. Chrysene ⁷	0.0038 ug/L /Me#8270D/ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	f. Dibenzo(a,h)anthracene ⁷	0.0038 ug/L /Me#8270D/ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML 5ug/L
	g. Indeno(1,2,3-cd) Pyrene ⁷	0.0038 ug/L /Me#8270D/ML 5ug/L, Me#610/ML 5ug/L& Me#625/ML5ug/L
✓	36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)	100 ug/L
✓	h. Acenaphthene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	i. Acenaphthylene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	j. Anthracene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	k. Benzo(ghi) Perylene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	l. Fluoranthene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	m. Fluorene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	n. Naphthalene ⁵	20 ug/l / Me#8270/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	o. Phenanthrene	X/Me#8270D/ML 5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
✓	p. Pyrene	X/Me#8270D/ML5ug/L, Me#610/ML 5ug/L & Me#625/ML 5ug/L
	37. Total Polychlorinated Biphenyls (PCBs) ^{8,9}	0.000064 ug/L/Me# 608/ ML 0.5 ug/L
✓	38. Chloride	Monitor only/Me# 300.0/ ML 0.1ug/L

<u>Metal parameter</u>	<u>Total Recoverable Metal Limit @ H ¹⁰ = 50 mg/l CaCO₃ for discharges in Massachusetts (ug/l)</u> <u>11/12</u>	<u>Minimum level=ML</u>

		Freshwater	Saltwater	
	39. Antimony	5.6/ML 10		
✓	40. Arsenic **	540/ML20	36/ML 20	
	41. Cadmium **	0.2/ML10	8.9/ML 10	
✓	42. Chromium III (trivalent) **	1,710/ML15	100/ML 15	
✓	43. Chromium VI (hexavalent) **	1,140/ML10	50.3/ML 10	
	44. Copper **	5.2/ML15	3.7/ML 15	
	45. Lead **	1.3/ML20	8.5/ML 20	
	46. Mercury **	0.9/ML0.2	1.1/ML 0.2	
	47. Nickel **	29/ML20	8.2/ML 20	
	48. Selenium **	5/ML20	71/ML 20	
	49. Silver	1.2/ML10	2.2/ML 10	
	50. Zinc **	66.6/ML15	85.6/ML 15	
✓	51. Iron	5,000/ML 20		

	Other Parameters	Limit
✓	52. Instantaneous Flow	Site specific in CFS
✓	53. Total Flow	Site specific in CFS
✓	54. pH Range for Class A & Class B Waters in MA	6.5-8.3; 1/Month/Grab ¹³
	55. pH Range for Class SA & Class SB Waters in MA	6.5-8.3; 1/Month/Grab ¹³
	56. pH Range for Class B Waters in NH	6.5-8; 1/Month/Grab ¹³
	57. Daily maximum temperature - Warm water fisheries	83°F; 1/Month/Grab ¹⁴
	58. Daily maximum temperature - Cold water fisheries	68°F; 1/Month/Grab ¹⁴
	59. Maximum Change in Temperature in MA - Any Class A water body	1.5°F; 1/Month/Grab ¹⁴
	60. Maximum Change in Temperature in MA - Any Class B water body- Warm Water	5°F; 1/Month/Grab ¹⁴
	61. Maximum Change in Temperature in MA - Any Class B water body - Cold water and Lakes/Ponds	3°F; 1/Month/Grab ¹⁴
	62. Maximum Change in Temperature in MA - Any Class SA water body - Coastal	1.5°F; 1/Month/Grab ¹⁴
	63. Maximum Change in Temperature in MA - Any Class SB water body - July to September	1.5°F; 1/Month/Grab ¹⁴
	64. Maximum Change in Temperature in MA -Any Class SB water body - October to June	4°F; 1/Month/Grab ¹⁴

Footnotes:

¹ Although the maximum values for TRC are 11ug/l and 7.5 ug/l for freshwater, and saltwater respectively, the compliance limits are equal to the minimum level (ML) of the test method used as listed in Appendix VI (i.e., Method 330.5, 20 ug/l).

² Limits for cyanide are based on EPA's water quality criteria expressed as micrograms per liter. There is currently no EPA approved test method for free cyanide. Therefore, total cyanide must be reported.

³ Although the maximum values for cyanide are 5.2 ug/l and 1.0 ug/l for freshwater and saltwater, respectively, the compliance limits are equal to the minimum level (ML) of the Method 335.4 as listed in Appendix VI (i.e., 10 ug/l).

⁴ BTEX = sum of Benzene, Toluene, Ethylbenzene, and total Xylenes.

⁵ Naphthalene can be reported as both a purgeable (VOC) and extractable (SVOC) organic compound. If both VOC and SVOC are analyzed, the highest value must be used unless the QC criteria for one of the analyses is not met. In such cases, the value from the analysis meeting the QC criteria must be used.

⁶ The sum of individual phthalate compounds (not including the #34, Bis (2-Ethylhexyl) Phthalate). The compliance limits are equal to the minimum level (ML) of the test method used as listed in Appendix VI.

Total values calculated for reporting on NOIs and discharge monitoring reports shall be calculated by adding the measured concentration of each constituent. If the measurement of a constituent is less than the ML, the permittee shall use a value of zero for that constituent. For each test, the permittee shall also attach the raw data for each constituent to the discharge monitoring report, including the minimum level and minimum detection level for the analysis.

⁷ Although the maximum value for the individual PAH compounds is 0.0038 ug/l, the compliance limits are equal to the minimum level (ML) of the test method used as listed in Appendix VI.

⁸ In the November 2002 WQC, EPA has revised the definition of Total PCBs for aquatic life as total PCBs is the sum of all homologue, all isomer, all congener, or all "Orochlor analyses." Total values calculated for reporting on NOIs and discharge monitoring reports shall be calculated by adding the measured concentration of each constituent. If the measure of a constituent is less than the ML, the permittee shall use a value of zero for that constituent. For each test, the permittee shall also attach the raw data for each constituent to the discharge monitoring report, including the minimum level and minimum detection level for the analysis.

⁹ Although the maximum value for total PCBs is 0.000064 ug/l, the compliance limit is equal to the minimum level (ML) of the test method used as listed in Appendix VI (i.e., 0.5 ug/l for Method 608 or 0.00005 ug/l when Method 1668a is approved).

¹⁰ Hardness. Cadmium, Chromium III, Copper, Lead, Nickel, Silver, and Zinc are Hardness Dependent.

¹¹ For a Dilution Factor (DF) from 1 to 5, metals limits are calculated using DF times the base limit for the metal. See Appendix IV. For example, iron limits are calculated using $DF \times 1,000 \text{ ug/L}$ (the iron base limit). Therefore DF is 1.5, the iron limit will be 1,500 ug/L; DF 2, then iron limit = $1,000 \times 2 = 2,000 \text{ ug/L}$, etc. not to exceed the DF=5.

¹² Minimum Level (ML) is the lowest level at which the analytical system gives a recognizable signal and acceptable calibration point for the analyte. The ML represents the lowest concentration at which an analyte can be measured with a known level of confidence. The ML is calculated by multiplying the laboratory-determined method detection limit by 3.18 (see 40 CFR Part 136, Appendix B).

¹³ pH sampling for compliance with permit limits may be performed using field methods as provided for in EPA test Method 150.1.

¹⁴ Temperature sampling per Method 170.1



ENVIRONMENTAL MANAGEMENT PROFESSIONALS, INC.

94 Sawyer Lane
Marshfield, MA 02050
781-834-3822 • Fax 781-834-7110

April 4, 2012

U.S. Environmental Protection Agency
RGP-NOC Processing Municipal Assistance Unit (CMU)
1 Congress Street, Suite 1100
Boston, MA 02114-2023

VIA: NPDES.Generalpermits@epa.gov

Attention: RGP-NOC Processing
RE: CAM 017 Drainage Improvements
Land Boulevard & Binney Street
Cambridge, MA
Notice of Intent for Construction Dewatering Discharge Under
Massachusetts Remedial General Permit MAG910000

To Whom It May Concern:

On behalf of P. Caliacco Corp., Environmental Management Professionals, Inc. is providing a summary of the site and groundwater quality information in support of an application for approval from the U.S. Environmental Protection Agency (EPA) for the temporary discharge of groundwater into the Charles River via a storm drain system during construction at the above referenced site. Refer to Attachment 1: Notice of Intent for the USEPA NPDES Remediation General Permit and Figure 1: Project Location Plan for the general site locus.

Operator

The operator is:
P. Caliacco Corp.
1373 Washington Street
Weymouth, MA 02189
Attention: Mr. Marc Ciampa
Telephone: 781-340-0400
Email: Mciampa@caliacco.com

Owner

The owner is:
City of Cambridge DPW
147 Hampshire Street
Cambridge, MA 02142
Attention: Mr. Owen O'Riordan
Telephone: 617-349-4800
Email: Ooriordan@cambridgema.gov

Site Location and Current Conditions

The utility improvements project will be conducted on sections of Land Boulevard and Binney Street in Cambridge, MA. The roadways have been public right-of-ways for at least the past 50 years.

The site and surrounding properties are serviced by public utilities including gas, water and electricity. Wastewater is discharged into the City of Cambridge sewer system. Stormwater is collected in catch basins that discharge via storm drains to the Charles River.

Site Environmental Setting and Surrounding Historical Places

Based on the current Massachusetts Geographic Information Systems (GIS) Department of Environmental Protection (DEP) Priority Resources Map of this section of Cambridge (Figure 2), the subject site is not located within the boundaries of a Potentially Productive Aquifer or within a Zone II, Interim Wellhead Protection Area as defined by the Massachusetts Department of Environmental Protection. There are no

known public or private drinking water supply wells, no Areas of Critical Environmental Concern, no fish habitats, no habitats of Species of Special Concern or Threatened or Endangered Species within 500 feet of the subject site. There are no surface water bodies or wetland areas located at the subject site. The nearest surface water is the Charles River, classified by the DEP as a Class B Surface Water Body. The Charles River is located approximately 300 feet to the south of the subject site. No Protected Open Spaces are located on or within 500 feet of the subject property. No areas designated as solid waste facilities (landfills) are located within 0.5 miles of the subject site.

A review of the most recent federal listing of threatened and endangered species published by the U.S. Fish and Wildlife Service identified no threatened and/or endangered species at, or in, the vicinity of the discharge location and/or discharge outfall. In addition, a review of the Massachusetts Division of Fisheries and Wildlife on-line database identified no threatened or endangered species at the point of discharge and/or the discharge outfall.

A review of the most recent National Register of Historical Places for Middlesex County and the Massachusetts Historical Commission website (MACRIS) did not identify records or addresses of Historic Places that exist in the immediate vicinity of the subject property and/or outfall location.

Release History

Based on the results of chemical testing conducted on soil and groundwater samples obtained on behalf of the Cambridge DPW in January 2011, the presence of cadmium has been identified in fill soil at the subject site at levels (13 mg/Kg) which exceed the applicable reporting thresholds established in CMR 40.0000, the Massachusetts Contingency Plan (MCP). The source of the contamination appears to be related to the historic filling of the area.

Laboratory analysis of groundwater samples obtained during this investigation indicated levels are below the applicable RCGW-2 reporting standards. Therefore, a reportable release to groundwater at the site has not been identified.

Based on the proposed area to be excavated as part of the proposed utility improvements and the approximate depth of impacted soils, the impacted soil will be removed under a Utility Related Abatement Measure (URAM) Plan. Remedial activities will include the excavation and off-site disposal of impacted soil.

Proposed Scope of Work

The scope of this project includes, but is not limited to, the installation of approximately 700 linear feet of RCP, DIP and PVC gravity storm drain and sanitary sewer ranging from 6-inch to 72-inch associated manholes and vaults; storm water management Bending Weirs; 315 linear feet of water main relocation ranging from 6-inch to 12-inch. Work also includes cleaning and CCTV inspection of 800 linear feet of 100-inch combined sewer, rehabilitation of existing 84-inch tide gate; and temporary traffic signal relocation. Construction will also include requisite excess soil removal and groundwater management activities that will occur during the installation of sewer and drainage structures. Specific soil management activities will include excavation, field screening, stockpiling, sampling, testing, on-site reuse and, potentially, transportation and disposal of excess soils displaced during the construction project. Construction dewatering will require the discharge of collected groundwater into the storm drain system under the requested Remedial General Permit. A review of relevant sewer and drainage plans provided by the City of Cambridge DPW indicates that an 8" storm water drain adjacent to the planned construction area connects onto a 90" x 96" wooden box culvert that discharges into the Charles River. Actual volumes of contaminated site media, soils and groundwater to be managed will be determined as on-site activities occur.

Based on previous soils characterization data obtained from sub-surface investigations in the project area and assessment of past land uses; contaminated soils subject to regulatory notification, specifically



cadmium, may be encountered during the construction project. Other contaminants detected in soil along the project alignment include polycyclic aromatic hydrocarbons (PAH), arsenic, barium, chromium, lead, mercury and petroleum hydrocarbons; however, these contaminants were below regulatory notification values.

Management of impacted soils with contaminant concentrations above the RC-SI reporting values will be performed as a Utility Related Abatement Measure (URAM) in accordance with the Massachusetts Contingency Plan.

Construction Site Dewatering

Groundwater will be managed through a series of sumps within the utility trenches and subsequently pumped to an 11,000-gallon Weir tank for equalization and solids removal. The dewatering flow will pass through a duplex bag filter system prior to entering into an 8" drain located on the northeast lane of Land Boulevard at the intersection with the west bound lane of Binney Street. This drain is connected to a 90"x 96" wooden box culvert that immediately discharges into the Charles River. If compliance sampling indicates that total metals in the discharge are present at concentrations above the applicable RGP limits; vessels containing ion exchange resin will be added to the treatment process. The location of relevant drain with relation to the subject site is indicated on Figure 3. Figure 4 shows the route of the storm drain on Land Boulevard to the Charles River.

Summary of Groundwater Analysis

On February 24, 2012 and March 29, 2012 Environmental Management Professionals, Inc. obtained samples of groundwater from monitoring well B102 and submitted the sample to a certified laboratory for analysis for the presence of parameters required under the EPA's Remediation General Permit (RGP) application including: pH, total suspended solids (TSS), total residual chlorine, total petroleum hydrocarbons (TPH), cyanide, volatile organic compounds (VOCs), including total benzene, toluene, ethylbenzene and xylenes (BTEX), poly-aromatic hydrocarbons (PAHs), total phenols, pesticides and PCBs, and total recoverable metals. The additional sample obtained on March 29, 2012 was subsequently analyzed for total mercury and 1,4 Dioxane because these contaminants were inadvertently omitted from the initial testing requested. The laboratory reports are included in Attachment 2.

The results of laboratory analysis indicate the following:

1. **pH:** The tested sample exhibited a pH level of 7.7 Standard Units (S.U.) which is within the recommended range of 6.5 to 8.5 S.U. for discharge into freshwater.
2. **TSS:** Total suspended solids (TSS) were detected in the tested sample at a concentration of 7 milligram per liter (mg/l), which is below the upper limit of 30 mg/l established by the EPA for discharge into surface water.
3. **VOCs:** No VOCs were detected in the tested sample above the laboratory's method detection limits.
4. **TPH:** Laboratory analysis of the groundwater sample indicated no detectable levels of TPH.
5. **PAH and Total Phenols:** The laboratory report indicated that the Total Group I PAHs, Total Group II PAHs cumulative concentrations did not exceed limits for discharges into surface water. However, the individual Group I PAH Benzo(a)anthracene was detected at 0.113 ug/l which exceeds the RGP limit of 0.00038 ug/l but this concentration does not exceed the value in Appendix VI regarding the test method ML. See RGP Appendix III Note (7). The individual Group II PAH's Acenaphthene was detected at 2.76 ug/l and Pyrene at 1.18 ug/l but below the RGP limited as total ug/l Group II PAHs of 100 ug/l. Total Phenols were detected at 280 ug/l which is below the RGP limit of 300 ug/l.
6. **PCBs:** The laboratory results indicated no detectable levels of PCBs.
7. **Cyanide:** Cyanide was not detected in the tested groundwater sample at a concentration in excess of the laboratory method detection limit of 0.5 mg/l.
8. **Total Metals:** The laboratory data indicated no detectable levels of antimony, cadmium, chromium III, copper, selenium, nickel, chromium VI, lead, mercury or silver in the submitted



groundwater samples. The detected levels of zinc are below the EPA effluent limits of 66 ug/l for discharge to a freshwater body. The detected level of iron and arsenic exceeds the EPA effluent limit of 1,000 ug/l and 10 ug/l respectively for discharge into a freshwater body. However, based on calculations of the applicable dilution factor, as shown below, the detected concentration of iron and arsenic does not exceed the corresponding dilution concentration of 5,000 ug/l and 540 ug/l.

Dilution Factor Application for Total Iron, Arsenic

As mentioned above, total iron was detected at a concentration of 2,570 ug/l and arsenic was detected at 273 ug/l. The EPA freshwater effluent limitation for iron is 1,000 ug/l and arsenic is 10 ug/l. As a result, a Dilution Factor (DF) was calculated for the detected level of iron and arsenic pursuant to the procedure contained in RGP MAG910000, Appendix V. The purpose of the DF calculation is to establish Total Recoverable Limits for metals, taking into consideration the anticipated dilution of the detected analyte upon discharge into the Charles River. The calculated DF was then used to find the appropriate Dilution Range Concentration (DRC) contained in MAG910000, Appendix IV.

The DF was calculated using the following equation:

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

Where the Q_d is the maximum discharge flow rate and Q_s is the receiving water flow rate minimum for seven consecutive days with a recurrence interval of 10 years or (7Q10 flow).

The Maximum Flow Rate is assumed to be 50 gallons per minute or 0.1115 cubic feet per second (cfs) and the Minimum Flow Rate calculated by the USGS *Streamstats* GIS database (Attachment 3) at the location of discharge into the Charles River for seven consecutive days with a recurrence interval of 10 years (7Q10 flow) is 28.2, thus resulting in a DF of 253.9.

A DF in excess of 100 corresponds to a dilution concentration of 5,000 ug/l. Therefore, based on the calculation of the applicable dilution factor, the detected level of iron at 2,570 ug/l and arsenic at 273 ug/l does not exceed the dilution concentration of 5,000 ug/l applicable to iron and 540 ug/l for arsenic for discharge into a freshwater body.

Groundwater Treatment

It is our opinion that the level of iron and arsenic detected in the tested sample from monitoring well B102 was due to the accumulation of sediment. To mitigate sediment in the discharge water as a result of construction activities, a sedimentation tank(s) and a bag filter(s) will be used to settle particulate matter out of the water to ensure allowable discharge limits prior to discharge. A schematic of the treatment system is shown on Figure 5.

To document the effectiveness of the treatment system, samples of the discharge water will be obtained and tested for the presence of TSS and total metals prior to the start of discharge into the storm drain system. Should the pre-start up testing indicate that the levels of these contaminants in the effluent exceed the limits established under the RGP, additional treatment of the effluent, including the addition of ion exchange resin, will be implemented prior to initial discharge. Refer to Attachment 4: Ion Exchange Resin Material Safety Data Sheet. In addition, should other contaminants be detected within the discharge water during the construction dewatering phase of the project at levels that exceed the effluent limitations, mitigative measures will be implemented to meet the allowable discharge limits. Operation and maintenance of the treatment system will be performed utilizing Best Management Practices. Refer to Attachment 5: Best Management Practices Plan (BMPP).



Summary and Conclusions

The purpose of this report is to assess site environmental conditions and groundwater data to support an application for a Massachusetts Remedial General Permit for off-site discharge of groundwater which will be encountered during construction of the proposed CAM 017 Drainage Improvement Project in Cambridge, MA.

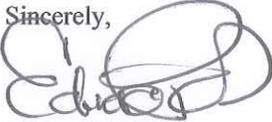
In summary, the results of the groundwater laboratory analyses indicate that most of the analytes were either not detected above the laboratory's detection limits or were detected at concentrations below the RGP effluent limitations.

It is our opinion that the levels of iron and arsenic detected in the sample from monitoring well B102 were due to the accumulation of sediment. To mitigate sediment in the discharge water as a result of construction activities, a sedimentation tank(s) will be used to settle particulate matter out of the water to meet allowable discharge limits prior to discharge. A bag filter(s) will also be added at the outlet from the tank before the effluent is discharged into the storm drain system to mitigate the presence of these metals.

Based on the results of groundwater chemical analyses discussed above, considering dilution, it is our opinion that no additional treatment of the groundwater prior to discharge will be necessary. It is our opinion that the metals are sorbed to the sediment in the groundwater, and the sediment will be settled out prior to discharge. It is therefore anticipated that metals will not be present in the discharge above permit limits. If during the start-up phase of this discharge data indicates that the subject metals are present at concentrations that exceed permit limits additional treatment, including ion exchange resin, will be included in the treatment process.

I trust that the attached information satisfies your permit requirements. If you have any questions or comments, please contact me at 781-834-3822 or by email at Tpatch@envmgtpro.com

Sincerely,



Edward M. Patch
 President

Figure 1	Site Locus
Figure 2	Massachusetts Geographic Information Systems (GIS) Department of Environmental Protection (DEP) Priority Resources Map
Figure 3	Effluent Discharge Location
Figure 4	Location of 8" Receiving Drain on Land Boulevard
Figure 5	Treatment System Schematic
Attachment 1	Notice Of Intent (NOI) For The USEPA NPDES Remediation General Permit
Attachment 2	Laboratory Reports
Attachment 3	USGS Streamstats GIS Database
Attachment 4	Ion Exchange Resin Material Safety Data Sheet
Attachment 5	Best Management Practices Plan (BMPP)

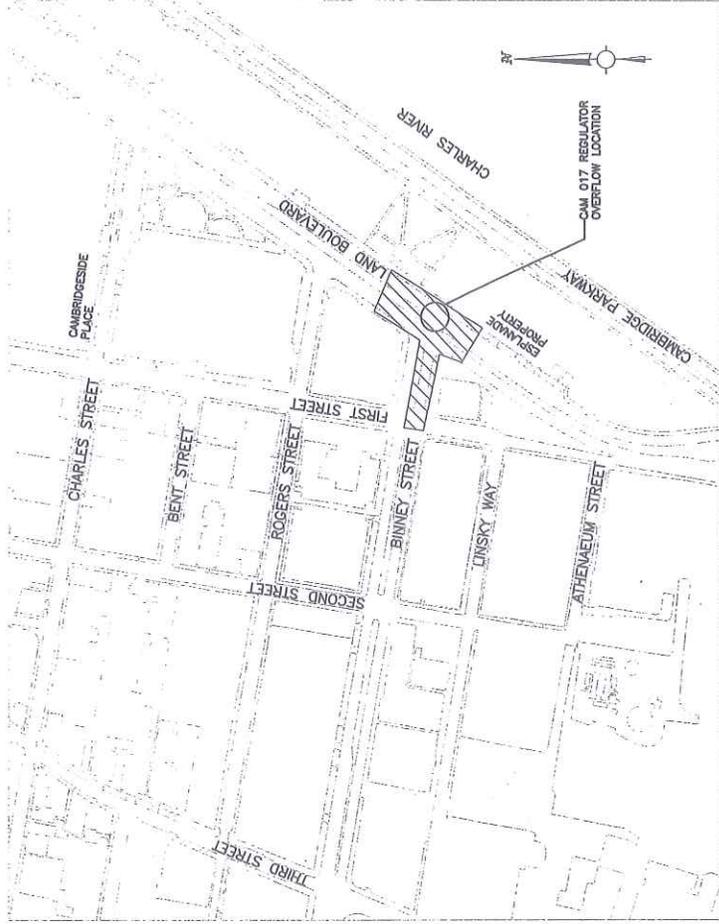


Figure 1

Site Locus



CITY OF CAMBRIDGE, MASSACHUSETTS
**CAM 017 COMBINED SEWER OVERFLOW
 REGULATOR IMPROVEMENTS AND
 DRAINAGE INSTALLATION**



CONSTRUCTION DOCUMENTS SUBMITTAL
 NOVEMBER 11, 2011
 LOCUS PLAN
 SCALE: NONE



PROJECT DESIGN TEAM



12 BARKINGHAM STREET, SECOND FLOOR
 CAMBRIDGE, MASSACHUSETTS 02140
 TEL: 617.321.4700



Figure 2

Massachusetts Geographic Information Systems (GIS)
Department of Environmental Protection (DEP) Priority Resources Map

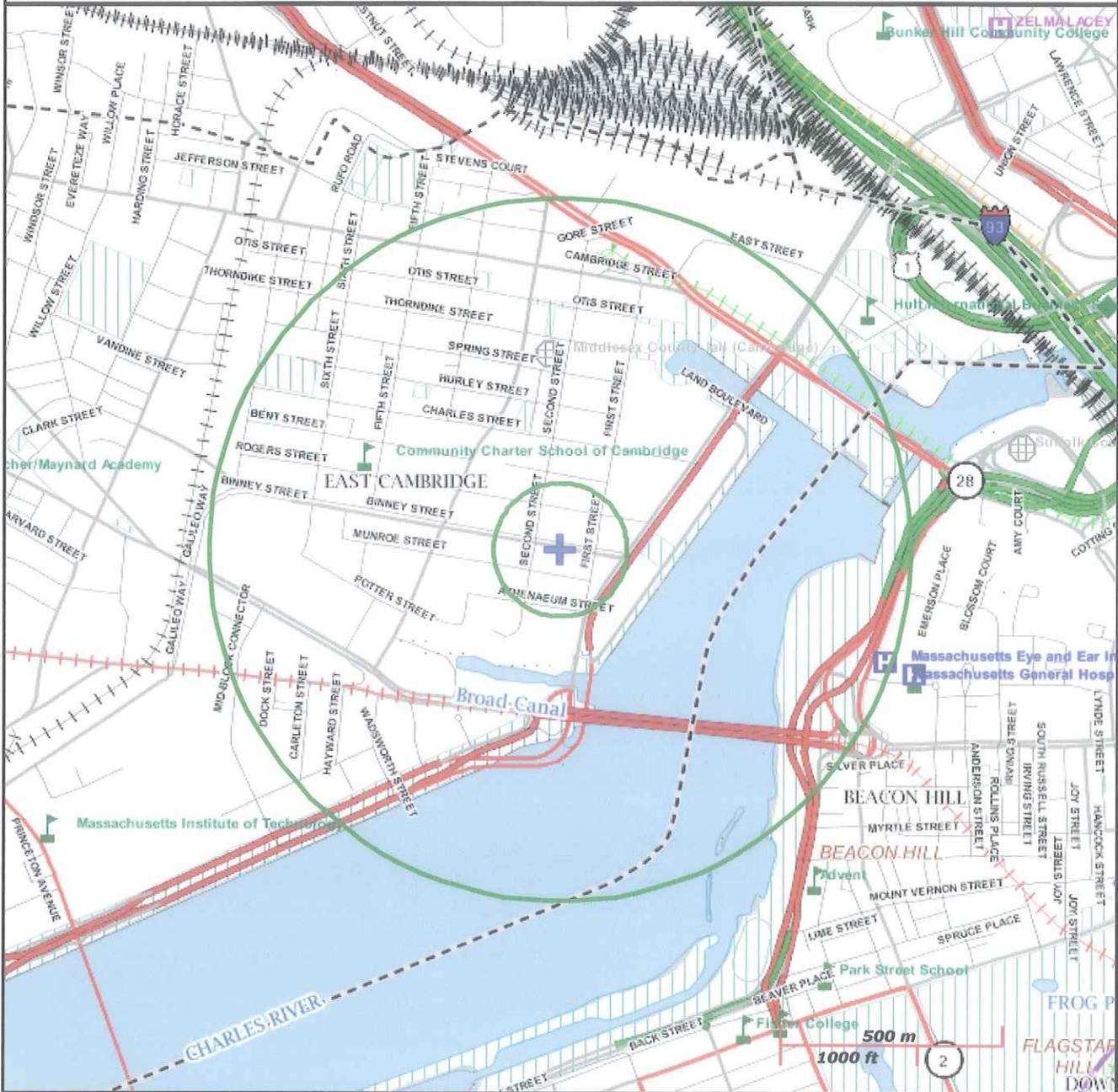


MassDEP - Bureau of Waste Site Cleanup

Site Information: MCP Numerical Ranking System Map: 500 feet & 0.5 Mile Radii

CAMBRIDGE, MA
 NAD83 UTM Meters:
 4692414mN, 328794mE (Zone: 19)
 March 29, 2012

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



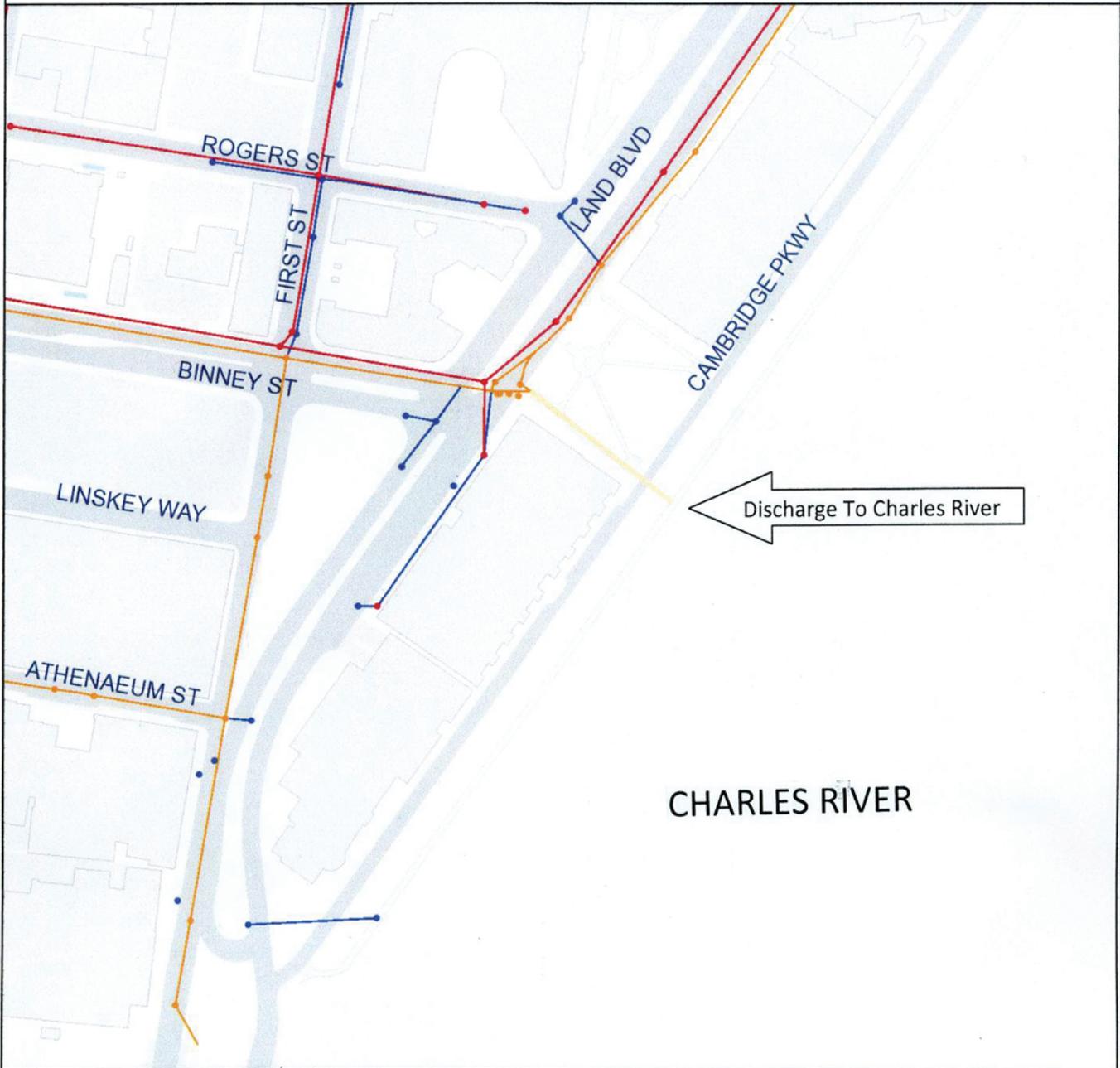
Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail	PWS Protection Areas: Zone II, IWPA, Zone A
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct	Hydrography: Open Water, PWS Reservoir, Tidal Flat
Basins: Major, PWS; Streams: Perennial, Intermittent,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

Figure 3

Effluent Discharge Location



Effluent Discharge point



City of Cambridge
Massachusetts

1" = 202 ft

- Gravity Mai
- Stormwater
- Sewage
- Combined Sewage
- Abandoned
- Zoom Three Paved Surfaces
- Paved Roads
- Paved Parking
- Bridges
- Public Footpath

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

Figure 4

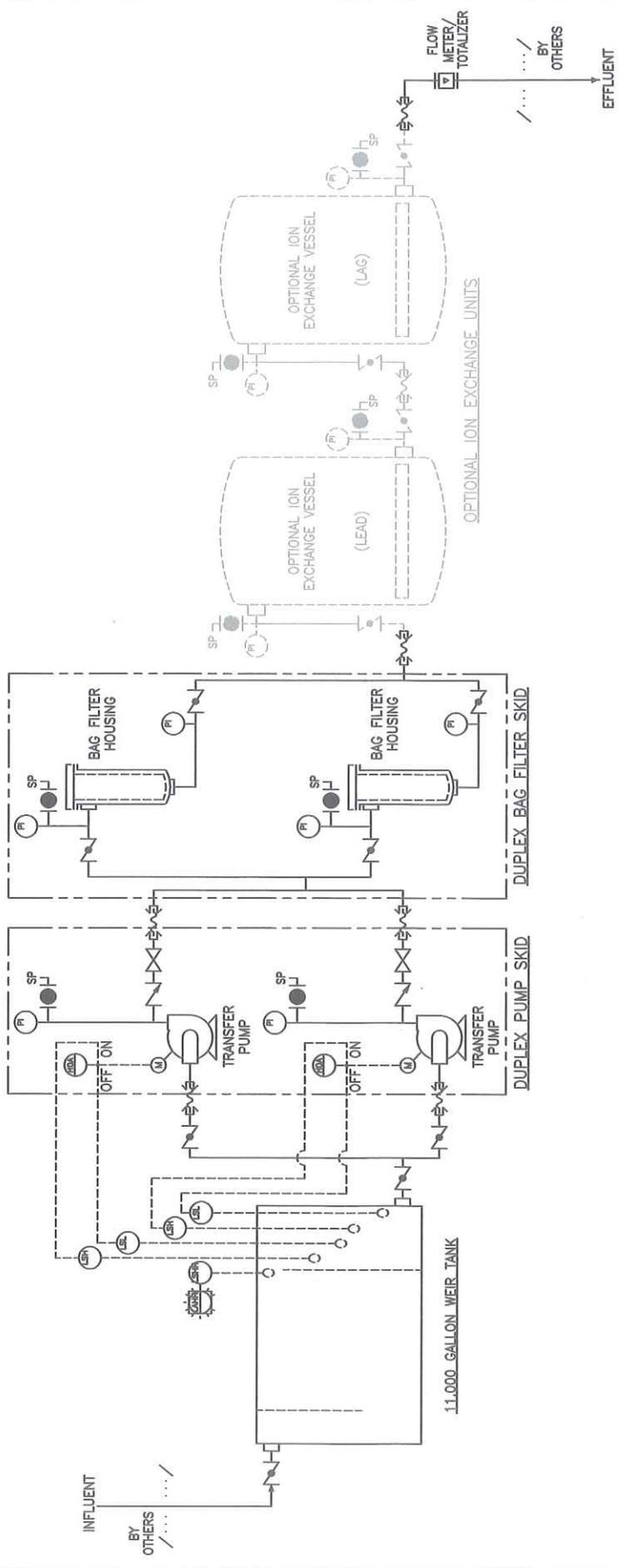
Location of 8" Receiving Drain on Land Boulevard



Figure 5

Treatment System Schematic





PRELIMINARY DESIGN FOR REVIEW		03/27/12
NO.	REVISIONS	DATE
IRON REMOVAL SYSTEM 50-100 GPM		
PROPOSED TEMPORARY TREATMENT SYSTEM		
SCALE:	NTS	APPROVED BY: MD
DATE:	03/27/12	DRAWN BY: RS
 GROUND/WATER TREATMENT & TECHNOLOGY P.O. BOX 1174 DENVER, NJ 07684		
DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: Q-3930-PD A

THIS DRAWING IS THE PROPERTY OF GROUND/WATER TREATMENT & TECHNOLOGY, INC.

- NOTES:
- 1) MAXIMUM FLOWRATE = 100 GPM
 - 2) NOT ALL VALVES, INSTRUMENTATION AND PIPING, ETC. SHOWN FOR CLARITY
 - 3) GENERATOR BY OTHERS

—	PROCESS PIPING	○	LEVEL FLOAT
~	FLEXIBLE HOSE	(M)	MOTOR
→	FLOW DIRECTION	⊞	FLOW METER
—	PIPE CROSS OVER	●	BALL VALVE (NORMALLY CLOSE)
⊞	BUTTERFLY VALVE	⊞	LEVEL ALARM HIGH HIGH
⊞	CHECK VALVE	⊞	LEVEL SWITCH HIGH
⊞	GATE VALVE (OPEN)	⊞	LEVEL SWITCH HIGH HIGH
SP	SAMPLE PORT	⊞	LEVEL SWITCH LOW
⊞	CAM LOCK COUPLING	⊞	HAND OPERATED SWITCH
⊞	PRESSURE GAUGE		

Attachment 1

Notice Of Intent (NOI)
For The
USEPA NPDES
Remediation General Permit



B. Suggested Form for Notice of Intent (NOI) for the Remediation General Permit

1. General facility/site information. Please provide the following information about the site:

a) Name of facility/site: CAM 017 DRAINAGE IMPROVEMENTS		Facility/site mailing address:	
Location of facility/site: Longitude: 71.077407 Latitude: 42.365010		Facility SIC code(s): 1623	Street: LAND BOULEVARD & BINNEY STREET
b) Name of facility/site owner:		Town: CAMBRIDGE	
Email address of facility/site owner: OORORDAN@CAMBRIDGE.MA.GOV		State: MA	Zip: 02142
Telephone no. of facility/site owner: 617-349-4800		County: MIDDLESEX	
Fax no. of facility/site owner:		Owner is (check one): 1. Federal <input type="radio"/> 2. State/Tribal <input type="radio"/>	
Address of owner (if different from site): CITY OF CAMBRIDGE DPW		3. Private <input type="radio"/> 4. Other <input checked="" type="radio"/> if so, describe:	
Street: 147 HAMPSHIRE STREET			
Town: CAMBRIDGE	State: MA	Zip: 02139	County: MIDDLESEX
c) Legal name of operator:		Operator telephone no: 781-340-0400	
P. CALIACCO CONSTRUCTION		Operator fax no.:	
Operator contact name and title: MARC CIAMPA PROJECT MANAGER		Operator email: MCIAMPA@PCALIACCO.COM	
Address of operator (if different from owner):		Street: 1373 WASHINGTON STREET	
Town: WEYMOUTH	State: MA	Zip: 02189	County: NORFOLK

<p>d) Check Y for "yes" or N for "no" for the following:</p> <p>1. Has a prior NPDES permit exclusion been granted for the discharge? Y <input type="radio"/> N <input checked="" type="radio"/>, if Y, number: <input type="text"/></p> <p>2. Has a prior NPDES application (Form 1 & 2C) ever been filed for the discharge? Y <input type="radio"/> N <input checked="" type="radio"/>, if Y, date and tracking #: <input type="text"/></p> <p>3. Is the discharge a "new discharge" as defined by 40 CFR 122.2? Y <input type="radio"/> N <input checked="" type="radio"/></p> <p>4. For sites in Massachusetts, is the discharge covered under the Massachusetts Contingency Plan (MCP) and exempt from state permitting? Y <input checked="" type="radio"/> N <input type="radio"/></p>	<p>e) Is site/facility subject to any State permitting, license, or other action which is causing the generation of discharge? Y <input type="radio"/> N <input checked="" type="radio"/></p> <p>If Y, please list:</p> <p>1. site identification # assigned by the state of NH or MA: <input type="text"/></p> <p>2. permit or license # assigned: <input type="text"/></p> <p>3. state agency contact information: name, location, and telephone number: <input type="text"/></p>	<p>f) Is the site/facility covered by any other EPA permit, including:</p> <p>1. Multi-Sector General Permit? Y <input type="radio"/> N <input checked="" type="radio"/>, if Y, number: <input type="text"/></p> <p>2. Final Dewatering General Permit? Y <input type="radio"/> N <input checked="" type="radio"/>, if Y, number: <input type="text"/></p> <p>3. EPA Construction General Permit? Y <input type="radio"/> N <input checked="" type="radio"/>, if Y, number: <input type="text"/> (MARI0E419)</p> <p>4. Individual NPDES permit? Y <input type="radio"/> N <input checked="" type="radio"/>, if Y, number: <input type="text"/></p> <p>5. any other water quality related individual or general permit? Y <input type="radio"/> N <input checked="" type="radio"/>, if Y, number: <input type="text"/></p> <p>g) Is the site/facility located within or does it discharge to an Area of Critical Environmental Concern (ACEC)? Y <input type="radio"/> N <input checked="" type="radio"/></p> <p>h) Based on the facility/site information and any historical sampling data, identify the sub-category into which the potential discharge falls.</p> <table border="1"> <thead> <tr> <th data-bbox="1036 1192 1073 1894">Activity Category</th> <th data-bbox="1036 323 1073 1192">Activity Sub-Category</th> </tr> </thead> <tbody> <tr> <td data-bbox="1073 1192 1211 1894">I - Petroleum Related Site Remediation</td> <td data-bbox="1073 323 1211 1192"> A. Gasoline Only Sites <input type="checkbox"/> B. Fuel Oils and Other Oil Sites (including Residential Non-Business Remediation Discharges) <input type="checkbox"/> C. Petroleum Sites with Additional Contamination <input type="checkbox"/> </td> </tr> <tr> <td data-bbox="1211 1192 1312 1894">II - Non Petroleum Site Remediation</td> <td data-bbox="1211 323 1312 1192"> A. Volatile Organic Compound (VOC) Only Sites <input type="checkbox"/> B. VOC Sites with Additional Contamination <input type="checkbox"/> C. Primarily Heavy Metal Sites <input type="checkbox"/> </td> </tr> <tr> <td data-bbox="1312 1192 1369 1894">III - Contaminated Construction Dewatering</td> <td data-bbox="1312 323 1369 1192"> A. General Urban Fill Sites <input checked="" type="checkbox"/> B. Known Contaminated Sites <input checked="" type="checkbox"/> </td> </tr> </tbody> </table>	Activity Category	Activity Sub-Category	I - Petroleum Related Site Remediation	A. Gasoline Only Sites <input type="checkbox"/> B. Fuel Oils and Other Oil Sites (including Residential Non-Business Remediation Discharges) <input type="checkbox"/> C. Petroleum Sites with Additional Contamination <input type="checkbox"/>	II - Non Petroleum Site Remediation	A. Volatile Organic Compound (VOC) Only Sites <input type="checkbox"/> B. VOC Sites with Additional Contamination <input type="checkbox"/> C. Primarily Heavy Metal Sites <input type="checkbox"/>	III - Contaminated Construction Dewatering	A. General Urban Fill Sites <input checked="" type="checkbox"/> B. Known Contaminated Sites <input checked="" type="checkbox"/>
Activity Category	Activity Sub-Category									
I - Petroleum Related Site Remediation	A. Gasoline Only Sites <input type="checkbox"/> B. Fuel Oils and Other Oil Sites (including Residential Non-Business Remediation Discharges) <input type="checkbox"/> C. Petroleum Sites with Additional Contamination <input type="checkbox"/>									
II - Non Petroleum Site Remediation	A. Volatile Organic Compound (VOC) Only Sites <input type="checkbox"/> B. VOC Sites with Additional Contamination <input type="checkbox"/> C. Primarily Heavy Metal Sites <input type="checkbox"/>									
III - Contaminated Construction Dewatering	A. General Urban Fill Sites <input checked="" type="checkbox"/> B. Known Contaminated Sites <input checked="" type="checkbox"/>									

IV - Miscellaneous Related Discharges	A. Aquifer Pump Testing to Evaluate Formerly Contaminated Sites <input type="checkbox"/> B. Well Development/Rehabilitation at Contaminated/Formerly Contaminated Sites <input type="checkbox"/> C. Hydrostatic Testing of Pipelines and Tanks <input type="checkbox"/> D. Long-Term Remediation of Contaminated Sumps and Dikes <input type="checkbox"/> E. Short-term Contaminated Dredging Drain Back Waters (if not covered by 401/404 permit) <input type="checkbox"/>
---------------------------------------	---

2. Discharge information. Please provide information about the discharge, (attaching additional sheets as necessary) including:

a) Describe the discharge activities for which the owner/applicant is seeking coverage:
 TEMPORARY CONSTRUCTION DEWATERING FROM REQUISITE UTILITY TRENCHES ON BINNEY STREET & LAND BOULEVARD TO ACCOMODATE NEW SEWERS AND DRAINS

b) Provide the following information about each discharge:

1) Number of discharge points:	1	2) What is the maximum and average flow rate of discharge (in cubic feet per second, ft ³ /s)? Max. flow: 0.1115 Average flow (include units): 0.0892	Is maximum flow a design value? Y <input type="radio"/> N <input checked="" type="radio"/> Is average flow a design value or estimate? ESTIMATE
3) Latitude and longitude of each discharge within 100 feet:			
pt.1: lat	42° 21' 52.33"	long	71° 4' 34.59"
pt.2: lat		long	
pt.3: lat		long	
pt.4: lat		long	
pt.5: lat		long	
pt.6: lat		long	
pt.7: lat		long	
pt.8: lat		long	
etc.			
4) If hydrostatic testing, total volume of the discharge (gals):			
5) Is the discharge intermittent <input checked="" type="radio"/> or seasonal <input type="radio"/> ? Is discharge ongoing? Y <input type="radio"/> N <input checked="" type="radio"/>			
c) Expected dates of discharge (mm/dd/yy): start	Apr 15, 2012	end	Mar 16, 2013
d) Please attach a line drawing or flow schematic showing water flow through the facility including: 1. sources of intake water, 2. contributing flow from the operation, 3. treatment units, and 4. discharge points and receiving waters(s) (SEE ATTACHED FIGURES)			

3. Contaminant information.

a) Based on the sub-category selected (see Appendix III), indicate whether each listed chemical is **believed present** or **believed absent** in the potential discharge. Attach additional sheets as needed.

Parameter *	CAS Number	Believed Absent	Believed Present	# of Samples	Sample Type (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
								concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
1. Total Suspended Solids (TSS)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	2540D	4.0mg/L	7000.0	1.906	7000.0	1.528
2. Total Residual Chlorine (TRC)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	4500 CL-G	0.02mg/L	ND			
3. Total Petroleum Hydrocarbons (TPH)		<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	1664A	5.0mg/L	ND			
4. Cyanide (CN)	57125	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	E335.49010	0.005mg/L	ND			
5. Benzene (B)	71432	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002mg/L	ND			
6. Toluene (T)	108883	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002mg/L	ND			
7. Ethylbenzene (E)	100414	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002mg/L	ND			
8. (m,p,o) Xylenes (X)	108883; 106423; 95476; 1330207	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002mg/L	ND			
9. Total BTEX ²	n/a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002mg/L	ND			
10. Ethylene Dibromide (EDB) (1,2-Dibromoethane) ³	106934	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002mg/L	ND			
11. Methyl-tert-Butyl Ether (MtBE)	1634044	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002mg/L	ND			
12. tert-Butyl Alcohol (TBA) (Tertiary-Butanol)	75650	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002mg/L	ND			

* Numbering system is provided to allow cross-referencing to Effluent Limits and Monitoring Requirements by Sub-Category included in Appendix III, as well as the Test Methods and Minimum Levels associated with each parameter provided in Appendix VI.

² BTEX = Sum of Benzene, Toluene, Ethylbenzene, total Xylenes.

³ EDB is a groundwater contaminant at fuel spill and pesticide application sites in New England.

Parameter *	CAS Number	Believed Absent	Believed Present	# of Samples	Sample Type (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
								concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
13. tert-Amyl Methyl Ether (TAME)	9940508	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
14. Naphthalene	91203	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
15. Carbon Tetrachloride	56235	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
16. 1,2 Dichlorobenzene (o-DCB)	95501	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
17. 1,3 Dichlorobenzene (m-DCB)	541731	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
18. 1,4 Dichlorobenzene (p-DCB)	106467	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
18a. Total dichlorobenzene		<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
19. 1,1 Dichloroethane (DCA)	75343	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
20. 1,2 Dichloroethane (DCA)	107062	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
21. 1,1 Dichloroethene (DCE)	75354	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
22. cis-1,2 Dichloroethene (DCE)	156592	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
23. Methylene Chloride	75092	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
24. Tetrachloroethene (PCE)	127184	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
25. 1,1,1 Trichloro-ethane (TCA)	71556	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
26. 1,1,2 Trichloro-ethane (TCA)	79005	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			
27. Trichloroethene (TCE)	79016	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.002	ND			

Parameter *	CAS Number	Believed Absent	Believed Present	# of Samples	Sample Type (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
								concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
28. Vinyl Chloride (Chloroethene)	75014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.01	ND			
29. Acetone	67641	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.01	ND			
30. 1,4 Dioxane	123911	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8260C	0.005	ND			
31. Total Phenols	108952	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	E420.1	0.015	280	0.076	280	0.061
32. Pentachlorophenol (PCP)	87865	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.0026	ND			
33. Total Phthalates (Phthalate esters) ⁴		<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]	117817	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00213	ND			
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	8270D	0.000106	0.133	0.036	0.133	.00002
a. Benzo(a) Anthracene	56553	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	8270D	0.000106	0.133	0.00003	0.133	.00002
b. Benzo(a) Pyrene	50328	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.000106	ND			
c. Benzo(b)Fluoranthene	205992	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.000106	ND			
d. Benzo(k)Fluoranthene	207089	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.000106	ND			
e. Chrysene	21801	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
f. Dibenzo(a,h)anthracene	53703	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.000106	ND			
g. Indeno(1,2,3-cd) Pyrene	193395	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.000106	ND			
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	8270D	0.00106	3.94	0.001	3.94	.0008

⁴ The sum of individual phthalate compounds.

Parameter *	CAS Number	Believed Absent	Believed Present	# of Samples	Sample Type (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
								concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
h. Acenaphthene	83329	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	8270D	0.00106	2.76	0.0007	2.76	0.0006
i. Acenaphthylene	208968	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
j. Anthracene	120127	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
k. Benzo(ghi) Perylene	191242	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
l. Fluoranthene	206440	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
m. Fluorene	86737	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
n. Naphthalene	91203	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
o. Phenanthrene	85018	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8270D	0.00106	ND			
p. Pyrene	129000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	8270D	0.00106	1.18	0.0003	1.18	0.0002
37. Total Polychlorinated Biphenyls (PCBs)	85687; 84742; 117840; 84662; 131113; 117817.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	8082	0.00026	ND			
38. Chloride	16887006	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	E300.0	300.0	2370000	646.8	2370000	517.5
39. Antimony	7440360	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	7010	0.002	ND			
40. Arsenic	7440382	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	GRAB	7010	0.001	273	0.074	273	0.059
41. Cadmium	7440439	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	6010C	0.004	ND			
42. Chromium III (trivalent)	15065831	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB		0.07	ND			
43. Chromium VI (hexavalent)	18540299	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	3500CR-D	0.05	ND			
44. Copper	7440508	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	6010C	0.015	ND			
45. Lead	7439921	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	7010	0.001	ND			
46. Mercury	7439976	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	E245.1	0.005	ND			
47. Nickel	7440020	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	6010C	0.02	ND			
48. Selenium	7782492	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	6010C	0.02	ND			
49. Silver	7440224	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	6010C	0.002	ND			
50. Zinc	7440666	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	6010C	0.015	56	0.015	56	0.012
51. Iron	7439896	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	GRAB	6010C	0.06	2570	0.701	2570	0.561
Other (describe):		<input type="checkbox"/>	<input type="checkbox"/>								

Parameter *	CAS Number	Believed Absent	Believed Present	# of Samples	Sample Type (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
								concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
		<input type="checkbox"/>	<input type="checkbox"/>								
		<input type="checkbox"/>	<input type="checkbox"/>								

b) For discharges where metals are believed present, please fill out the following (attach results of any calculations):

<p><i>Step 1:</i> Do any of the metals in the influent exceed the effluent limits in Appendix III (i.e., the limits set at zero dilution)? Y <input checked="" type="radio"/> N <input type="radio"/></p> <p><i>Step 2:</i> For any metals which exceed the Appendix III limits, calculate the dilution factor (DF) using the formula in Part I.A.3.c (step 2) of the NOI instructions or as determined by the State prior to the submission of this NOI. What is the dilution factor for applicable metals?</p> <p>Metal: IRON DF: 100</p> <p>Metal: ARSENIC DF: 100</p> <p>Metal: DF: </p> <p>Metal: DF: </p> <p>Etc.</p>	<p>If yes, which metals? IRON, ARSENIC</p> <p>Look up the limit calculated at the corresponding dilution factor in Appendix IV. Do any of the metals in the influent have the potential to exceed the corresponding effluent limits in Appendix IV (i.e., is the influent concentration above the limit set at the calculated dilution factor)? Y <input type="radio"/> N <input checked="" type="radio"/> If Y, list which metals:</p>
---	---

4. Treatment system information. Please describe the treatment system using separate sheets as necessary, including:

a) A description of the treatment system, including a schematic of the proposed or existing treatment system:
 FROM TRENCH SUMPS TO AN 11,000-GALLON WEIR TANK TO A DUPLEX BAG FILTER ADDITIONAL TREATMENT WITH ION EXCHANGE RESIN WILL BE ADDED IF Fe OR AS EXCEEDS RGP WITH DF PERMIT VALUES

b) Identify each applicable treatment unit (check all that apply):

Frac. tank <input checked="" type="checkbox"/>	Air stripper <input type="checkbox"/>	Oil/water separator <input type="checkbox"/>	Equalization tanks <input type="checkbox"/>	Bag filter <input checked="" type="checkbox"/>	GAC filter <input type="checkbox"/>
Chlorination <input type="checkbox"/>	De-chlorination <input type="checkbox"/>	Other (please describe):	OPTIONAL ION EXCHANGE RESIN IF Fe, AS EXCEED RGP LIMIT WITH DF		

c) Proposed average and maximum flow rates (gallons per minute) for the discharge and the design flow rate(s) (gallons per minute) of the treatment system:
 Average flow rate of discharge gpm Maximum flow rate of treatment system gpm
 Design flow rate of treatment system gpm

d) A description of chemical additives being used or planned to be used (attach MSDS sheets):
 OPTIONAL ION EXCHANGE RESIN

5. Receiving surface water(s). Please provide information about the receiving water(s), using separate sheets as necessary:

a) Identify the discharge pathway:	Direct to receiving water <input type="checkbox"/>	Within facility (sewer) <input type="checkbox"/>	Storm drain <input checked="" type="checkbox"/>	Wetlands <input type="checkbox"/>	Other (describe): <input type="text"/>
b) Provide a narrative description of the discharge pathway, including the name(s) of the receiving waters: 8" DRAIN ON THE NE LANE OF LAND BLVD AT THE INTERSECTION W/ THE W-BOUND LANE ON BINNEY ST TO A 90"X96" WOODEN BOX CULVERT TO CHARLES RIVER					
c) Attach a detailed map(s) indicating the site location and location of the outfall to the receiving water: 1. For multiple discharges, number the discharges sequentially. 2. For indirect dischargers, indicate the location of the discharge to the indirect conveyance and the discharge to surface water The map should also include the location and distance to the nearest sanitary sewer as well as the locus of nearby sensitive receptors (based on USGS topographical mapping), such as surface waters, drinking water supplies, and wetland areas.					
d) Provide the state water quality classification of the receiving water <input type="text" value="B"/>					
e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water <input type="text" value="28.2"/> cfs Please attach any calculation sheets used to support stream flow and dilution calculations.					
f) Is the receiving water a listed 303(d) water quality impaired or limited water? Y <input checked="" type="radio"/> N <input type="radio"/> If yes, for which pollutant(s)?					
Is there a final TMDL? Y <input checked="" type="radio"/> N <input type="radio"/> If yes, for which pollutant(s)? <input type="text" value="PATHOGENS PHOSPHORUS"/>					

6. ESA and NHPA Eligibility.

Please provide the following information according to requirements of Permit Parts I.A.4 and I.A.5 Appendices II and VII.

- a) Using the instructions in Appendix VII and information on Appendix II, under which criterion listed in Part I.C are you eligible for coverage under this general permit?
A B C D E F
- b) If you selected Criterion D or F, has consultation with the federal services been completed? Y N Underway
- c) If consultation with U.S. Fish and Wildlife Service and/or NOAA Fisheries Service was completed, was a written concurrence finding that the discharge is "not likely to adversely affect" listed species or critical habitat received? Y N
- d) Attach documentation of ESA eligibility as described in the NOI instructions and required by Appendix VII, Part I.C, Step 4.
- e) Using the instructions in Appendix VII, under which criterion listed in Part II.C are you eligible for coverage under this general permit?
1 2 3
- f) If Criterion 3 was selected, attach all written correspondence with the State or Tribal historic preservation officers, including any terms and conditions that outline measures the applicant must follow to mitigate or prevent adverse effects due to activities regulated by the RGP.

7. 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.

SEE ATTACHED

8. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22, including the following certification:

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 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/Site Name:	CAM 017 DRAINAGE IMPROVEMENTS
Operator signature:	<i>Marc S. Ciampa</i>
Printed Name & Title:	MARC S. CIAMPA PROJECT MANAGER
Date:	<i>April 4, 2012</i>

Attachment 2

Laboratory Reports



ANALYTICAL REPORT

Thursday, March 29, 2012

Ted Patch
EMP, Inc.
94 Sawyer Lane
Marshfield, MA 02050

GeoLabs, Inc.
45 Johnson Lane
Braintree MA 02184
Tele: 781 848 7844
Fax: 781 848 7811

TEL: (781) 834-3822
FAX: (781) 834-7110

Project: CAM-17, Cambridge
Location:

Order No.: 1202179

Dear Ted Patch:

GeoLabs, Inc. received 1 sample(s) on 2/24/2012 for the analyses presented in the following report.

The laboratory results in this report relate only to samples submitted.

Report is being re-issued with correction to test methods. All data for associated QC met method or laboratory specifications, except when noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,



David Mick
Laboratory Director

For current certifications, please visit our website at www.geolabs.com

Certifications:

CT (PH-0148) - MA (M-MA015) - NH (2508) - NJ (MA009) - RI (LA000252)
Accredited in Accordance with NELAC

Date: 29-Mar-12

CLIENT: EMP, Inc.
Project: CAM-17, Cambridge
Lab Order: 1202179

CASE NARRATIVE

Physical Condition of Samples

The project was received by the laboratory in satisfactory condition. The sample(s) were received undamaged, in appropriate containers with the correct preservation.

Project Documentation

The project was accompanied by satisfactory Chain of Custody documentation.

Analysis of Sample(s)

All extractable samples were extracted and analyzed and any Volatile samples were analyzed within method specified holding times and according to GeoLabs documented Standard Operating Procedure. No analytical anomalies or non-conformances were noted by the laboratory during the processing of these samples.

SIGNATURE:



LAB DIRECTOR

PRINTED NAME: David Mick

DATE: 03/29/12

ANALYTICAL REPORT

Reported 29-Mar-12

CLIENT: EMP, Inc.
 Lab Order: 1202179
 Project: CAM-17, Cambridge
 Lab ID: 1202179-001

Client Sample B-102
 Collection 2/24/2012 11:30:00 AM
 Date Received: 2/24/2012
 Matrix: GROUNDWATER

Analyses Result Det. Limit Qual Units DF Date Analyzed
 NON-POLAR 1664A - E1664A Analyst: WFR

Prep Method:

Prep Date:

Total Petroleum Hydrocarbons ND 5.00 mg/L 1 2/28/2012

TOTAL SUSPENDED SOLIDS - SM2540D Analyst: WFR

Prep Method:

Prep Date:

Total Suspended Solids 7.00 4.00 mg/L 1 2/29/2012

POLYCHLORINATED BIPHENYLS - SW8082 Analyst: Jsi

Prep Method: (SW3510B)

Prep Date: 2/28/2012 8:47:39 AM

Analyte	Result	Det. Limit	Qual	Units	DF	Date Analyzed
Aroclor 1016	ND	0.260		µg/L	1	2/28/2012
Aroclor 1221	ND	0.260		µg/L	1	2/28/2012
Aroclor 1232	ND	0.260		µg/L	1	2/28/2012
Aroclor 1242	ND	0.260		µg/L	1	2/28/2012
Aroclor 1248	ND	0.260		µg/L	1	2/28/2012
Aroclor 1254	ND	0.260		µg/L	1	2/28/2012
Aroclor 1260	ND	0.260		µg/L	1	2/28/2012
Surr: Decachlorobiphenyl Sig 1	76.8	30-150		%REC	1	2/28/2012
Surr: Decachlorobiphenyl Sig 2	66.9	30-150		%REC	1	2/28/2012
Surr: Tetrachloro-m-Xylene Sig 1	203	30-150	S	%REC	1	2/28/2012
Surr: Tetrachloro-m-Xylene Sig 2	60.6	30-150		%REC	1	2/28/2012

TOTAL METALS BY ICP - SW6010C Analyst: QS

Prep Method: (SW3010A)

Prep Date: 2/28/2012 1:25:25 PM

Analyte	Result	Det. Limit	Qual	Units	DF	Date Analyzed
Cadmium	ND	0.00400		mg/L	1	2/28/2012
Chromium	ND	0.0700		mg/L	1	2/28/2012
Copper	ND	0.015		mg/L	1	2/28/2012
Iron	2.57	0.0600		mg/L	1	2/28/2012
Nickel	ND	0.02		mg/L	1	2/28/2012
Selenium	ND	0.0200		mg/L	1	2/28/2012
Silver	ND	0.00200		mg/L	1	2/28/2012
Zinc	0.056	0.015		mg/L	1	2/28/2012

Qualifiers: B Analyte detected in the associated Method Blank BRL Below Reporting Limit
 E Value above quantitation range H Holding times for preparation or analysis exceeded
 J Analyte detected below quantitation limits ND Not Detected at the Reporting Limit
 S Spike Recovery outside recovery limits

GeoLabs, Inc.

45 Johnson Lane ~ Braintree MA 02184 ~ 781 848 7844 ~ 781 848 7811

ANALYTICAL REPORT

Reported 29-Mar-12

CLIENT: EMP, Inc.
Lab Order: 1202179
Project: CAM-17, Cambridge
Lab ID: 1202179-001

Client Sample B-102
Collection 2/24/2012 11:30:00 AM
Date Received: 2/24/2012
Matrix: GROUNDWATER

Analyses **Result** **Det. Limit** **Qual** **Units** **DF** **Date Analyzed**

TOTAL METALS BY GFAA - 7010

Analyst: QS

Prep Method: (SW3020A) Prep Date: 2/29/2012 12:38:46 PM

Antimony	ND	0.00200	mg/L	1	3/1/2012
Arsenic	0.00273	0.00100	mg/L	1	3/1/2012
Lead	ND	0.00100	mg/L	1	3/1/2012

SEMIVOLATILE ORGANICS - SW8270D

Analyst: ZYZ

Prep Method: (SW3510C) Prep Date: 2/28/2012 9:04:50 AM

Acenaphthene	2.76	1.06	µg/L	1	3/1/2012 11:21:00 AM
Acenaphthylene	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Anthracene	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Benz(a)Anthracene	0.133	0.106	µg/L	1	3/1/2012 11:21:00 AM
Benzo(a)Pyrene	ND	0.106	µg/L	1	3/1/2012 11:21:00 AM
Benzo(b)Fluoranthene	ND	0.106	µg/L	1	3/1/2012 11:21:00 AM
Benzo(g,h,i)Perylene	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Benzo(k)Fluoranthene	ND	0.106	µg/L	1	3/1/2012 11:21:00 AM
Bis(2-Ethylhexyl)Phthalate	ND	2.13	µg/L	1	3/1/2012 11:21:00 AM
Butyl Benzyl Phthalate	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Chrysene	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Dibenz(a,h)Anthracene	ND	0.106	µg/L	1	3/1/2012 11:21:00 AM
Diethyl Phthalate	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Dimethyl Phthalate	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Di-n-Butyl Phthalate	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Di-n-Octyl Phthalate	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Fluoranthene	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Fluorene	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Indeno(1,2,3-cd)Pyrene	ND	0.106	µg/L	1	3/1/2012 11:21:00 AM
Naphthalene	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Pentachlorophenol	ND	2.66	µg/L	1	3/1/2012 11:21:00 AM
Phenanthrene	ND	1.06	µg/L	1	3/1/2012 11:21:00 AM
Pyrene	1.18	1.06	µg/L	1	3/1/2012 11:21:00 AM
Surr: 2,4,6-Tribromophenol	92.4	15-110	%REC	1	3/1/2012 11:21:00 AM
Surr: 2-Fluorobiphenyl	43.3	30-130	%REC	1	3/1/2012 11:21:00 AM
Surr: 2-Fluorophenol	44.9	15-110	%REC	1	3/1/2012 11:21:00 AM
Surr: Nitrobenzene-d5	32.2	30-130	%REC	1	3/1/2012 11:21:00 AM
Surr: Phenol-d6	28.7	15-110	%REC	1	3/1/2012 11:21:00 AM
Surr: Terphenyl-d14	51.9	30-130	%REC	1	3/1/2012 11:21:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
 E Value above quantitation range
 J Analyte detected below quantitation limits
 S Spike Recovery outside recovery limits

BRL Below Reporting Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

ANALYTICAL REPORT

Reported 29-Mar-12

CLIENT: EMP, Inc.
 Lab Order: 1202179
 Project: CAM-17, Cambridge
 Lab ID: 1202179-001

Client Sample B-102
 Collection 2/24/2012 11:30:00 AM
 Date Received: 2/24/2012
 Matrix: GROUNDWATER

Analyses Result Det. Limit Qual Units DF Date Analyzed

VOLATILE ORGANIC COMPOUNDS - SW8260CA Analyst: ZC

Prep Method:

Prep Date:

Analyses	Result	Det. Limit	Qual	Units	DF	Date Analyzed
1,1,1-Trichloroethane	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
1,1,2-Trichloroethane	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
1,1-Dichloroethane	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
1,1-Dichloroethene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
1,2-Dibromoethane	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
1,2-Dichlorobenzene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
1,2-Dichloroethane	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
1,3-Dichlorobenzene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
1,4-Dichlorobenzene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
2-Methoxy-2-Methylbutane (TAME)	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Acetone	ND	10.0		µg/L	1	2/27/2012 6:19:00 PM
Benzene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Carbon Tetrachloride	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
cis-1,2-Dichloroethene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Ethylbenzene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Methyl Tert-Butyl Ether	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Methylene Chloride	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Naphthalene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
t-Butyl Alcohol	ND	20.0		µg/L	1	2/27/2012 6:19:00 PM
Tetrachloroethene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Toluene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Trichloroethene	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Vinyl Chloride	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Xylenes, Total	ND	2.00		µg/L	1	2/27/2012 6:19:00 PM
Surr: 1,2-Dichloroethane-d4	123	70-130		%REC	1	2/27/2012 6:19:00 PM
Surr: 4-Bromofluorobenzene	112	70-130		%REC	1	2/27/2012 6:19:00 PM
Surr: Dibromofluoromethane	101	70-130		%REC	1	2/27/2012 6:19:00 PM
Surr: Toluene-d8	99.3	70-130		%REC	1	2/27/2012 6:19:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
 E Value above quantitation range
 J Analyte detected below quantitation limits
 S Spike Recovery outside recovery limits

BRL Below Reporting Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

GeoLabs, Inc.

45 Johnson Lane ~ Braintree MA 02184 ~ 781 848 7844 ~ 781 848 7811

ANALYTICAL REPORT

Reported 29-Mar-12

CLIENT: EMP, Inc.
Lab Order: 1202179
Project: CAM-17, Cambridge
Lab ID: 1202179-001

Client Sample B-102
Collection 2/24/2012 11:30:00 AM
Date Received: 2/24/2012
Matrix: GROUNDWATER

Analyses	Result	Det. Limit	Qual	Units	DF	Date Analyzed
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CHLORIDE - E300.0

Analyst: **SUB**

Prep Method:

Prep Date:

Chloride	2370	300		mg/L	1	2/28/2012
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NOTES:
 Sample was analyzed by Phoenix Environmental Laboratories, M-CT007.

CYANIDE, TOTAL - E335.4/9010

Analyst: **SUB**

Prep Method:

Prep Date:

Cyanide	ND	0.00500		mg/L	1	2/27/2012
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NOTES:
 Sample was analyzed by Phoenix Environmental Laboratories, M-CT007.

PHENOLICS - E420.1

Analyst: **SUB**

Prep Method:

Prep Date:

Phenolics, Total Recoverable	0.0280	0.0150		mg/L	1	2/28/2012
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NOTES:
 Sample was analyzed by Phoenix Environmental Laboratories, M-CT007.

PH - SM4500-H-B

Analyst: **RP**

Prep Method:

Prep Date:

pH	7.7	0		pH units	1	2/24/2012 2:00:00 PM
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NOTES:
 taken at 16.2 deg.C

Qualifiers:	B Analyte detected in the associated Method Blank E Value above quantitation range J Analyte detected below quantitation limits S Spike Recovery outside recovery limits	BRL Below Reporting Limit H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit
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ANALYTICAL REPORT

Reported 29-Mar-12

CLIENT: EMP, Inc.
Lab Order: 1202179
Project: CAM-17, Cambridge
Lab ID: 1202179-001

Client Sample B-102
Collection 2/24/2012 11:30:00 AM
Date Received: 2/24/2012
Matrix: GROUNDWATER

Analyses	Result	Det. Limit	Qual	Units	DF	Date Analyzed
TOTAL RESIDUAL CHLORINE- SM 4500 CL-G						Analyst: SUB
Prep Method:		Prep Date:				
Total Residual Chlorine	ND	0.0200	H	mg/L	1	2/27/2012 5:50:00 PM
NOTES: Sample was analyzed by Phoenix Environmental Laboratories, M-CT007.						
TRIVALENT CHROMIUM IN WATER -						Analyst: RP
Prep Method:		Prep Date:				
Trivalent Chromium, Cr3+	ND	0.070		mg/L	1	2/29/2012
HEXAVALENT CHROMIUM - SM3500-CR-D						Analyst: RP
Prep Method:		Prep Date:				
Chromium, Hexavalent	ND	0.0500		mg/L	1	2/24/2012 3:30:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
 E Value above quantitation range
 J Analyte detected below quantitation limits
 S Spike Recovery outside recovery limits
 BRL Below Reporting Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

ANALYTICAL REPORT



Wednesday, April 04, 2012

Ted Patch
EMP, Inc.
94 Sawyer Lane
Marshfield, MA 02050

GeoLabs, Inc.
45 Johnson Lane
Braintree MA 02184
Tele: 781 848 7844
Fax: 781 848 7811

TEL: (781) 834-3822

FAX: (781) 834-7110

Project: CAM-17

Location:

Order No.: 1203323

Dear Ted Patch:

GeoLabs, Inc. received 1 sample(s) on 3/29/2012 for the analyses presented in the following report.

The laboratory results in this report relate only to samples submitted.

All data for associated QC met method or laboratory specifications, except when noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "David Mick", is written over a faint circular stamp.

David Mick

Laboratory Director

For current certifications, please visit our website at www.geolabs.com

Certifications:

CT (PH-0148) - MA (M-MA015) - NH (2508) - NJ (MA009) - RI (LA000252)

Accredited in Accordance with NELAC

Date: 04-Apr-12

CLIENT: EMP, Inc.
Project: CAM-17
Lab Order: 1203323

CASE NARRATIVE

Physical Condition of Samples

The project was received by the laboratory in satisfactory condition. The sample(s) were received undamaged, in appropriate containers with the correct preservation.

Project Documentation

The project was accompanied by satisfactory Chain of Custody documentation.

Analysis of Sample(s)

All extractable samples were extracted and analyzed and any Volatile samples were analyzed within method specified holding times and according to GeoLabs documented Standard Operating Procedure. No analytical anomalies or non-conformances were noted by the laboratory during the processing of these samples.

SIGNATURE:



LAB DIRECTOR

PRINTED NAME: David Mick

DATE: April 4, 2012

ANALYTICAL REPORT

Reported 04-Apr-12

CLIENT: EMP, Inc.
Lab Order: 1203323
Project: CAM-17
Lab ID: 1203323-001

Client Sample B-102
Collection 3/29/2012 2:30:00 PM
Date Received: 3/29/2012
Matrix: GROUNDWATER

Analyses

	Result	Det. Limit	Qual	Units	DF	Date Analyzed
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TOTAL MERCURY - E245.1 Analyst: EC

Prep Method: (SW7470A/E245.1) Prep Date: 4/2/2012 4:02:12 PM

Mercury	ND	0.0005		mg/L	1	4/2/2012
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VOLATILE ORGANICS – 8260C Analyst: ZC

Prep Method: Prep Date:

1,4-Dioxane	ND	5.00		µg/L	1	4/3/2012
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Qualifiers: B Analyte detected in the associated Method Blank BRL Below Reporting Limit
 E Value above quantitation range H Holding times for preparation or analysis exceeded
 J Analyte detected below quantitation limits ND Not Detected at the Reporting Limit
 S Spike Recovery outside recovery limits

Attachment 3

USGS Streamstats GIS Database





Streamstats Ungaged Site Report

Date: Sat Mar 24 2012 13:08:54 Mountain Daylight Time
 Site Location: Massachusetts
 NAD27 Latitude: 42.3642 (42 21 51)
 NAD27 Longitude: -71.0748 (-71 04 29)
 NAD83 Latitude: 42.3642 (42 21 51)
 NAD83 Longitude: -71.0743 (-71 04 28)
 Drainage Area: 308 mi2

Low Flows Basin Characteristics			
100% Statewide Low Flow (308 mi2)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	308 (above max value 149)	1.61	149
Mean Basin Slope from 250K DEM (percent)	2.33	0.32	24.6
Stratified Drift per Stream Length (square mile per mile)	0.24	0	1.29
Massachusetts Region (dimensionless)	0	0	1

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Probability of Perennial Flow Basin Characteristics			
100% Perennial Flow Probability (308 mi2)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	308 (above max value 1.99)	0.01	1.99
Percent Underlain By Sand And Gravel (percent)	46.74	0	100
Percent Forest (percent)	39.30	0	100
Massachusetts Region (dimensionless)	0	0	1

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Low Flows Streamflow Statistics					
Statistic	Flow (ft ³ /s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
D50	330				
D60	274				
D70	190				
D75	156				
D80	123				
D85	98.6				
D90	77.4				
D95	52.5				
D98	35.1				
D99	29.2				
M7D2Y	56				
AUGD50	106				
M7D10Y	28.2				

The equation for estimating the probability of perennial flow is applicable for most areas of Massachusetts except eastern Buzzards Bay, Cape Cod, and the Island regions. The estimate obtained from the equation assumes natural flow conditions at the site. The equation also is best used for sites with drainage areas between 0.01 to 1.99 mi2, as errors beyond for basins beyond these bounds are unknown.

Probability of Perennial Flow Statistics		
Statistic	Value	Standard Error (percent)
PROBPEREN	1	

Attachment 4

Ion Exchange Resin Material Safety Data Sheet





MATERIAL SAFETY DATA SHEET

ION EXCHANGE RESINS

Product Name: CG10-H, CG10-H-ULTRA, CG10-H-LTOC, CG10-H-SC, CG10-H-NG, CG10-H-C, CG10-H-F, CG10-H-UPS, CG8-H, CG8-H-ULTRA, CG8-H-LTOC, CG8-H-SC, CG8-H-NG, CG8-H-C, CG8-H-F, CG8-H-UPS, CGS-H, CGS-H-C, CGS-H-F, CGS-H-UPS, CG6-H, GP-SAC-H

Cation Exchange Resin, Hydrogen Form

Effective Date: 11/1/07

1. Company Information:

Company Address:

ResinTech, Inc.
1 ResinTech Plaza
160 Cooper Road
West Berlin, NJ 08091 USA

Information Numbers:

Phone Number: 856-768-9600
Fax Number: 856-768-9601
Email: ixresin@resintech.com
Website: www.resintech.com

2. Composition/Ingredients:

Sulfonated copolymer of styrene and divinylbenzene in the hydrogen form.

CAS# 69011-20-7 (35 – 65%)

Water

CAS# 7732-18-5 (35 – 65%)

This document is prepared pursuant to the OSHA Hazard Communication Standard (29CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

3. Physical/Chemical Data:

Boiling Point:	Not Applicable
Vapor Pressure (MM HG):	Not Applicable
Evaporation Rate (water = 1):	1
Appearance & Odor:	Amber solid beads. No to low odor.
Specific Gravity:	1.2 (water = 1)
Melting Point (deg. F)	Not applicable
Solubility in Water:	Insoluble
Thermal:	May yield oxides of carbon and nitrogen
Vapor Density:	Not Applicable

Product Hazard Rating	Scale
Toxicity = 0	0 = Negligible
Fire = 0	1 = Slight
Reactivity = 0	2 = Moderate
Special – N/A	3 = High
	4 = Extreme

4. Fire & Explosion Hazard Data

Flammable Limits:	800 ° Deg. F
Unusual Fire & Explosion Hazards:	Product is not combustible until moisture is removed, then resin starts to burn in flame at



Ion Exchange Resins

Combustion Products:

230 C. Autoignition occurs above 500C.
Possible fire.

Hazardous combustion products may include and are not limited to: hydrocarbons, sulfur oxides, organic sulfonates, carbon monoxide, carbon dioxide, benzene compounds.

Extinguishing Media:

Water, CO₂, Talc, Dry Chemical

Special Fire Fighting Procedures:

MSHA/NIOSH approved self-contained breathing gear.

5. Reactivity Data

Stability:

Stable

Conditions to Avoid:

Temperatures above 400° F

Hazardous by Products:

See Section 3 above for possible combustion products.

Materials to avoid contact with:

Strong oxidizing agents (i.e. nitric acid)

Hazardous Polymerization:

Material does not polymerize

Storage:

Store in a cool dry place

6. Health Hazards & Sara (Right to Know)

Emergency First Aid Procedures:

Contact with eyes can and skins can cause irritation.

Skin Absorption:

Skin absorption is unlikely due to physical properties.

Ingestion:

Single dose oral LD50 has not been determined.

Single does oral toxicity is believed to be low. No hazards anticipated from ingestion incidental to industrial exposure.

Inhalation:

Vapors are unlikely due to physical properties.

Systemic & Other Effects:

No specific data available, however, repeated exposures are not anticipated to cause any significant adverse effects.

Carcinogenicity:

Not Applicable

Sara – title 3, sections 311 & 312:

All ingredients are non-hazardous

7. First Aid

Eyes:

Irrigate immediately with water for at least 5 minutes.
Mechanical irritation only.

Skin:

No adverse effects anticipated by this route of exposure.

Ingestion:

No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

Inhalation:

No adverse effects anticipated by this route of exposure.

8. Control Measures

Respiratory protection:

Not required for normal uses if irritation occurs from breathing-get fresh air!

Eye protection:

Splash goggles

Ventilation:

Normal

Protective Gloves:

Not required.

9. Safe handling procedures

In Case of Spills:

Sweep up material and transfer to containers. Use caution – the floor will be slippery!



Ion Exchange Resins

Disposal Method:

Bury resin in licensed landfill or burn in approved Incinerator according to local, state, and federal regulations. For resin contaminated with hazardous material, dispose of mixture as hazardous material according to local, state and federal regulations.

10. Additional Information:

Special precautions to be taken in handling and storage:

Practice reasonable care and caution. Metal equipment with feed, regenerant, resin form, and effluent of that process.

TSCA Considerations:

Every different salt or ionic form of an ion-exchange resin is a separate chemical. If you use an ion-exchange resin for ion-exchange purposes and then remove the by-product resin from its vessel or container prior to recovery of the original or another form of the resin or of another chemical, the by-product resin must be listed on the TSCA Inventory (unless an exemption is applicable). It is the responsibility of the customer to ensure that such isolated, recycled by-product resins are in compliance with TSCA. Failure to comply could result in substantial civil or criminal penalties being assessed by the Environmental Production Agency.

MSDS Status:

Canadian regulatory information added.

11. Regulatory Information: (Not meant to be all-inclusive—selected regulations represented.)

Notice:

The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

12. Canadian Regulations:

WHMIS Information:

The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

This product is not a "Controlled Product" under WHMIS.

Canadian TDG Information:

For guidance, the Transportation of Dangerous Good Classification for this product is: Not Regulated.

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, ResinTech, Inc. makes no warranty with respect hereto and disclaims all liability from reliance thereon.

Attachment 5

Best Management Practices Plan
(BMPP)



BEST MANAGEMENT PRACTICES PLAN

National Pollutant Discharge Elimination System – Remediation General Permit Temporary Construction Dewatering CAM 017 Drainage Improvements Land Boulevard and Binney Street Cambridge, MA

A Notice Of Intent (NOI) for a Remediation General Permit (RGP) under the National Pollutant Discharge Elimination System (NPDES) is being submitted to the US Environmental Protection Agency (EPA) on behalf of P. Caliacco Corp. by Environmental Management Professionals, Inc. in anticipation of temporary construction site dewatering planned to occur during proposed utility improvements at the above referenced site (the Site). This Best Management Practices Plan (BMPP) was prepared in accordance with the general requirements of the NPDES RGP, and related guidance documentation provided by the EPA. The BMPP is included as an Appendix to the NOI and will be posted at the Site during the time of the work as specified in the NOI.

Water Treatment and Management

Construction dewatering will be conducted from sumps located inside the utility trenches. The treatment system will include an equalization tank, pumps, and filtration at a minimum to reduce low concentrations of total suspended solids (TSS) and Total Metals. This NOI has been prepared for the management of dewatering from the Site; please refer to Figure 1: Site Locus for an overview of the immediate area surrounding the Site. The proposed work area is referred to as Land Boulevard and Binney Street bounded by residential condominium and apartment properties and commercial buildings.

Discharge Monitoring and Compliance

Routine Operation & Maintenance (O&M) will be completed on the water treatment system. Maintenance will include checking the condition of the treatment system equipment such as the settling tank, bag filters, hoses, pumps and flow meter. Collection of samples throughout the treatment system to verify the treatment system discharge is in compliance with the RGP. In the event that the system effluent is not within the discharge criteria of the RGP, modification to the treatment system may occur until discharge compliance can be consistently achieved. Please refer to Figure 5 for a layout of the proposed treatment system.

The total monthly discharge will be monitored by a non-resettable flow meter and totalizer. Monthly monitoring reports will be compiled and maintained at the Site. Employees who have direct or indirect responsibility for enduring compliance with the RGP will be trained by the treatment system operator.

Management of Treatment System Materials

No potential sources of pollutants other than TSS and naturally occurring metals associated with the TSS are anticipated during the construction dewatering activities. Dewatering effluent will be pumped directly to the treatment system from the excavation via hoses and sumps to minimize handling. Site security for the treatment system will be covered in the project site security plan. The general contractor at the Site has established staging area for equipment and materials on Charlestown Avenue and North Point Boulevard in Cambridge, MA, a location away from the excavation and treatment system. Sediment collected in the weir tank used in the treatment system will be characterized and disposed of as soil at an appropriate receiving facility in accordance with the applicable laws and regulations. Any bag filters will be containerized and disposed of to an appropriate receiving facility. If used, any media (i.e., ion exchange resin) will be profiled and recycled at an approved receiving facility.

