GZA
GeoEnvironmental, Inc.

Engineers and Scientists

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MAG-9104-30

July 29, 2009
File No: 01.0012820.53

One Edgewater Drive
Norwood
Massachusetts
02062
781-278-3700
FAX 781-278-5701
http://www.gza.com

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

Re: Submittal of Notice of Intent (NOI)
Excavation Dewatering for
Wetland Remediation Pilot Program
411 Waverley Oaks Road
Waltham, Massachusetts
MassDEP – RTN No. 3-0454

Dear Mr. Alvarez:

GZA GeoEnvironmental, Inc. (GZA), on behalf of Duffy Brothers Construction Company, Inc., has prepared this Notice of Intent (NOI) for an application of a National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) for proposed remediation activities at the above referenced location (Figure 2). This NOI is being submitted for conducting remedial response actions under the Massachusetts Contingency Plan (MCP). The proposed remedial activities are described in GZA's Pilot Program – Notice of Intent which was submitted to the Waltham Conservation Commission on January 23, 2009. The Site remediation will be conducted in accordance with all applicable MassDEP regulations and under the guidance of a Licensed Site Professional (LSP). As there is a likely need to discharge water generated from the dewatering of the wetland and pond to be excavated in this pilot program, the enclosed NOI form provides required information on the general site conditions, proposed treatment system, discharge location and receiving water, and analytical results for the water samples collected from the pond and wetland area to be excavated as part of this work.. Sample locations are shown in Figure 2.

The excavation, dewatering, and discharge of treated water are scheduled to begin in the fall of 2009.

SITE DESCRIPTION

The Site is located at 411 Waverley Oaks Road in a mixed commercial and residential neighborhood. The Site is currently used as a retail, commercial, and office park. Figure 1 presents the Site Locus Plan, and Figure 2 presents the Wetland Remediation Pilot Program Area showing wetland resources, existing conditions, and the extent of the Wetland Remediation Pilot Program Area. The Pilot Program is proposed for an area of about 4,800 square feet at the eastern end of the overall wetland area to be remediated, adjacent to the uplands (Figure 2). The Pilot Program Area is on the property listed by the Waltham

Assessor's Office as Map 46 Parcel 11-10 at 425 Waverley Oaks Road, which is part of the commercial complex commonly known as 411 Waverley Oaks Road.

The goal of the Pilot Program is to evaluate construction methods and efficacy of a proposed remediation program for wetland soil and sediment at the 411 Waverley Oaks Road Site ("the Site"; see Figure 1) in Waltham, Massachusetts. Historically, approximately 3.03 acres of surficial wetland soil and sediment[1] in the wetland associated with this property was impacted by the release of waste oil (see Figure 2).

The Pilot Program proposed in this Notice of Intent (NOI) involves implementing the remediation program in a small portion of the contaminated area, and monitoring the Pilot Program Area to evaluate whether re-contamination of the clean surficial material occurs. In addition, we propose to construct a small section of temporary access road within the wetland to evaluate whether low impact methods (i.e., swamp mats) can be successfully used during the actual remediation, and to test whether surficial water control dams can be used successfully to control water inflow to the work areas.

PROPOSED ACTIVITIES

The goals of the proposed (overall) Wetland Remediation Program are to excavate oily surficial sediment and oily surficial wetland soil, and replace these materials with clean replacement soil and sediment to mitigate exposure of, and therefore risk to, environmental receptors. Based on observations of conditions in wetland monitoring wells over several years, it is GZA's opinion that oil in the sediment and wetland soil is not readily released. Therefore, recontamination of restored surficial sediment and soil from residual oil from below is not expected to be significant. A main goal of the Pilot Program is to confirm whether the clean surficial material can be emplaced and remain uncontaminated over time.

The proposed location of excavation is depicted in Figure 2. Prior to beginning of remedial activities at the Site, a staging area will be established and will be used to for the temporary on-Site water treatment system, on- and off load equipment, stockpile clean fill materials from off-Site that will be used to replicate areas disturbed by remedial activities, and to stockpile and treat petroleum impacted sediments and wetland soil excavated from the Pilot Program area. The Pilot Program is anticipated to generate approximately 180 cu.ft. of excavated material.

Water generated during dewatering activities will be treated as described in the attached NOI submittal, sampled as required and discharged from the proposed treatment system to Beaver Brook (located on the Site), which is a tributary to the Charles River.

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[1] Composed of approximately 1.96 acres (85,476 square) feet of surficial wetland soil, and 1.07 acres (46,434 square feet) of sediment.

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

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Sowjanya Chintalapati
Environmental Engineer I

Russell Parkman
Consultant/Reviewer

Timothy L. Briggs
Senior Project Manager

Albert J. Ricciardelli, LSP
Senior Principal

Attachment: Attachment 1: NOI Form
Attachment 2: Figure 1 - Site Locus Map
Attachment 3: Figure 2 - Wetland Remediation Pilot Program
Attachment 4: Figure 3 - Process Flow Diagram
Attachment 5: Laboratory Analytical Results
Attachment 6: Supplemental Information - 7Q10 data for Beaver Brook

cc: Kevin Duffy, Duffy Brothers Construction Co., Inc.
MassDEP – Northeast Regional Office

ATTACHMENT 1

NOI FORM

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

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

a) Name of **facility/site:** 411 Waverley Oaks Road			**Facility/site** address: 411 Waverley Oaks Road, Waltham,	
Location of **facility/site**: longitude: -71° 20' 27" latitude: 42° 38' 65"	Facility SIC code(s):		Street: Waverley Oaks road	
b) Name of **facility/site owner:** Duffy Brothers Construction Co., Inc.			Town: Waltham	
Email address of owner: kevinduffy@duffyproperties.com			State: MA	Zip: 02452	County
Telephone no.of facility/site **owner**: (781) 647-5775					
Fax no. of facility/site **owner**: (781) 893-6623			**Owner** is (check one): 1. Federal____ 2. State/Tribal_____ 3. Private ✓ 4. other, if so, describe:	
Address of **owner** (if different from site):				
Street:				
Town:	State:	Zip:	County:	
c) Legal name of **operator**: Duffy Brothers Construction Co., Inc.	**Operator** telephone no: (781) 647-5775			
	Operator fax no.: (781) 893-6623		**Operator** email: kevinduffy@	
Operator contact name and title: Kevin P Duffy, Manager				
Address of **operator** (if different from owner):	Street:			
Town:	State:	Zip:	County:	

d) Check "yes" or "no" for the following:
1. Has a prior NPDES permit exclusion been granted for the discharge? Yes___ No ✓, if "yes," number:
2. Has a prior NPDES application (Form 1 & 2C) ever been filed for the discharge? Yes___ No ✓, if "yes," date and tracking #:
3. Is the discharge a "new discharge"as defined by 40 CFR 122.2? Yes ✓ No___
4. For sites in Massachusetts, is the discharge covered under the MA Contingency Plan (MCP) and exempt from state permitting? Yes ✓ No__

e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes ✓ No ___ If "yes," please list: 1. site identification # assigned by the state of NH or MA: MA 2. permit or license # assigned: MassDEP (RTN) 3-0454 3. state agency contact information: name, location, and telephone number: Valeri Thompson, MassDEP Northeast Regional Office, 205B Lowell St, Wilmington, MA 01887, 978-694-3348	f) Is the site/facility covered by any other EPA permit, including: 1. multi-sector storm water general permit? Y___ N ✓, if Y, number: 2. phase I or II construction storm water general permit? Y___ N ✓, if Y, number: 3. individual NPDES permit? Y___ N ✓, if Y, number: 4. any other water quality related permit? Y ✓ N___, if Y, number: MAG910153

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

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

During the proposed pilot program activities, there is a likely need to discharge water generated from the dewatering of the wetland areas to be excavated.

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, ft3/s)? Max. flow 0.278 Average flow 0.167 Is maximum flow a **design value**? Y ✓ N___ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available.

3) Latitude and longitude of each discharge within 100 feet: pt.1:long. 71° 11'58"W lat. 42° 23'10"N; pt.2: long.___ lat.___; pt.3: long.___ lat.___; pt.4:long.___ lat.___; pt.5: long.___ lat.___; pt.6:long.___ lat.___; pt.7: long.___ lat.___; pt.8:long.___ lat.___; etc.

4) If hydrostatic testing, total volume of the discharge (gals):	5) Is the discharge intermittent ✓ or seasonal ___? Is discharge ongoing Yes ___ No ✓ ?__

c) Expected dates of discharge (mm/dd/yy): start 09/01/09 end 11/01/09

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).

3. Contaminant information. In order to complete this section, the applicant will need to take a minimum of one sample of the untreated water and have it analyzed for **all** of the parameters listed in Appendix III. Historical data, (i.e., data taken no more than 2 years prior to the effective date of the permit) may be used if obtained pursuant to: i. Massachusetts' regulations 310 CMR 40.0000, the Massachusetts Contingency Plan ("Chapter 21E"); ii. New Hampshire's Title 50 RSA 485-A: Water Pollution and Waste Disposal or Title 50 RSA 485-C: Groundwater Protection Act; or iii. an EPA permit exclusion letter issued pursuant to 40 CFR 122.3, provided the data was analyzed with test methods that meet the requirements of this permit. Otherwise, a new sample shall be taken and analyzed.

a) Based on the analysis of the sample(s) of the untreated influent, the applicant must check the box of the sub-categories that the potential discharge falls within.

Gasoline Only	VOC Only	Primarily Metals	Urban Fill Sites	Contaminated Sumps	Mixed Contaminants	Aquifer Testing
Fuel Oils (and Other Oils) only	VOC with Other Contaminants	Petroleum with Other Contaminants ✓	Listed Contaminated Sites	Contaminated Dredge Condensates	Hydrostatic Testing of Pipelines/Tanks	Well Development or Rehabilitation

b) Based on the analysis of the untreated influent, the applicant must indicate whether each listed chemical is **believed present** or **believed absent** in the potential discharge. Attach additional sheets as needed.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
1. Total Suspended Solids		✓	2	grab	SM 2540D	12,000	386,000		264,000	
2. Total Residual Chlorine	✓		2	grab	SM 4500 CLD	20	BDL		BDL	
3. Total Petroleum Hydrocarbons		✓	2	grab	1664	5,000	63,000		31,500	
4. Cyanide	✓		2	grab	SM4500 CN CE	50	BDL		BDL	
5. Benzene	✓		2	grab	8260B	1	BDL		BDL	
6. Toluene	✓		2	grab	8260B	1	BDL		BDL	
7. Ethylbenzene	✓		2	grab	8260B	1	BDL		BDL	
8. (m,p,o) Xylenes	✓		2	grab	8260B	1	BDL		BDL	
9. Total BTEX[4]	✓		2	grab	8260B	4	BDL		BDL	

[4] BTEX = Sum of Benzene, Toluene, Ethylbenzene, total Xylenes.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
10. Ethylene Dibromide [5] (1,2- Dibromo-methane)	✓		2	grab	504.1	0.015	BDL		BDL	
11. Methyl-tert-Butyl Ether (MtBE)	✓		2	grab	8260B	2	BDL		BDL	
12. tert-Butyl Alcohol (TBA)	✓		2	grab	8260B	25	BDL		BDL	
13. tert-Amyl Methyl Ether (TAME)	✓		2	grab	8260B	5	BDL		BDL	
14. Naphthalene	✓		2	grab	8260B	1	BDL		BDL	
15. Carbon Tetra-chloride	✓		2	grab	8260B	1	BDL		BDL	
16. 1,4 Dichlorobenzene	✓		2	grab	8260B	1	BDL		BDL	
17. 1,2 Dichlorobenzene	✓		2	grab	8260B	1	BDL		BDL	
18. 1,3 Dichlorobenzene	✓		2	grab	8260B	1	BDL		BDL	
19. 1,1 Dichloroethane	✓		2	grab	8260B	1	BDL		BDL	
20. 1,2 Dichloroethane	✓		2	grab	8260B	1	BDL		BDL	
21. 1,1 Dichloroethylene	✓		2	grab	8260B	1	BDL		BDL	
22. cis-1,2 Dichloro-ethylene	✓		2	grab	8260B	1	BDL		BDL	
23. Dichloromethane (Methylene Chloride)	✓		2	grab	8260B	5	BDL		BDL	
24. Tetrachloroethylene	✓		2	grab	8260B	1	BDL		BDL	

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

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily Value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
25. 1,1,1 Trichloroethane	✓		2	grab	8260B	1	BDL		BDL	
26. 1,1,2 Trichloroethane	✓		2	grab	8260B	1	BDL		BDL	
27. Trichloroethylene	✓		2	grab	8260B	1	BDL		BDL	
28. Vinyl Chloride	✓		2	grab	8260B	1	BDL		BDL	
29. Acetone	✓		2	grab	8260B	10	BDL		BDL	
30. 1,4 Dioxane	✓		2	grab	8260B	100	BDL		BDL	
31. Total Phenols	✓		2	grab	8270C	500	BDL		BDL	
32. Pentachlorophenol	✓		2	grab	8270C	500	BDL		BDL	
33. Total Phthalates [6] (Phthalate esthers)	✓		2	grab	8270C	100	BDL		BDL	
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]	✓		2	grab	8270C	66	BDL		BDL	
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)										
a. Benzo(a) Anthracene		✓	2	grab	8270C	110	124		62	
b. Benzo(a) Pyrene		✓	2	grab	8270C	110	115		57.5	
c. Benzo(b)Fluoranthene		✓	2	grab	8270C	110	158		79	
d. Benzo(k) Fluoranthene		✓	2	grab	8270C	110	113		56.5	
e. Chrysene		✓	2	grab	8270C	110	222		111	

[6] The sum of individual phthalate compounds.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (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)
f. Dibenzo(a,h) anthracene	✓		2	grab	8270C	110	BDL		BDL	
g. Indeno(1,2,3-cd) Pyrene	✓		2	grab	8270C	110	BDL		BDL	
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)										
h. Acenaphthene	✓		2	grab	8270C	110	BDL		BDL	
i. Acenaphthylene	✓		2	grab	8270C	110	BDL		BDL	
j. Anthracene	✓		2	grab	8270C	110	BDL		BDL	
k. Benzo(ghi) Perylene	✓		2	grab	8270C	110	BDL		BDL	
l. Fluoranthene		✓	2	grab	8270C	110	416		208	
m. Fluorene	✓		2	grab	8270C	110	BDL		BDL	
n. Naphthalene-	✓		2	grab	8270C	110	BDL		BDL	
o. Phenanthrene		✓	2	grab	8270C	110	165		82.5	
p. Pyrene		✓	2	grab	8270C	110	369		184.5	
37. Total Polychlorinated Biphenyls (PCBs)		✓	2	grab	608	0.72	40		20	
38. Antimony	✓		2	grab	6010B	25	BDL		BDL	
39. Arsenic		✓	2	grab	6010B	2	40		38	
40. Cadmium		✓	2	grab	6010B	5	6.5		3.25	
41. Chromium III		✓	2	grab	6010B	5	78		43.45	
42. Chromium VI	✓		2	grab	SM 3500 CrD	10	BDL		BDL	

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
43. Copper		✓	2	grab	6010B	3	210		128	
44. Lead		✓	2	grab	6010B	40	1,300		740	
45. Mercury	✓		2	grab	7470A	0.2	BDL		BDL	
46. Nickel		✓	2	grab	6010B	10	40		27.5	
47. Selenium	✓		2	grab	6010B	25	BDL		BDL	
48. Silver	✓		2	grab	6010B	5	BDL		BDL	
49. Zinc		✓	2	grab	6010B	10	1,000		600	
50. Iron		✓	2	grab	6010B	75	130,000		79,500	
Other (describe):										

c) For discharges where **metals** are believed present, please fill out the following:

Step 1: Do any of the metals in the influent have a **reasonable potential** to exceed the effluent limits in Appendix III (i.e., the limits set at zero to five dilutions)? Y_✓_ N____	If yes, which metals? Arsenic, Cadmium, Copper, Lead, Zinc, Iron
Step 2: For any metals which have **reasonable potential** to 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? Metals: Arsenic, Cadmium, Copper, Lead, Zinc, Iron DF: 1.50	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_✓_ N____ If "Yes," list which metals: Arsenic, Cadmium, Copper, Lead, Zinc, Iron

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:						
b) Identify each applicable treatment unit (check all that apply):	Frac. tank ✓	Air stripper	Oil/water separator	Equalization tanks	Bag filter ✓	GAC filter ✓
	Chlorination	Dechlorination	Other (please describe):			
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 75 gpm. Maximum flow rate of treatment system 125 gpm Design flow rate of treatment system 125 gpm						
d) A description of chemical additives being used or planned to be used (attach MSDS sheets): None						

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

a) Identify the discharge pathway:	Direct____	Within facility__	Storm drain____	River/brook ✓	Wetlands_____	Other (describe):
b) Provide a narrative description of the discharge pathway, including the name(s) of the receiving waters: Treated water discharges via temporary piping to Beaver Brook, a tributary of 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 Class B (discharging from Beaver Brook tributary to Charles River).						
e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water 0.14 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? Yes ✓ No____ If yes, for which pollutant(s)? Bacteria/Nutrients Is there a TMDL? Yes ✓ No____ If yes, for which pollutant(s)? Phosphorus, Bacteria						

6. Results of Consultation with Federal Services: Please provide the following information according to requirements of Part I.B.4 and Appendices II and VII.

a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes____No✓
Has any consultation with the federal services been completed ? Yes___ No✓ or is consultation underway? Yes ____ No✓
What were the results of the consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (check one):
a "no jeopardy" opinion? ____or written concurrence____ on a finding that the discharges are not likely to adversely affect any endangered species or critical habitat?

b) Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility or site or in proximity to the discharge?
Yes_____ No✓____ Have any state or tribal historic preservation officer been consulted in this determination (Massachusetts only)? Yes_____ No✓_____

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.

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: Duffy Brothers Construction Co., Inc.
411 Waverley Oaks Road, Waltham, MA 02452

Operator signature:

Title: Owner

Date: 9/6/07

ATTACHMENT 2

FIGURE 1 – SITE LOCUS MAP

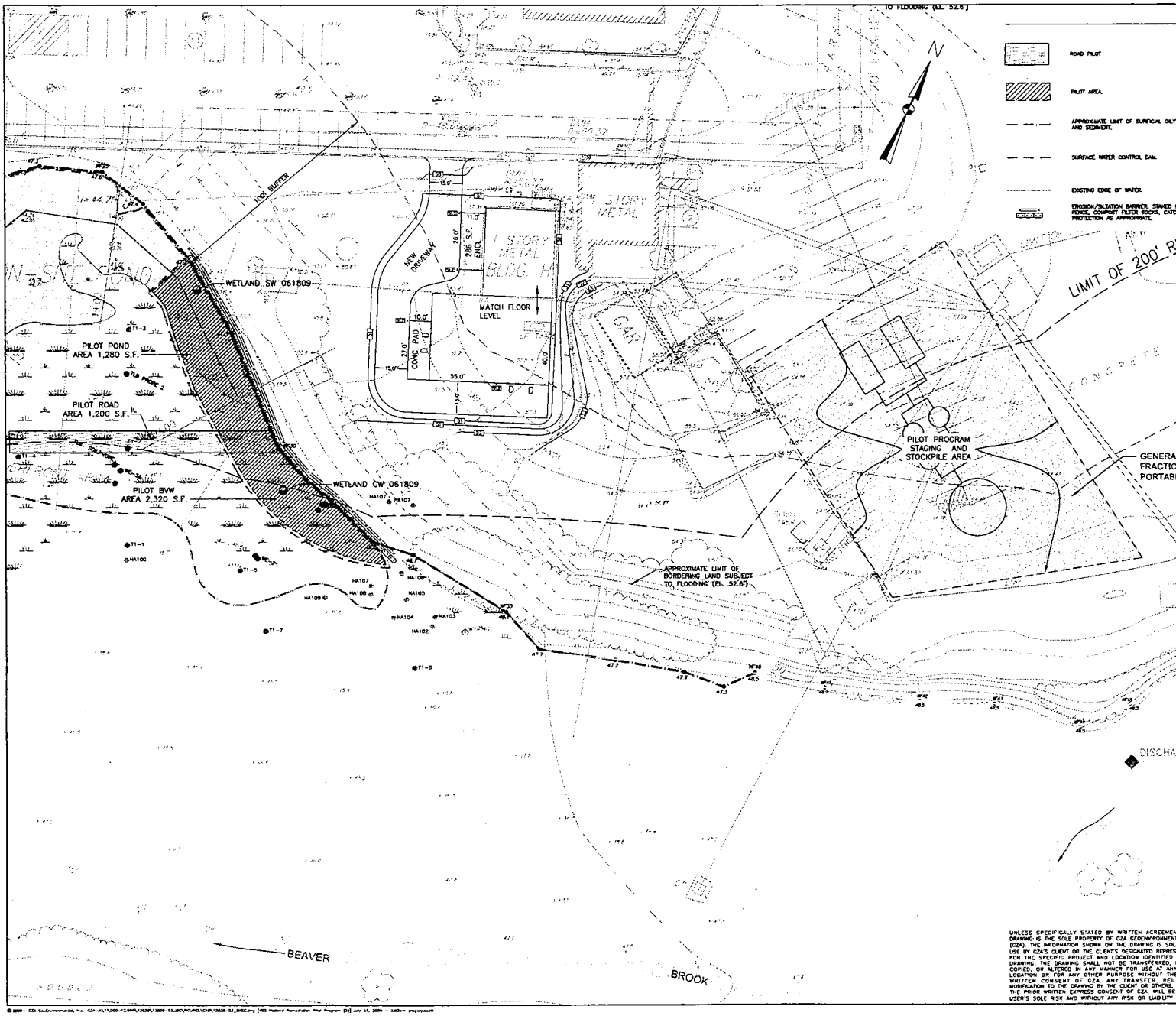
SOURCE : SCANNED USGS TOPOGRAPHIC QUADRANGLES
SCANNED BY THE MASSACHUSETTS EXECUTIVE OFFICE OF

Data Supplied by :

GURES\GIS\12820-53_F01_Site-Locus_v1.mxd

ATTACHMENT 3

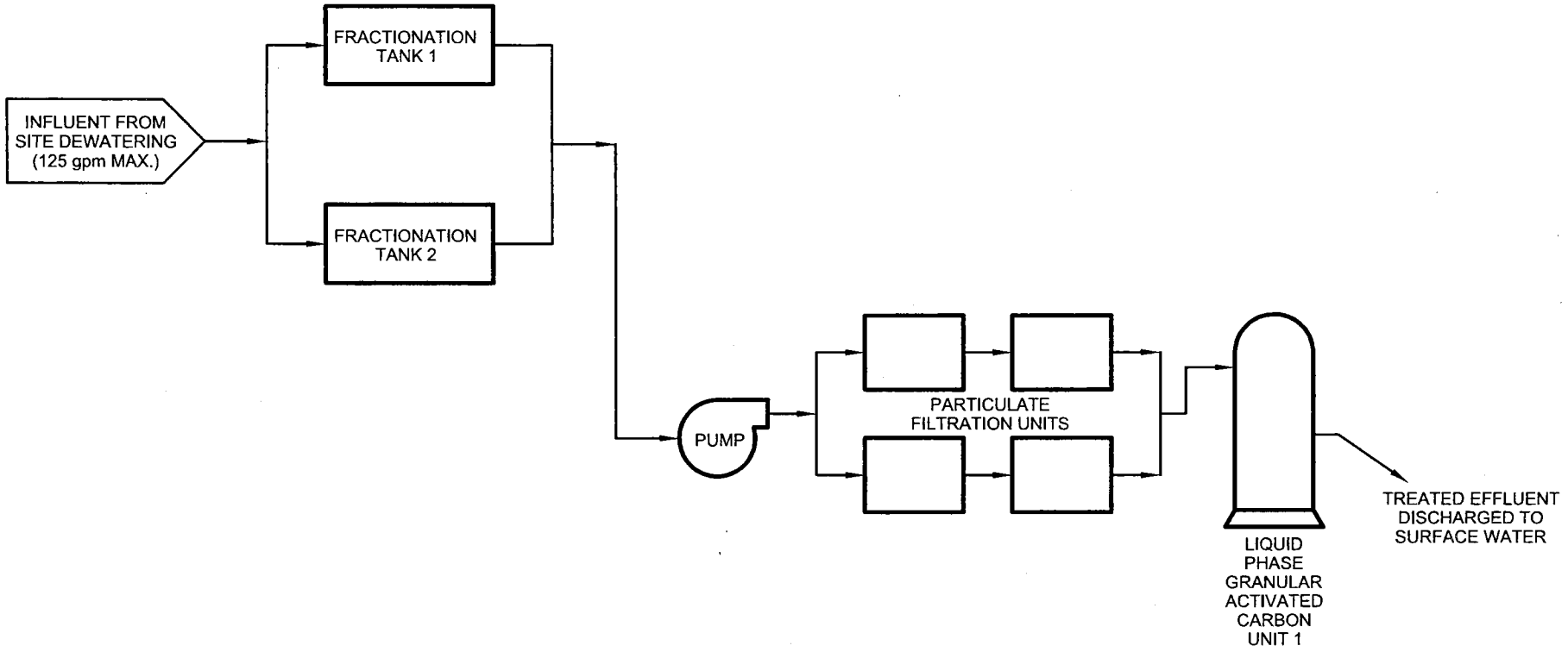
FIGURE 2 – WETLAND REMEDIATION PILOT PROGRAM



ATTACHMENT 4

FIGURE 3 – PROCESS FLOW DIAGRAM

 GZA-J:\11,000-12,999\12820\12820-53.JBC\FIGURES\CAD\12820-53_Process-Flow-Prop-Dwater-Sys.dwg [F03] July 27, 2009 - 3:22pm oliver.olivenza



PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists, ONE EDGEWATER DRIVE, Norwood, Massachusetts, (PH) 781-278-3700	411 WAVERLEY OAKS ROAD WALTHAM, MASSACHUSETTS	PROJ MGR: TLB DESIGNED BY: SC REVIEWED BY: TLB DRAWN BY: GAS / EMD CHECKED BY: SCALE: NOT TO SCALE	DATE: 07-24-2009 PROJECT NO.: 12820.53 REVISION NO.	FIGURE 3
PREPARED FOR: DUFFY BROTHERS CONSTRUCTION CO., INC. 411 WAVERLEY OAKS ROAD WALTHAM, MASSACHUSETTS	PROCESS FLOW DIAGRAM PROPOSED DEWATERING TREATMENT SYSTEM			

ATTACHMENT 5

LABORATORY ANALYTICAL RESULTS

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

PROJECT NARRATIVE

Michelle Mirenda
GZA GeoEnvironmental, Inc. (MA)
106 South Street
Hopkinton, MA 01748

RE: Duffy Brothers
ESS Laboratory Work Order Number: 0906314

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this Project Narrative, the entire report has been paginated. The ESS Laboratory Certifications sheet is the final report page. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration may be used instead of automated integration because it produces more accurate results. All ICP Metals were analyzed using the established linear dynamic range to determine acceptable analytical results.

ESS Laboratory certifies that the test results meet the requirements of NELAC, except where noted within this project narrative.
Samples were analyzed in accordance with the Guidelines Establishing Test Procedures for the Analysis of Pollutants, 40 CFR Part 136, as amended.

Sample Receipt
The following sample(s) were received on June 18, 2009 for the analyses specified on the enclosed Chain of Custody Record.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers

ESS Laboratory Work Order: 0906314

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland GW 061809
Date Sampled: 06/18/09 09:15
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 5
Extraction Method: 3510C

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-01
Sample Matrix: Ground Water
Analyst: SEP
Prepared: 06/19/09

608 Polychlorinated Biphenyls (PCB)

Analyte	Results	Units	MRL	Limit	DF	Analyzed
Aroclor 1016	ND	ug/L	0.50		1	06/22/09
Aroclor 1221	ND	ug/L	0.50		1	06/22/09
Aroclor 1232	ND	ug/L	0.50		1	06/22/09
Aroclor 1242	ND	ug/L	0.50		1	06/22/09
Aroclor 1248	ND	ug/L	0.50		1	06/22/09
Aroclor 1254	ND	ug/L	0.50		1	06/22/09
Aroclor 1260	ND	ug/L	0.50		1	06/22/09
Aroclor 1262	ND	ug/L	0.50		1	06/22/09
Aroclor 1268	ND	ug/L	0.50		1	06/22/09

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*67 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*66 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*92 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*103 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland GW 061809
Date Sampled: 06/18/09 09:15
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-01
Sample Matrix: Ground Water
Analyst: IBM
Prepared: 06/22/09

8270C Semi-Volatile Organic Compounds

Analyte	Results	Units	MRL	Limit	DF	Analyzed
1,1-Biphenyl	ND	ug/L	10.0		1	06/24/09
1,2,4-Trichlorobenzene	ND	ug/L	10.0		1	06/24/09
1,2-Dichlorobenzene	ND	ug/L	10.0		1	06/24/09
1,3-Dichlorobenzene	ND	ug/L	10.0		1	06/24/09
1,4-Dichlorobenzene	ND	ug/L	10.0		1	06/24/09
2,4,5-Trichlorophenol	ND	ug/L	10.0		1	06/24/09
2,4,6-Trichlorophenol	ND	ug/L	10.0		1	06/24/09
2,4-Dichlorophenol	ND	ug/L	10.0		1	06/24/09
2,4-Dimethylphenol	ND	ug/L	50.0		1	06/24/09
2,4-Dinitrophenol	ND	ug/L	50.0		1	06/24/09
2,4-Dinitrotoluene	ND	ug/L	10.0		1	06/24/09
2,6-Dinitrotoluene	ND	ug/L	10.0		1	06/24/09
2-Chloronaphthalene	ND	ug/L	10.0		1	06/24/09
2-Chlorophenol	ND	ug/L	10.0		1	06/24/09
2-Methylnaphthalene	ND	ug/L	10.0		1	06/24/09
2-Methylphenol	ND	ug/L	10.0		1	06/24/09
2-Nitrophenol	ND	ug/L	10.0		1	06/24/09
3,3'-Dichlorobenzidine	ND	ug/L	10.0		1	06/24/09
3+4-Methylphenol	ND	ug/L	20.0		1	06/24/09
4-Bromophenyl-phenylether	ND	ug/L	10.0		1	06/24/09
4-Chloroaniline	ND	ug/L	20.0		1	06/24/09
4-Nitrophenol	ND	ug/L	50.0		1	06/24/09
Acenaphthene	ND	ug/L	10.0		1	06/24/09
Acenaphthylene	ND	ug/L	10.0		1	06/24/09
Acetophenone	ND	ug/L	10.0		1	06/24/09
Aniline	ND	ug/L	10.0		1	06/24/09
Anthracene	ND	ug/L	10.0		1	06/24/09
Azobenzene	ND	ug/L	20.0		1	06/24/09
Benzo(a)anthracene	ND	ug/L	10.0		1	06/24/09
Benzo(a)pyrene	ND	ug/L	10.0		1	06/24/09
Benzo(b)fluoranthene	ND	ug/L	10.0		1	06/24/09
Benzo(g,h,i)perylene	ND	ug/L	10.0		1	06/24/09
Benzo(k)fluoranthene	ND	ug/L	10.0		1	06/24/09
bis(2-Chloroethoxy)methane	ND	ug/L	10.0		1	06/24/09
bis(2-Chloroethyl)ether	ND	ug/L	10.0		1	06/24/09

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland GW 061809
Date Sampled: 06/18/09 09:15
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-01
Sample Matrix: Ground Water
Analyst: IBM
Prepared: 06/22/09

8270C Semi-Volatile Organic Compounds

bis(2-chloroisopropyl)Ether	ND	ug/L	10.0	1	06/24/09
bis(2-Ethylhexyl)phthalate	ND	ug/L	6.0	1	06/24/09
Butylbenzylphthalate	ND	ug/L	10.0	1	06/24/09
Chrysene	ND	ug/L	10.0	1	06/24/09
Dibenzo(a,h)Anthracene	ND	ug/L	10.0	1	06/24/09
Dibenzofuran	ND	ug/L	10.0	1	06/24/09
Diethylphthalate	ND	ug/L	10.0	1	06/24/09
Dimethylphthalate	ND	ug/L	10.0	1	06/24/09
Di-n-butylphthalate	ND	ug/L	10.0	1	06/24/09
Di-n-octylphthalate	ND	ug/L	10.0	1	06/24/09
Fluoranthene	ND	ug/L	10.0	1	06/24/09
Fluorene	ND	ug/L	10.0	1	06/24/09
Hexachlorobenzene	ND	ug/L	10.0	1	06/24/09
Hexachlorobutadiene	ND	ug/L	10.0	1	06/24/09
Hexachloroethane	ND	ug/L	5.0	1	06/24/09
Indeno(1,2,3-cd)Pyrene	ND	ug/L	10.0	1	06/24/09
Isophorone	ND	ug/L	10.0	1	06/24/09
Naphthalene	ND	ug/L	10.0	1	06/24/09
Nitrobenzene	ND	ug/L	10.0	1	06/24/09
N-Nitrosodimethylamine	ND	ug/L	10.0	1	06/24/09
Pentachlorophenol	ND	ug/L	50.0	1	06/24/09
Phenanthrene	ND	ug/L	10.0	1	06/24/09
Phenol	ND	ug/L	10.0	1	06/24/09
Pyrene	ND	ug/L	10.0	1	06/24/09

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*58 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*82 %*		*15-110*
Surrogate: 2-Chlorophenol-d4	*57 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*66 %*		*30-130*
Surrogate: 2-Fluorophenol	*46 %*		*15-110*
Surrogate: Nitrobenzene-d5	*65 %*		*30-130*
Surrogate: Phenol-d6	*62 %*		*15-110*
Surrogate: p-Terphenyl-d14	*48 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland GW 061809
Date Sampled: 06/18/09 09:15
Percent Solids: N/A

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results	Units	MRL	Method	Limit	DF	Analyst	Analyzed
Total Cyanide	ND	mg/L	0.050	4500CN CE		1	EEM	06/23/09
Total Petroleum Hydrocarbon	ND	mg/L	5	1664A		1	JP	06/22/09
Total Residual Chlorine	ND	mg/L	0.02	4500Cl D		1	KJK	06/18/09 18:30
Total Suspended Solids	**142**	mg/L	12	2540D		1	KJK	06/18/09

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland GW 061809
Date Sampled: 06/18/09 09:15
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-01
Sample Matrix: Ground Water
Analyst: SEP
Prepared: 06/24/09

504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results	Units	MRL	Limit	DF	Analyzed
1,2-Dibromoethane	ND	ug/L	0.015		1	06/24/09

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*119 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland SW 061809
Date Sampled: 06/18/09 09:30
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 5
Extraction Method: 3510C

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-02
Sample Matrix: Surface Water
Analyst: SEP
Prepared: 06/19/09

608 Polychlorinated Biphenyls (PCB)

Analyte	Results	Units	MRL	Limit	DF	Analyzed
Aroclor 1016	ND	ug/L	0.50		1	06/22/09
Aroclor 1221	ND	ug/L	0.50		1	06/22/09
Aroclor 1232	ND	ug/L	0.50		1	06/22/09
Aroclor 1242	ND	ug/L	0.50		1	06/22/09
Aroclor 1248	ND	ug/L	0.50		1	06/22/09
Aroclor 1254	**17.6**	ug/L	2.50		5	06/23/09
Aroclor 1260	**22.4**	ug/L	2.50		5	06/23/09
Aroclor 1262	ND	ug/L	0.50		1	06/22/09
Aroclor 1268	ND	ug/L	0.50		1	06/22/09

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*62 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*63 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*80 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*78 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland SW 061809
Date Sampled: 06/18/09 09:30
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-02
Sample Matrix: Surface Water
Analyst: IBM
Prepared: 06/22/09

8270C Semi-Volatile Organic Compounds

Analyte	Results	Units	MRL	Limit	DF	Analyzed
1,1-Biphenyl	ND	ug/L	100		10	06/24/09
1,2,4-Trichlorobenzene	ND	ug/L	100		10	06/24/09
1,2-Dichlorobenzene	ND	ug/L	100		10	06/24/09
1,3-Dichlorobenzene	ND	ug/L	100		10	06/24/09
1,4-Dichlorobenzene	ND	ug/L	100		10	06/24/09
2,4,5-Trichlorophenol	ND	ug/L	100		10	06/24/09
2,4,6-Trichlorophenol	ND	ug/L	100		10	06/24/09
2,4-Dichlorophenol	ND	ug/L	100		10	06/24/09
2,4-Dimethylphenol	ND	ug/L	500		10	06/24/09
2,4-Dinitrophenol	ND	ug/L	500		10	06/24/09
2,4-Dinitrotoluene	ND	ug/L	100		10	06/24/09
2,6-Dinitrotoluene	ND	ug/L	100		10	06/24/09
2-Chloronaphthalene	ND	ug/L	100		10	06/24/09
2-Chlorophenol	ND	ug/L	100		10	06/24/09
2-Methylnaphthalene	ND	ug/L	100		10	06/24/09
2-Methylphenol	ND	ug/L	100		10	06/24/09
2-Nitrophenol	ND	ug/L	100		10	06/24/09
3,3'-Dichlorobenzidine	ND	ug/L	100		10	06/24/09
3+4-Methylphenol	ND	ug/L	200		10	06/24/09
4-Bromophenyl-phenylether	ND	ug/L	100		10	06/24/09
4-Chloroaniline	ND	ug/L	200		10	06/24/09
4-Nitrophenol	ND	ug/L	500		10	06/24/09
Acenaphthene	ND	ug/L	100		10	06/24/09
Acenaphthylene	ND	ug/L	100		10	06/24/09
Acetophenone	ND	ug/L	100		10	06/24/09
Aniline	ND	ug/L	100		10	06/24/09
Anthracene	ND	ug/L	100		10	06/24/09
Azobenzene	ND	ug/L	200		10	06/24/09
Benzo(a)anthracene	**124**	ug/L	100		10	06/24/09
Benzo(a)pyrene	**115**	ug/L	100		10	06/24/09
Benzo(b)fluoranthene	**158**	ug/L	100		10	06/24/09
Benzo(g,h,i)perylene	ND	ug/L	100		10	06/24/09
Benzo(k)fluoranthene	**113**	ug/L	100		10	06/24/09
bis(2-Chloroethoxy)methane	ND	ug/L	100		10	06/24/09
bis(2-Chloroethyl)ether	ND	ug/L	100		10	06/24/09

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland SW 061809
Date Sampled: 06/18/09 09:30
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-02
Sample Matrix: Surface Water
Analyst: IBM
Prepared: 06/22/09

8270C Semi-Volatile Organic Compounds

bis(2-chloroisopropyl)Ether	ND	ug/L	100	10	06/24/09
bis(2-Ethylhexyl)phthalate	ND	ug/L	60.0	10	06/24/09
Butylbenzylphthalate	ND	ug/L	100	10	06/24/09
Chrysene	**222**	ug/L	100	10	06/24/09
Dibenzo(a,h)Anthracene	ND	ug/L	100	10	06/24/09
Dibenzofuran	ND	ug/L	100	10	06/24/09
Diethylphthalate	ND	ug/L	100	10	06/24/09
Dimethylphthalate	ND	ug/L	100	10	06/24/09
Di-n-butylphthalate	ND	ug/L	100	10	06/24/09
Di-n-octylphthalate	ND	ug/L	100	10	06/24/09
Fluoranthene	**416**	ug/L	100	10	06/24/09
Fluorene	ND	ug/L	100	10	06/24/09
Hexachlorobenzene	ND	ug/L	100	10	06/24/09
Hexachlorobutadiene	ND	ug/L	100	10	06/24/09
Hexachloroethane	ND	ug/L	50.0	10	06/24/09
Indeno(1,2,3-cd)Pyrene	ND	ug/L	100	10	06/24/09
Isophorone	ND	ug/L	100	10	06/24/09
Naphthalene	ND	ug/L	100	10	06/24/09
Nitrobenzene	ND	ug/L	100	10	06/24/09
N-Nitrosodimethylamine	ND	ug/L	100	10	06/24/09
Pentachlorophenol	ND	ug/L	500	10	06/24/09
Phenanthrene	**165**	ug/L	100	10	06/24/09
Phenol	ND	ug/L	100	10	06/24/09
Pyrene	**369**	ug/L	100	10	06/24/09

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*42 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*67 %*		*15-110*
Surrogate: 2-Chlorophenol-d4	*44 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*39 %*		*30-130*
Surrogate: 2-Fluorophenol	*34 %*		*15-110*
Surrogate: Nitrobenzene-d5	*53 %*		*30-130*
Surrogate: Phenol-d6	*44 %*		*15-110*
Surrogate: p-Terphenyl-d14	*38 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers
Client Sample ID: Wetland SW 061809
Date Sampled: 06/18/09 09:30
Percent Solids: N/A

ESS Laboratory Work Order: 0906314
ESS Laboratory Sample ID: 0906314-02
Sample Matrix: Surface Water

Classical Chemistry

Analyte	Results	Units	MRL	Method	Limit	DF	Analyst	Analyzed
Total Cyanide	ND	mg/L	0.050	4500CN CE		1	EEM	06/23/09
Total Petroleum Hydrocarbon	**63**	mg/L	5	1664A		1	JP	06/22/09
Total Residual Chlorine	ND	mg/L	0.02	4500Cl D		1	KJK	06/18/09 18:30
Total Suspended Solids	**386**	mg/L	10	2540D		1	KJK	06/18/09

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers

ESS Laboratory Work Order: 0906314

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
608 Polychlorinated Biphenyls (PCB)										
Batch BF92415 - 3510C										
Blank										
Aroclor 1016	ND	0.50	ug/L							
Aroclor 1221	ND	0.50	ug/L							
Aroclor 1232	ND	0.50	ug/L							
Aroclor 1242	ND	0.50	ug/L							
Aroclor 1248	ND	0.50	ug/L							
Aroclor 1254	ND	0.50	ug/L							
Aroclor 1260	ND	0.50	ug/L							
Aroclor 1262	ND	0.50	ug/L							
Aroclor 1268	ND	0.50	ug/L							
Surrogate: Decachlorobiphenyl	*0.309*		ug/L	*0.2500*		*123*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.311*		ug/L	*0.2500*		*124*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.293*		ug/L	*0.2500*		*117*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.340*		ug/L	*0.2500*		*136*	*30-150*			
LCS										
Aroclor 1016	5.05	0.50	ug/L	5.000		101	40-140			
Aroclor 1260	4.96	0.50	ug/L	5.000		99	40-140			
Surrogate: Decachlorobiphenyl	*0.322*		ug/L	*0.2500*		*129*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.324*		ug/L	*0.2500*		*130*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.325*		ug/L	*0.2500*		*130*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.364*		ug/L	*0.2500*		*146*	*30-150*			
LCS Dup										
Aroclor 1016	5.17	0.50	ug/L	5.000		103	40-140	2	50	
Aroclor 1260	5.10	0.50	ug/L	5.000		102	40-140	3	50	
Surrogate: Decachlorobiphenyl	*0.319*		ug/L	*0.2500*		*127*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.319*		ug/L	*0.2500*		*128*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.314*		ug/L	*0.2500*		*126*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.351*		ug/L	*0.2500*		*140*	*30-150*			
8270C Semi-Volatile Organic Compounds										
Batch BF92206 - 3520C										
Blank										
1,1-Biphenyl	ND	10.0	ug/L							
1,2,4-Trichlorobenzene	ND	10.0	ug/L							
1,2-Dichlorobenzene	ND	10.0	ug/L							
1,3-Dichlorobenzene	ND	10.0	ug/L							
1,4-Dichlorobenzene	ND	10.0	ug/L							
2,4,5-Trichlorophenol	ND	10.0	ug/L							
2,4,6-Trichlorophenol	ND	10.0	ug/L							
2,4-Dichlorophenol	ND	10.0	ug/L							
2,4-Dimethylphenol	ND	50.0	ug/L							
2,4-Dinitrophenol	ND	50.0	ug/L							
2,4-Dinitrotoluene	ND	10.0	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers

ESS Laboratory Work Order: 0906314

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270C Semi-Volatile Organic Compounds										
Batch BF92206 - 3520C										
2,6-Dinitrotoluene	ND	10.0	ug/L							
2-Chloronaphthalene	ND	10.0	ug/L							
2-Chlorophenol	ND	10.0	ug/L							
2-Methylnaphthalene	ND	10.0	ug/L							
2-Methylphenol	ND	10.0	ug/L							
2-Nitrophenol	ND	10.0	ug/L							
3,3'-Dichlorobenzidine	ND	10.0	ug/L							
3+4-Methylphenol	ND	20.0	ug/L							
4-Bromophenyl-phenylether	ND	10.0	ug/L							
4-Chloroaniline	ND	20.0	ug/L							
4-Nitrophenol	ND	50.0	ug/L							
Acenaphthene	ND	10.0	ug/L							
Acenaphthylene	ND	10.0	ug/L							
Acetophenone	ND	10.0	ug/L							
Aniline	ND	10.0	ug/L							
Anthracene	ND	10.0	ug/L							
Azobenzene	ND	20.0	ug/L							
Benzo(a)anthracene	ND	10.0	ug/L							
Benzo(a)pyrene	ND	10.0	ug/L							
Benzo(b)fluoranthene	ND	10.0	ug/L							
Benzo(g,h,i)perylene	ND	10.0	ug/L							
Benzo(k)fluoranthene	ND	10.0	ug/L							
bis(2-Chloroethoxy)methane	ND	10.0	ug/L							
bis(2-Chloroethyl)ether	ND	10.0	ug/L							
bis(2-chloroisopropyl)Ether	ND	10.0	ug/L							
bis(2-Ethylhexyl)phthalate	ND	6.0	ug/L							
Butylbenzylphthalate	ND	10.0	ug/L							
Chrysene	ND	10.0	ug/L							
Dibenzo(a,h)Anthracene	ND	10.0	ug/L							
Dibenzofuran	ND	10.0	ug/L							
Diethylphthalate	ND	10.0	ug/L							
Dimethylphthalate	ND	10.0	ug/L							
Di-n-butylphthalate	ND	10.0	ug/L							
Di-n-octylphthalate	ND	10.0	ug/L							
Fluoranthene	ND	10.0	ug/L							
Fluorene	ND	10.0	ug/L							
Hexachlorobenzene	ND	10.0	ug/L							
Hexachlorobutadiene	ND	10.0	ug/L							
Hexachloroethane	ND	5.0	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	10.0	ug/L							
Isophorone	ND	10.0	ug/L							
Naphthalene	ND	10.0	ug/L							
Nitrobenzene	ND	10.0	ug/L							
N-Nitrosodimethylamine	ND	10.0	ug/L							
Pentachlorophenol	ND	50.0	ug/L							
Phenanthrene	ND	10.0	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers

ESS Laboratory Work Order: 0906314

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270C Semi-Volatile Organic Compounds										
Batch BF92206 - 3520C										
Phenol	ND	10.0	ug/L							
Pyrene	ND	10.0	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	*62.3*		ug/L	*100.0*		*62*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*106*		ug/L	*150.0*		*71*	*15-110*			
Surrogate: 2-Chlorophenol-d4	*94.6*		ug/L	*150.0*		*63*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*74.6*		ug/L	*100.0*		*75*	*30-130*			
Surrogate: 2-Fluorophenol	*77.1*		ug/L	*150.0*		*51*	*15-110*			
Surrogate: Nitrobenzene-d5	*77.0*		ug/L	*100.0*		*77*	*30-130*			
Surrogate: Phenol-d6	*101*		ug/L	*150.0*		*67*	*15-110*			
Surrogate: p-Terphenyl-d14	*92.4*		ug/L	*100.0*		*92*	*30-130*			
LCS										
1,1-Biphenyl	80.2	10.0	ug/L	100.0		80	40-140			
1,2,4-Trichlorobenzene	69.6	10.0	ug/L	100.0		70	40-140			
1,2-Dichlorobenzene	57.2	10.0	ug/L	100.0		57	40-140			
1,3-Dichlorobenzene	54.1	10.0	ug/L	100.0		54	40-140			
1,4-Dichlorobenzene	51.1	10.0	ug/L	100.0		51	40-140			
2,4,5-Trichlorophenol	89.1	10.0	ug/L	100.0		89	30-130			
2,4,6-Trichlorophenol	87.0	10.0	ug/L	100.0		87	30-130			
2,4-Dichlorophenol	82.8	10.0	ug/L	100.0		83	30-130			
2,4-Dimethylphenol	79.6	50.0	ug/L	100.0		80	30-130			
2,4-Dinitrophenol	67.7	50.0	ug/L	100.0		68	30-130			
2,4-Dinitrotoluene	94.4	10.0	ug/L	100.0		94	40-140			
2,6-Dinitrotoluene	91.6	10.0	ug/L	100.0		92	40-140			
2-Chloronaphthalene	71.4	10.0	ug/L	100.0		71	40-140			
2-Chlorophenol	65.9	10.0	ug/L	100.0		66	30-130			
2-Methylnaphthalene	79.3	10.0	ug/L	100.0		79	40-140			
2-Methylphenol	73.2	10.0	ug/L	100.0		73	30-130			
2-Nitrophenol	76.0	10.0	ug/L	100.0		76	30-130			
3,3'-Dichlorobenzidine	87.0	10.0	ug/L	100.0		87	40-140			
3+4-Methylphenol	139	20.0	ug/L	200.0		69	30-130			
4-Bromophenyl-phenylether	86.1	10.0	ug/L	100.0		86	40-140			
4-Chloroaniline	69.8	20.0	ug/L	100.0		70	40-140			
4-Nitrophenol	84.6	50.0	ug/L	100.0		85	30-130			
Acenaphthene	86.7	10.0	ug/L	100.0		87	40-140			
Acenaphthylene	71.2	10.0	ug/L	100.0		71	40-140			
Acetophenone	78.8	10.0	ug/L	100.0		79	40-140			
Aniline	68.0	10.0	ug/L	100.0		68	40-140			
Anthracene	94.5	10.0	ug/L	100.0		94	40-140			
Azobenzene	99.6	20.0	ug/L	100.0		100	40-140			
Benzo(a)anthracene	98.0	10.0	ug/L	100.0		98	40-140			
Benzo(a)pyrene	93.3	10.0	ug/L	100.0		93	40-140			
Benzo(b)fluoranthene	96.8	10.0	ug/L	100.0		97	40-140			
Benzo(g,h,i)perylene	96.0	10.0	ug/L	100.0		96	40-140			
Benzo(k)fluoranthene	95.9	10.0	ug/L	100.0		96	40-140			
bis(2-Chloroethoxy)methane	75.7	10.0	ug/L	100.0		76	40-140			
bis(2-Chloroethyl)ether	69.6	10.0	ug/L	100.0		70	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers

ESS Laboratory Work Order: 0906314

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270C Semi-Volatile Organic Compounds										
Batch BF92206 - 3520C										
bis(2-chloroisopropyl)Ether	63.9	10.0	ug/L	100.0		64	40-140			
bis(2-Ethylhexyl)phthalate	94.7	6.0	ug/L	100.0		95	40-140			
Butylbenzylphthalate	92.5	10.0	ug/L	100.0		92	40-140			
Chrysene	100	10.0	ug/L	100.0		100	40-140			
Dibenzo(a,h)Anthracene	97.2	10.0	ug/L	100.0		97	40-140			
Dibenzofuran	85.5	10.0	ug/L	100.0		85	40-140			
Diethylphthalate	93.6	10.0	ug/L	100.0		94	40-140			
Dimethylphthalate	91.8	10.0	ug/L	100.0		92	40-140			
Di-n-butylphthalate	92.8	10.0	ug/L	100.0		93	40-140			
Di-n-octylphthalate	97.4	10.0	ug/L	100.0		97	40-140			
Fluoranthene	97.9	10.0	ug/L	100.0		98	40-140			
Fluorene	94.9	10.0	ug/L	100.0		95	40-140			
Hexachlorobenzene	91.7	10.0	ug/L	100.0		92	40-140			
Hexachlorobutadiene	64.3	10.0	ug/L	100.0		64	40-140			
Hexachloroethane	52.2	5.0	ug/L	100.0		52	40-140			
Indeno(1,2,3-cd)Pyrene	97.6	10.0	ug/L	100.0		98	40-140			
Isophorone	63.2	10.0	ug/L	100.0		63	40-140			
Naphthalene	73.0	10.0	ug/L	100.0		73	40-140			
Nitrobenzene	73.3	10.0	ug/L	100.0		73	40-140			
N-Nitrosodimethylamine	75.6	10.0	ug/L	100.0		76	40-140			
Pentachlorophenol	99.9	50.0	ug/L	100.0		100	30-130			
Phenanthrene	91.6	10.0	ug/L	100.0		92	40-140			
Phenol	72.0	10.0	ug/L	100.0		72	30-130			
Pyrene	96.9	10.0	ug/L	100.0		97	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*61.0*		ug/L	*100.0*		*61*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*142*		ug/L	*150.0*		*95*	*15-110*			
Surrogate: 2-Chlorophenol-d4	*97.7*		ug/L	*150.0*		*65*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*73.3*		ug/L	*100.0*		*73*	*30-130*			
Surrogate: 2-Fluorophenol	*82.6*		ug/L	*150.0*		*55*	*15-110*			
Surrogate: Nitrobenzene-d5	*74.0*		ug/L	*100.0*		*74*	*30-130*			
Surrogate: Phenol-d6	*106*		ug/L	*150.0*		*70*	*15-110*			
Surrogate: p-Terphenyl-d14	*91.9*		ug/L	*100.0*		*92*	*30-130*			
LCS Dup										
1,1-Biphenyl	81.6	10.0	ug/L	100.0		82	40-140	2	20	
1,2,4-Trichlorobenzene	64.0	10.0	ug/L	100.0		64	40-140	8	20	
1,2-Dichlorobenzene	55.6	10.0	ug/L	100.0		56	40-140	3	20	
1,3-Dichlorobenzene	52.7	10.0	ug/L	100.0		53	40-140	3	20	
1,4-Dichlorobenzene	48.8	10.0	ug/L	100.0		49	40-140	4	20	
2,4,5-Trichlorophenol	92.9	10.0	ug/L	100.0		93	30-130	4	20	
2,4,6-Trichlorophenol	91.7	10.0	ug/L	100.0		92	30-130	5	20	
2,4-Dichlorophenol	80.3	10.0	ug/L	100.0		80	30-130	3	20	
2,4-Dimethylphenol	76.7	50.0	ug/L	100.0		77	30-130	4	20	
2,4-Dinitrophenol	71.0	50.0	ug/L	100.0		71	30-130	5	20	
2,4-Dinitrotoluene	95.5	10.0	ug/L	100.0		96	40-140	1	20	
2,6-Dinitrotoluene	92.6	10.0	ug/L	100.0		93	40-140	1	20	
2-Chloronaphthalene	72.7	10.0	ug/L	100.0		73	40-140	2	20	

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers

ESS Laboratory Work Order: 0906314

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270C Semi-Volatile Organic Compounds										
Batch BF92206 - 3520C										
2-Chlorophenol	62.4	10.0	ug/L	100.0		62	30-130	6	20	
2-Methylnaphthalene	77.3	10.0	ug/L	100.0		77	40-140	3	20	
2-Methylphenol	70.8	10.0	ug/L	100.0		71	30-130	3	20	
2-Nitrophenol	73.3	10.0	ug/L	100.0		73	30-130	4	20	
3,3´-Dichlorobenzidine	92.4	10.0	ug/L	100.0		92	40-140	6	20	
3+4-Methylphenol	132	20.0	ug/L	200.0		66	30-130	5	20	
4-Bromophenyl-phenylether	88.7	10.0	ug/L	100.0		89	40-140	3	20	
4-Chloroaniline	67.0	20.0	ug/L	100.0		67	40-140	4	20	
4-Nitrophenol	88.2	50.0	ug/L	100.0		88	30-130	4	20	
Acenaphthene	88.1	10.0	ug/L	100.0		88	40-140	2	20	
Acenaphthylene	72.9	10.0	ug/L	100.0		73	40-140	2	20	
Acetophenone	74.0	10.0	ug/L	100.0		74	40-140	6	20	
Aniline	63.7	10.0	ug/L	100.0		64	40-140	7	20	
Anthracene	96.7	10.0	ug/L	100.0		97	40-140	2	20	
Azobenzene	101	20.0	ug/L	100.0		101	40-140	1	20	
Benzo(a)anthracene	98.6	10.0	ug/L	100.0		99	40-140	0.6	20	
Benzo(a)pyrene	94.8	10.0	ug/L	100.0		95	40-140	2	20	
Benzo(b)fluoranthene	97.7	10.0	ug/L	100.0		98	40-140	0.9	20	
Benzo(g,h,i)perylene	98.4	10.0	ug/L	100.0		98	40-140	2	20	
Benzo(k)fluoranthene	96.3	10.0	ug/L	100.0		96	40-140	0.4	20	
bis(2-Chloroethoxy)methane	72.1	10.0	ug/L	100.0		72	40-140	5	20	
bis(2-Chloroethyl)ether	66.9	10.0	ug/L	100.0		67	40-140	4	20	
bis(2-chloroisopropyl)Ether	60.1	10.0	ug/L	100.0		60	40-140	6	20	
bis(2-Ethylhexyl)phthalate	95.0	6.0	ug/L	100.0		95	40-140	0.3	20	
Butylbenzylphthalate	92.2	10.0	ug/L	100.0		92	40-140	0.4	20	
Chrysene	100	10.0	ug/L	100.0		100	40-140	0.3	20	
Dibenzo(a,h)Anthracene	98.2	10.0	ug/L	100.0		98	40-140	1	20	
Dibenzofuran	87.2	10.0	ug/L	100.0		87	40-140	2	20	
Diethylphthalate	93.5	10.0	ug/L	100.0		93	40-140	0.2	20	
Dimethylphthalate	92.8	10.0	ug/L	100.0		93	40-140	1	20	
Di-n-butylphthalate	93.2	10.0	ug/L	100.0		93	40-140	0.4	20	
Di-n-octylphthalate	101	10.0	ug/L	100.0		101	40-140	4	20	
Fluoranthene	103	10.0	ug/L	100.0		103	40-140	5	20	
Fluorene	96.4	10.0	ug/L	100.0		96	40-140	2	20	
Hexachlorobenzene	94.0	10.0	ug/L	100.0		94	40-140	2	20	
Hexachlorobutadiene	62.0	10.0	ug/L	100.0		62	40-140	4	20	
Hexachloroethane	50.3	5.0	ug/L	100.0		50	40-140	4	20	
Indeno(1,2,3-cd)Pyrene	101	10.0	ug/L	100.0		101	40-140	3	20	
Isophorone	60.0	10.0	ug/L	100.0		60	40-140	5	20	
Naphthalene	70.6	10.0	ug/L	100.0		71	40-140	3	20	
Nitrobenzene	71.9	10.0	ug/L	100.0		72	40-140	2	20	
N-Nitrosodimethylamine	65.7	10.0	ug/L	100.0		66	40-140	14	20	
Pentachlorophenol	101	50.0	ug/L	100.0		101	30-130	0.6	20	
Phenanthrene	92.4	10.0	ug/L	100.0		92	40-140	0.8	20	
Phenol	60.0	10.0	ug/L	100.0		60	30-130	18	20	
Pyrene	96.4	10.0	ug/L	100.0		96	40-140	0.5	20	

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers

ESS Laboratory Work Order: 0906314

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270C Semi-Volatile Organic Compounds										
Batch BF92206 - 3520C										
Surrogate: 1,2-Dichlorobenzene-d4	*56.8*		ug/L	*100.0*		*57*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*138*		ug/L	*150.0*		*92*	*15-110*			
Surrogate: 2-Chlorophenol-d4	*89.9*		ug/L	*150.0*		*60*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*73.4*		ug/L	*100.0*		*73*	*30-130*			
Surrogate: 2-Fluorophenol	*77.3*		ug/L	*150.0*		*52*	*15-110*			
Surrogate: Nitrobenzene-d5	*68.7*		ug/L	*100.0*		*69*	*30-130*			
Surrogate: Phenol-d6	*96.4*		ug/L	*150.0*		*64*	*15-110*			
Surrogate: p-Terphenyl-d14	*88.7*		ug/L	*100.0*		*89*	*30-130*			
Classical Chemistry										
Batch BF91837 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	60		mg/L	60.60		99	80-120			
Duplicate **Source: 0906314-01**										
Total Suspended Solids	132	12	mg/L		142			7	20	
Batch BF91838 - General Preparation										
Blank										
Total Residual Chlorine	ND	0.02	mg/L							
LCS										
Total Residual Chlorine	1.18		mg/L	1.160		102	85-115			
Duplicate **Source: 0906314-02**										
Total Residual Chlorine	ND	0.02	mg/L		ND				20	
Batch BF92222 - General Preparation										
Blank										
Total Petroleum Hydrocarbon	ND	5	mg/L							
LCS										
Total Petroleum Hydrocarbon	16	5	mg/L	20.00		80	66-114			
Batch BF92305 - TCN Prep										
Blank										
Total Cyanide	ND	0.050	mg/L							
LCS										
Total Cyanide	0.100	0.050	mg/L	0.1003		99	90-110			
LCS										
Total Cyanide	0.386	0.050	mg/L	0.4012		96	90-110			
LCS Dup										
Total Cyanide	0.392	0.050	mg/L	0.4012		98	90-110	2	20	
Duplicate **Source: 0906314-02**										
Total Cyanide	0.017	0.050	mg/L		0.018			7	20	
Matrix Spike **Source: 0906314-02**										

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers

ESS Laboratory Work Order: 0906314

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch BF92305 - TCN Prep										
Total Cyanide	0.184	0.050	mg/L	0.2006	0.018	83	75-125			
504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch BF92434 - 504/8011										
Blank										
1,2-Dibromoethane	ND	0.015	ug/L							
Surrogate: Pentachloroethane	*0.243*		ug/L	*0.2000*		*121*	*30-150*			
LCS										
1,2-Dibromoethane	0.229	0.015	ug/L	0.2000		114	60-140			
Surrogate: Pentachloroethane	*0.233*		ug/L	*0.2000*		*116*	*30-150*			
LCS Dup										
1,2-Dibromoethane	0.248	0.015	ug/L	0.2000		124	60-140	8	20	
Surrogate: Pentachloroethane	*0.255*		ug/L	*0.2000*		*127*	*30-150*			
Duplicate **Source: 0906314-01**										
1,2-Dibromoethane	ND	0.015	ug/L		ND				20	
Surrogate: Pentachloroethane	*0.249*		ug/L	*0.2000*		*125*	*30-150*			
Matrix Spike **Source: 0906314-02**										
1,2-Dibromoethane	0.251	0.015	ug/L	0.2000	ND	126	30-150			
Surrogate: Pentachloroethane	*0.240*		ug/L	*0.2000*		*120*	*30-150*			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers ESS Laboratory Work Order: 0906314

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Diluted.
ND	Analyte NOT DETECTED above the detection limit
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: Duffy Brothers ESS Laboratory Work Order: 0906314

ESS LABORATORY CERTIFICATIONS

U.S. Army Corps of Engineers
Soil and Water

Rhode Island: A-179
Potable and Non Potable Water
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut: PH-0750
Potable and Non Potable Water, Solid and Hazardous Waste
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine: RI002
Potable and Non Potable Water
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts: M-RI002
Potable and Non Potable Water
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited): 242405
Potable and Non PotableWater
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited): 11313
Potable and Non Potable Water, Solid and Hazardous Waste
http://www.wadsworth.org/labcert/elap/comm.html

United States Department of Agriculture
Soil Permit: S-54210

New Jersey (NELAP accredited): RI002
Potable and Non Potable Water, Solid and Hazardous Waste
http://www.nj.gov/dep/oqa/certlabs.htm

Maryland: 301
Potable Water
http://www.mde.state.md.us/assets/document/wsp_labs

South Carolina: 78003
Volatile Organic Compounds in Potable Water

CHAIN-OF-[redacted]ODY RECORD

ESS 0906314

W.O. #

Sample I.D.	Date/Time Sampled	Matrix A=Air S=Soil GW=Ground W. SW=Surface W. WW=Waste W. DW=Drinking W. P=Product Other (specify)	☐ pH ☐ Cond.	GC Methane, Ethane, Ethene	EPA 8260	EPA 8260 - 8010 List (Chlor.)	EPA 8260 - 8021 list	EPA 8021 - 8020 List (BTEX)	EPA 524.2 DW VOCs	EPA 624 WW VOCs	☐ 601 ☐ 602 WW VOCs	EPA 8270 FULL SVOCs	EPA 8270 ☐ PAH ☐ A ☐ BN	EPA 625 WW SVOCs	~~EPA 8082~~-PCBs/608	EPA 8081-Pest	TPH-GC ([illegible])	TPH-GC w/FING.	EPH (MA DEP)	VPH (MA DEP)	Metals ☐ PPM-13 ☐ R-8	MCP 14 Metals (MA)	Metals (List Below)**	TCLP - Specify Below	SPLP - Specify Below	EPA 300 ☐ Cl ☐ SO4	EPA 300 ☐ NO3 ☐ NO2
-01 Wetland GW 061809	6/18/09 0915	GW										✓			✓		✓										
-02 Wetland SW 061809	6/18/09 0930	~~GSW~~										✓			✓		✓										
		(2)																									
PRESERVATIVE (Cl - HCl, M=Methanol, N - HNO3, S - H2SO4, Na - NaOH, O - Other)*												-			-		CL										
CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, T-Teflon, O-Other)*												G			G		G										

RELINQUISHED BY: (AFFILIATION)	DATE/TIME	RECEIVED BY: (AFFILIATION)
[signature]	6/18/09 1500	[signature]
[signature]	6/18/09 1705	[signature]
		6/18/09 1720

NOTES: (Unless otherwise noted, all samples have been refrigerated to 4° C)
*Specify "Other" preservatives and containers types in this space.

See Attached RGP DLs

PROJECT MANAGER: Michelle Mirenda EXT: 4710
Edie Hutchinson X4703

TURNAROUND TIME: Standard Rush__ Days, Approved by ________

LAB USE:
TEMP. OF COOLER

GZA GEOENVIRONMENTAL, INC.
Labaratory Division

106 South Street
Hopkinton, MA 01748
(781) 278-4700
FAX (508) 435-9912

GZA FILE NO: 01.0012820.53 TASK NO: 004 P.O. NO

PROJECT: Duffy Wetlands

LOCATION: Waltham, MA

COLLECTOR(S): J.M. SHEET

R.I. ANALYTICAL
Specialists in Environmental Services

CERTIFICATE OF ANALYSIS

GZA GeoEnvironmental Labs
Attn: Ms. Michelle Mirenda
Engineers and Scientists
106 South Street
Hopkinton, MA 01748

Date Received: 6/29/09
Date Reported: 6/29/09
Date Revised: 7/14/09
P.O. #: 8-32623
Work Order # 0906-11412

DESCRIPTION: GZA FILE# 01.0012820.53 DUFFY'S WETLANDS WALTHAM, MA

Subject sample(s) has/have been analyzed by our Warwick, R.I. laboratory with the attached results.

Reference: All parameters were analyzed by U.S. EPA approved methodologies.
The specific methodologies are listed in the methods column of the Certificate Of Analysis.

Data qualifiers (if present) are explained in full at the end of a given sample's analytical results.

Certification #: RI-033, MA-RI015, CT-PH-0508, ME-RI015
NH-253700 A & B, USDA S-41844

If you have any questions regarding this work, or if we may be of further assistance, please contact our customer service department.

Approved by:

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

GZA GeoEnvironmental Labs
Date Received: 6/29/09
Work Order #: 0906-11412

Approved by: _____
Data Reporting

Sample # 002
SAMPLE DESCRIPTION: WETLAND SW 061809
SAMPLE TYPE: GRAB **SAMPLE DATE/TIME:** 6/18/2009 @ 09:30

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
Volatile Organic Compounds						
Benzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Bromobenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Bromochloromethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Bromodichloromethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Bromoform	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Bromomethane	<2	2	ug/l	SW-846 8260B	6/30/09	MMM
n-Butylbenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Sec-butylbenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
tert-Butylbenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Carbon Tetrachloride	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Chlorobenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Chloroethane	<5	5	ug/l	SW-846 8260B	6/30/09	MMM
Chloroform	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Chloromethane	<5	5	ug/l	SW-846 8260B	6/30/09	MMM
2-Chlorotoluene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
4-Chlorotoluene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Dibromochloromethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,2-Dibromo-3-Chloropropane	<2	2	ug/l	SW-846 8260B	6/30/09	MMM
1,2-Dibromoethane(EDB)	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Dibromomethane	<2	2	ug/l	SW-846 8260B	6/30/09	MMM
1,2-Dichlorobenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,3-Dichlorobenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,4-Dichlorobenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Dichlorodifluoromethane	<5	5	ug/l	SW-846 8260B	6/30/09	MMM
1,1-Dichloroethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,2-Dichloroethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,1-Dichloroethene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
cis-1,2-Dichloroethene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
trans-1,2-Dichloroethylene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,2-Dichloropropane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,3-Dichloropropane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
2,2-Dichloropropane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,1-Dichloropropene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,3-Dichloropropene (total)	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Ethylbenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Hexachlorobutadiene	<0.6	0.6	ug/l	SW-846 8260B	6/30/09	MMM
Isopropylbenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
p-Isopropyltoluene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Methylene Chloride	<5	5	ug/l	SW-846 8260B	6/30/09	MMM
Naphthalene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

GZA GeoEnvironmental Labs
Date Received: 6/29/09
Work Order #: 0906-11412

Approved by: _____
Data Reporting

Sample # 002
SAMPLE DESCRIPTION: WETLAND SW 061809
SAMPLE TYPE: GRAB **SAMPLE DATE/TIME:** 6/18/2009 @ 09:30

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
n-Propylbenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Styrene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,1,1,2-Tetrachloroethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,1,2,2-Tetrachloroethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Tetrachloroethene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Toluene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,2,3-Trichlorobenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,2,4-Trichlorobenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,1,1-Trichloroethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,1,2-Trichloroethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Trichloroethene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Trichlorofluoromethane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,2,3-Trichloropropane	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,2,4-Trimethylbenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
1,3,5-Trimethylbenzene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Vinyl Chloride	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
o-Xylene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
m,p-Xylene	<1	1	ug/l	SW-846 8260B	6/30/09	MMM
Methyl Tertiary Butyl Ether (MTBE)	<2	2	ug/l	SW-846 8260B	6/30/09	MMM
Surrogates			RANGE	SW-846 8260B	6/30/09	MMM
Dibromofluoromethane	100		86-118%	SW-846 8260B	6/30/09	MMM
Toluene-d8	94		88-110%	SW-846 8260B	6/30/09	MMM
4-Bromofluorobenzene	102		86-115%	SW-846 8260B	6/30/09	MMM
1,2 Dichloroethane-d4	95		80-120%	SW-846 8260B	6/30/09	MMM
Volatile Organic Compounds						
Acetone	<10	10	ug/l	SW-846 8260B	6/30/09	MMM
1,4-Dioxane	<100	100	ug/l	SW-846 8260B	6/30/09	MMM
Tertiary Amyl Methyl Ether	<5	5	ug/l	SW-846 8260B	6/30/09	MMM
Tertiary Butanol (TBA)	<25	25	ug/l	SW-846 8260B	6/30/09	MMM
Surrogates			RANGE	SW-846 8260B	6/30/09	MMM
Dibromofluoromethane	100		86-118%	SW-846 8260B	6/30/09	MMM
Toluene-d8	94		88-110%	SW-846 8260B	6/30/09	MMM
4-Bromofluorobenzene	102		86-115%	SW-846 8260B	6/30/09	MMM
1,2 Dichloroethane-d4	95		80-120%	SW-846 8260B	6/30/09	MMM

R.I. ANALYTICAL
Specialists in Environmental Services

Case Narrative

Date: 7/1/09 Revised 7/14/2009

GZA GeoEnvironmental Labs
Attn: Mr. Michelle Mirenda
Engineers and Scientists
106 South Street
Hopkinton, MA 01748

Project# 01.0012820.53 DUFFY'S WETLANDS WALTHAM, MA

RIAL WO# 0906-11412

The following exceptions were noted for this Work Order:

The Volatile Organic Compounds Method 8260B detection limits for 1,3-Dichloropropene(total) in samples -001(WETLAND GW 061809), and -002(WETLAND SW 061809) were above the MCP S-1/GW-1 standards of 0.4 ug/l. Most of the LCS/LCSD percent recoveries were within the recommended range of 70-130% except for; Dichlorofluoromethane(64%, 59%). Continuing Calibration Standard (CCAL):The percent difference, from the initial calibration curve, for dichlorodifluoromethane was 41%. The method allows up to six compounds to be greater than 30% with laboratory narration.

Revised The Volatile Organic Compounds Method 8260B to include Acetone, Tertiary Amyl Methyl Ether, tertiary Butanol (TBA) and 1,4-Dioxane the LSCD was not available for all the revised parameters.

There were no additional exceptions or analytical issues to discuss concerning the testing requirements for the project.

Michael J. Hobin
QA/QC Manager

R.I. ANALYTICAL
Specialists in Environmental Services

Customer Name : GZA GeoEnvironmental Labs

W.O. Number 0906-11412

MADEP MCP Response Action Analytical Report Certification Form

Laboratory Name: R.I. Analytical Laboratories Work Order No: 0906-11412

Project / Location: GZA FILE# 01.0012820.53 DUFFY'S WETLANDS WALTHAM, MA MADEP RTN 1 :

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

0906-11412-001 through 0906-11412-002

Sample Matrices: ☑ Groundwater ☐ Soil / Sediment ☐ Drinking Water ☐ Other :

MCP SW-846 Methods As specified in MADEP Compendium of Analytical Methods (check all that apply)					
	8260B (X)	8151A ( )	8330 ( )	6010B( )	7470A/1A( )
	8270C ( )	8081A ( )	VPH ( )	6020 ( )	9014M 2 ( )
	8082 ( )	8021B ( )	EPH ( )	7000 S 3 ( )	OTHER ( )

1 List Release Tracking Number (RTN) if known
2 MCP SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method
3 MCP SW-846 Methods 7000 Series: List individual method and analyte

An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status

A	Were all samples received by the laboratory in a condition consistent with that described on the Chain-of Custody documentation for the data set?	☑ Yes	☐ No 1
B	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	☑ Yes	☐ No 1
C	Does the analytical data included in this report meet all the requirements for "Presumptive Certainty", as described in Section 2.0 of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Aquisition and Reporting of Analytical Data"?	☐ Yes	☑ No 1
D	VPH and EPH methods only: Was the VPH or EPH method run without significant modifications, as specified in Section 11.3?	☐ Yes	☐ No 1

A response to questions E and F below is required for "Presumptive Certainty" status

E	Were all QC performance standards and recommendations for the specified methods achieved?	☐ Yes	☑ No 1
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	☑ Yes	☐ No 1

1 *All NO answers must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ Date: 7/14/09 rev 1

Mike Hobin / QA/QC Manager

41 Illinois Avenue, Warwick, RI 02888
Phone: 401.737.8500 Fax: 401.738.1970

nelac

131 Coolidge Street, Suite 105, Hudson, MA 01749
Phone: 978.568.0041 Fax: 978.568.0078

R.I. ANALYTICAL
Specialists in Environmental Services

QA/QC Report

Client: GZA GeoEnvironmental Labs
WO #: 0906-11412
Date: 6/29/09

-Method Blanks Results-

Parameter	Units	Results	Date Analyzed

Volatile Organics by Method 8260B (Aqueous)

Benzene	ug/l	<1	6/30/2009
Bromobenzene	ug/l	<1	6/30/2009
Bromochloromethane	ug/l	<1	6/30/2009
Bromodichloromethane	ug/l	<1	6/30/2009
Bromoform	ug/l	<1	6/30/2009
Bromomethane	ug/l	<5	6/30/2009
n-Butylbenzene	ug/l	<1	6/30/2009
sec-butylbenzene	ug/l	<1	6/30/2009
tert-Butylbenzene	ug/l	<1	6/30/2009
Carbon tetrachloride	ug/l	<1	6/30/2009
Chlorobenzene	ug/l	<1	6/30/2009
Chloroethane	ug/l	<5	6/30/2009
Chloroform	ug/l	<1	6/30/2009
Chloromethane	ug/l	<5	6/30/2009
2-Chlorotoluene	ug/l	<1	6/30/2009
4-Chlorotoluene	ug/l	<1	6/30/2009
Dibromochloromethane	ug/l	<1	6/30/2009
1,2-Dibromo-3-Chloropropane	ug/l	<2	6/30/2009
1,2-Dibromoethane(EDB)	ug/l	<1	6/30/2009
Dibromomethane	ug/l	<2	6/30/2009
1,2-Dichlorobenzene	ug/l	<1	6/30/2009
1,3-Dichlorobenzene	ug/l	<1	6/30/2009
1,4-Dichlorobenzene	ug/l	<1	6/30/2009
Dichlorodifluoromethane	ug/l	<5	6/30/2009
1,1-Dichloroethane	ug/l	<1	6/30/2009
1,2-Dichloroethane	ug/l	<1	6/30/2009
1,1-Dichloroethene	ug/l	<1	6/30/2009
cis-1,2-Dichloroethene	ug/l	<1	6/30/2009
trans-1,2-Dichloroethylene	ug/l	<1	6/30/2009
1,2-Dichloropropane	ug/l	<1	6/30/2009
1,3-Dichloropropane	ug/l	<1	6/30/2009
2,2-Dichloropropane	ug/l	<1	6/30/2009
1,1-Dichloropropene	ug/l	<1	6/30/2009
Ethylbenzene	ug/l	<1	6/30/2009
Hexachlorobutadiene	ug/l	<0.6	6/30/2009
Isopropylbenzene	ug/l	<1	6/30/2009
p-Isopropyltoluene	ug/l	<1	6/30/2009

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Phone: 978.568.0041 Fax: 978.568.0078

QA/QC Report

Client: GZA GeoEnvironmental Labs
WO #: 0906-11412
Date: 6/29/09

-Method Blanks Results-

Parameter	Units	Results	Date Analyzed
Volatile Organics by Method 8260B (Aqueous) (cont'd)			
Methylene Chloride	ug/l	<5	6/30/2009
Naphthalene	ug/l	<1	6/30/2009
n-Propylbenzene	ug/l	<1	6/30/2009
Styrene	ug/l	<1	6/30/2009
1,1,1,2-Tetrachloroethane	ug/l	<1	6/30/2009
1,1,2,2-Tetrachloroethane	ug/l	<1	6/30/2009
Tetrachloroethene	ug/l	<1	6/30/2009
Toluene	ug/l	<1	6/30/2009
1,2,3-Trichlorobenzene	ug/l	<1	6/30/2009
1,2,4-Trichlorobenzene	ug/l	<1	6/30/2009
1,1,1-Trichloroethane	ug/l	<1	6/30/2009
1,1,2-Trichloroethane	ug/l	<1	6/30/2009
Trichloroethene	ug/l	<1	6/30/2009
Trichlorofluoromethane	ug/l	<1	6/30/2009
1,2,3-Trichloropropane	ug/l	<1	6/30/2009
1,2,4-Trimethylbenzene	ug/l	<1	6/30/2009
1,3,5-Trimethylbenzene	ug/l	<1	6/30/2009
Vinyl Chloride	ug/l	<1	6/30/2009
o-Xylene	ug/l	<1	6/30/2009
m,p-Xylene	ug/l	<1	6/30/2009
MTBE	ug/l	<2	6/30/2009
Surrogates	**RANGE**		6/30/2009
Dibromofluoromethane	86-118%	100	6/30/2009
Toluene-d8	88-110%	94	6/30/2009
4-Bromofluorobenzene	86-115%	101	6/30/2009
1,2 Dichloroethane-d4	80-120%	104	6/30/2009
Volatile Organics by Method 8260 (Aqueous)			
Acetone	ug/l	<10	6/30/2009
1,4-Dioxane	ug/l	<100	6/30/2009
Tertiary Amyl Methyl Ether	ug/l	<5	6/30/2009
Tertiary Butanol (TBA)	ug/l	<25	6/30/2009

-LCS/LCS Duplicate Data Results-

QA/QC Report

Client: GZA GeoEnvironmental Labs
WO #: 0906-11412
Date: 6/29/09

-LCS/LCS Duplicate Data Results-

Parameter	Spike Conc	LCS Conc	LCS % Rec	LCS Dup Conc	LCS DUP % Rec	% RPD	Date Analyzed
Volatile Organics by Method 8260B (Aqueous)							
Benzene	50	50.0	100	49.4	99	1	6/30/2009
Bromobenzene	50	46.8	94	43.6	87	7	6/30/2009
Bromochloromethane	50	51.9	104	49.2	98	5	6/30/2009
Bromodichloromethane	50	52.5	105	54.6	109	4	6/30/2009
Bromoform	50	46.5	93	43.0	86	8	6/30/2009
Bromomethane	50	42.4	85	38.1	76	11	6/30/2009
n-Butylbenzene	50	47.1	94	48.1	96	2	6/30/2009
sec-Butylbenzene	50	42.7	85	39.2	78	9	6/30/2009
tert-Butylbenzene	50	43.9	88	40.7	81	8	6/30/2009
Carbon tetrachloride	50	44.2	88	51.3	103	16	6/30/2009
Chlorobenzene	50	45.6	91	44.4	89	3	6/30/2009
Chloroethane	50	42.5	85	38.5	77	10	6/30/2009
Chloroform	50	51.0	102	47.8	96	6	6/30/2009
Chloromethane	50	64.5	129	61.7	123	4	6/30/2009
2-Chlorotoluene	50	46.3	93	43.5	87	6	6/30/2009
4-Chlorotoluene	50	46.4	93	43.1	86	7	6/30/2009
Dibromochloromethane	50	57.2	114	60.9	122	6	6/30/2009
1,2-Dibromo-3-Chloropropane	50	48.1	96	50.2	100	4	6/30/2009
1,2-Dibromoethane(EDB)	50	53.6	107	50.9	102	5	6/30/2009
Dibromomethane	50	53.5	107	54.2	108	1	6/30/2009
1,2-Dichlorobenzene	50	48.9	98	48.4	97	1	6/30/2009
1,3-Dichlorobenzene	50	44.9	90	41.2	82	9	6/30/2009
1,4-Dichlorobenzene	50	46.4	93	46.7	93	1	6/30/2009
Dichlorodifluoromethane	50	32.2	64	29.6	59	8	6/30/2009
1,1-Dichloroethane	50	50.5	101	46.2	92	9	6/30/2009
1,2-Dichloroethane	50	49.7	99	49.8	100	0	6/30/2009
1,1-Dichloroethene	50	51.3	103	50.9	102	1	6/30/2009
cis-1,2-Dichloroethene	50	53.7	107	51.4	103	4	6/30/2009
trans-1,2-Dichloroethylene	50	52.1	104	45.9	92	13	6/30/2009
1,2-Dichloropropane	50	48.9	98	50.3	101	3	6/30/2009
1,3-Dichloropropane	50	52.2	104	51.1	102	2	6/30/2009
2,2-Dichloropropane	50	60.2	120	56.2	112	7	6/30/2009
1,1-Dichloropropene	50	49.9	100	57.3	115	14	6/30/2009
Ethylbenzene	50	47.7	95	45.4	91	5	6/30/2009
Hexachlorobutadiene	50	47.8	96	48.5	97	1	6/30/2009

QA/QC Report

Client: GZA GeoEnvironmental Labs
WO #: 0906-11412
Date: 6/29/09

-LCS/LCS Duplicate Data Results-

Parameter	Spike Conc	LCS Conc	LCS % Rec	LCS Dup Conc	LCS DUP % Rec	% RPD	Date Analyzed
Volatile Organics by Method 8260B (Aqueous) (cont'd)							
Isopropylbenzene	50	46.0	92	44.5	89	3	6/30/2009
p-Isopropyltoluene	50	42.6	85	38.8	78	9	6/30/2009
Methylene Chloride	50	52.2	104	49.7	99	5	6/30/2009
Naphthalene	50	49.2	98	50.5	101	3	6/30/2009
n-Propylbenzene	50	47.8	96	45.1	90	6	6/30/2009
Styrene	50	45.3	91	42.5	85	6	6/30/2009
1,1,1,2-Tetrachloroethane	50	47.9	96	47.0	94	2	6/30/2009
1,1,2,2-Tetrachloroethane	50	45.4	91	43.5	87	4	6/30/2009
Tetrachloroethene	50	52.6	105	52.5	105	0	6/30/2009
Toluene	50	51.5	103	49.9	100	3	6/30/2009
1,2,3-Trichlorobenzene	50	42.6	85	40.6	81	5	6/30/2009
1,2,4-Trichlorobenzene	50	44.1	88	43.7	87	1	6/30/2009
1,1,1-Trichloroethane	50	52.6	105	53.1	106	1	6/30/2009
1,1,2-Trichloroethane	50	53.6	107	51.8	104	3	6/30/2009
Trichloroethene	50	50.3	101	52.6	105	4	6/30/2009
Trichlorofluoromethane	50	47.8	96	44.2	88	8	6/30/2009
1,2,3-Trichloropropane	50	42.6	85	40.5	81	5	6/30/2009
1,2,4-Trimethylbenzene	50	43.4	87	40.1	80	8	6/30/2009
1,3,5-Trimethylbenzene	50	43.5	87	40.4	81	7	6/30/2009
Vinyl Chloride	50	55.7	111	52.7	105	6	6/30/2009
o-Xylene	50	45.3	91	43.9	88	3	6/30/2009
m,p-Xylene	100	99.1	99	93.8	94	5	6/30/2009
MTBE	50	56.3	113	49.5	99	13	6/30/2009
Surrogates							
Dibromofluoromethane		109		101			
Toluene-d8		109		102			
4-Bromofluorobenzene		105		97			
1,2 Dichloroethane-d4		95		103			
Volatile Organics by Method 8260 (Aqueous)							
Acetone	50	51.5	103	59.9	120	15	6/30/2009
Tertiary Amyl Methyl Ether	50	45.4	91				6/30/2009
Tertiary Butanol (TBA)	250	204	82				6/30/2009

CHAIN-OF-CUSTODY RECORD

Rial/

W.O. # O

Sample I.D.	Date/Time Sampled	Matrix A=Air S=Soil GW=Ground W. SW=Surface W. WW=Waste W. DW=Drinking W. P=Product Other (specify)	☐ pH ☐ Cond.	GC Methane, Ethane, Ethene	EPA 8260 /MA MCP	EPA 8260/8010 List (Chlor.)	EPA 8260 – 8021 list	EPA 8021 – 8020 List (BTEX)	EPA 524.2 DW VOCs	EPA 624 WW VOCs	☐ 601 ☐ 602 WW VOCs	EPA 8270 FULL SVOCs	EPA 8270 ☐ PAH ☐ A ☐ BN	EPA 625 WW SVOCs	EPA 8082-PCBs	EPA 8081-Pest	TPH-GC (Mod. 8100)	TPH-GC w/FING.	EPH (MA DEP)	VPH (MA DEP)	Metals ☐ PPM-13 ☐ R-8	MCP 14 Metals (MA)	Metals (List Below)**	TCLP – Specify Below	SPLP – Specify Below	EPA 300 ☐ Cl ☐ SO4	EPA 300 ☐ NO2 ☐ NO3
Wetland GW 061809	6/18/09 0915	GW			✓																						
Wetland SW 061809	6/18/09 0930	GW			✓																						
PRESERVATIVE (Cl - HCl, M=Methanol, N - HNO3, S - H2SO4, Na - NaOH, O - Other)*					Cl																						
CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, T-Teflon, O-Other)*					V																						

RELINQUISHED BY: (AFFILIATION)	DATE/TIME	RECEIVED BY: (AFFILIATION)
[signature]	6/29/09 1530	George Millett 6-29-09 17:15
George Millett	6-29-09 - 18:10	Trish Whelan

NOTES: (Unless otherwise noted, all samples have been refrigerated to 4° C)
*Specify "Other" preservatives and containers types in this space.

Report Method Blank and Laboratory
Control Sample Results

Requires MCP MA
Reporting Protocols

due 7/1/09 by 1400hrs.

PROJECT MANAGER: Michelle Miranda EXT: 4710

TURNAROUND TIME: Standard Rush 2 Days, Approved by ______

LAB USE:
TEMP. OF COOLER ______

GZA GEOENVIRONMENTAL, INC.
Labaratory Division

106 South Street
Hopkinton, MA 01748
(781) 278-4700
FAX (508) 435-9912

GZA FILE NO: 01.0012820.53 TASK NO: 004 P.O. NO. ______

PROJECT Duffy's Wetlands

LOCATION Waltham, MA

COLLECTOR(S) J.M.

SHEET ______

GZA GeoEnvironmental, Inc.
106 South Street
Hopkinton, MA 01748
(781) 278-4700

Laboratory Identification Numbers:
MA and ME: **MA092** NH: **2028**
CT: **PH0579** RI: **LAO00236**
NELAC - NYS DOH: **11063**

ANALYTICAL REPORT

GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062

Tim Briggs

Project No.: **01.0012820.53**
Work Order No.: **0906-00131**
Date Received: **06/18/2009**
Date Reported: **07/01/2009**

SAMPLE INFORMATION

Date Sampled	Matrix	Laboratory ID	Sample ID
06/18/2009	Aqueous	0906-00131 001	Wetland GW 061809
06/18/2009	Aqueous	0906-00131 002	Wetland SW 061809

GZA GeoEnvironmental, Inc.
106 South Street
Hopkinton, MA 01748
(781) 278-4700

ANALYTICAL REPORT

GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062

Tim Briggs

Project Name.: **Duffy's**
Project No.: **01.0012820.53**

Date Received: **06/18/2009**
Date Reported: **07/01/2009**
Work Order No.: **0906-00131**

PROJECT NARRATIVE:

1. Sample Receipt

The samples were received on 06/18/09 via _x_GZA courier, __EC, __FEDEX, or ___hand delivered. The temperature of the __temperature blank/_x_cooler air, was 2.7 degrees C. The temperature requirement for most analyses is above freezing to 6 degrees C. The samples were received intact for all requested analyses.

The chain of custody indicates that the samples, when required, were chemically preserved in accordance with the method they reference.

2. Subcontracted Analyses

Analyses for SVOC's, Total Residual Chlorine, PCB's by EPA 608, TSS, TPH by 1664, Cyanide and EDB by 504.1 were subcontracted to ESS Laboratory, Cranston, RI;

Analyses for Volatile Organics was performed by R.I. Analytical Laboratories, Inc, Warwick RI. Certification MA: MA-RI015, NH: 253700 A&B, CT: PH-0508, ME: RI015, RI: RI-033, NY:11726

The data is included in GZA's report for ease of electronic data transfer and is indicated by "XXX" in the tech column. The data report from the subcontractor is attached.

3. Method SM 18 3500 Cr(D) - Hexavalent Chromium

Attach QC 06/18/09

4. EPA Method 6010B/7470A- Metals

All samples were pre-concentrated 5 times in order to reach the required reporting limits for As (0.005mg/L) and Cu (0.005 mg/L).

Attach QC 6010B 06/19/09 B - Aqueous
Attach QC 7470A 06/24/09 - Aqueous

GZA GeoEnvironmental, Inc.
106 South Street
Hopkinton, MA 01748
(781) 278-4700

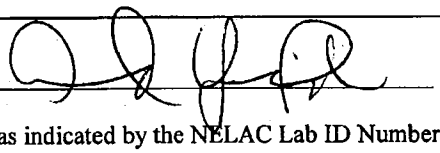
ANALYTICAL REPORT

GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062

Tim Briggs

Project Name.: **Duffy's**
Project No.: **01.0012820.53**

Date Received: **06/18/2009**
Date Reported: **07/01/2009**
Work Order No.: **0906-00131**

Data Authorized By: 

NELAC certification, as indicated by the NELAC Lab ID Number, is per analyte. For a complete list of NELAC validated analytes, please contact the laboratory.

Abbreviations:
% R = % Recovery
DF = Dilution Factor
DFS = Dilution Factor Solids
CF = Calculation Factor
DO = Diluted Out

Method Key:
Method 8260: The current version of the method is 8260B.
Method 8270: The current version of the method is 8270D.
Method 6010: The current version of the method is 6010B.

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.
Matrix Spike / Matrix Spike Duplicate sets are performed as per method and are reported at the end of the analytical report if assigned on the Chain of Custody.

GZA GeoEnvironmental, Inc.
106 South Street
Hopkinton, MA 01748
(781) 278-4700

ANALYTICAL REPORT

GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062

Tim Briggs

Project Name.: **Duffy's**
Project No.: **01.0012820.53**

Date Received: **06/18/2009**
Date Reported: **07/01/2009**
Work Order No.: **0906-00131**

Sample ID: **Wetland GW 061809**
Sample No.: **001**
Sample Date: **06/18/2009**

Test Performed	Method	Results	Units	Tech	Analysis Date
METALS					
Lead	EPA 6010B	0.18	mg/L	LLZ	06/19/2009
Iron	EPA 6010B	29	mg/L	LLZ	06/19/2009
Antimony	EPA 6010B	<0.025	mg/L	LLZ	06/19/2009
Arsenic	EPA 6010B	0.036	mg/L	LLZ	06/19/2009
Cadmium	EPA 6010B	<0.0050	mg/L	LLZ	06/19/2009
Chromium	EPA 6010B	0.0089	mg/L	LLZ	06/19/2009
Copper	EPA 6010B	0.046	mg/L	LLZ	06/19/2009
Nickel	EPA 6010B	0.015	mg/L	LLZ	06/19/2009
Selenium	EPA 6010B	<0.025	mg/L	LLZ	06/19/2009
Silver	EPA 6010B	<0.0050	mg/L	LLZ	06/19/2009
Zinc	EPA 6010B	0.20	mg/L	LLZ	06/19/2009
Mercury	EPA 7470A	<0.00020	mg/L	TN	06/25/2009
Hexavalent Chromium	SM 3500CrD	<0.010	mg/L	LLZ	06/18/2009
SUBCONTRACTED ANALYTES					
GC-MS SEMIVOLATILES	EPA 8270C			XXX	06/24/2009
Residual Chlorine	SM4500-CL,D	<0.02	mg/L	XXX	06/18/2009
PCB	EPA 608			XXX	06/22/2009
Total Suspended Solids	SM-2540D	142	mg/L	XXX	06/18/2009
TPH via Method 1664	EPA 1664	<5	mg/L	XXX	06/22/2009
Total Cyanide	SM4500CN C E	<0.050	mg/L	XXX	06/23/2009
VOLATILE ORANIC COMPOUNDS	EPA 8260B			XXX	

GZA GeoEnvironmental, Inc.
106 South Street
Hopkinton, MA 01748
(781) 278-4700

ANALYTICAL REPORT

GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062

Tim Briggs

Project Name.: **Duffy's**
Project No.: **01.0012820.53**

Date Received: **06/18/2009**
Date Reported: **07/01/2009**
Work Order No.: **0906-00131**

Sample ID: **Wetland SW 061809**
Sample No.: **002**
Sample Date: **06/18/2009**

Test Performed	Method	Results	Units	Tech	Analysis Date
METALS					
Lead	EPA 6010B	1.3	mg/L	LLZ	06/19/2009
Iron	EPA 6010B	130	mg/L	LLZ	06/22/2009
Antimony	EPA 6010B	<0.025	mg/L	LLZ	06/19/2009
Arsenic	EPA 6010B	0.040	mg/L	LLZ	06/19/2009
Cadmium	EPA 6010B	0.0065	mg/L	LLZ	06/19/2009
Chromium	EPA 6010B	0.078	mg/L	LLZ	06/19/2009
Copper	EPA 6010B	0.21	mg/L	LLZ	06/19/2009
Nickel	EPA 6010B	0.040	mg/L	LLZ	06/19/2009
Selenium	EPA 6010B	<0.025	mg/L	LLZ	06/19/2009
Silver	EPA 6010B	<0.0050	mg/L	LLZ	06/19/2009
Zinc	EPA 6010B	1.0	mg/L	LLZ	06/19/2009
Mercury	EPA 7470A	<0.00020	mg/L	TN	06/25/2009
Hexavalent Chromium	SM 3500CrD	<0.010	mg/L	LLZ	06/18/2009
SUBCONTRACTED ANALYTES					
GC-MS SEMIVOLATILES	EPA 8270C			XXX	06/24/2009
Residual Chlorine	SM4500-CL,D	<0.02	mg/L	XXX	06/18/2009
PCB	EPA 608			XXX	06/22/2009
Total Suspended Solids	SM-2540D	386	mg/L	XXX	06/18/2009
TPH via Method 1664	EPA 1664	63	mg/L	XXX	06/22/2009
Total Cyanide	SM 4500CN C E	<0.050	mg/L	XXX	06/23/2009
VOLATILE ORANIC COMPOUNDS	EPA 8260B			XXX	

GZA GEOENVIRONMENTAL, INC.
ENVIRONMENTAL CHEMISTRY LABORATORY
106 SOUTH ST, HOPKINTON, MA 01748
MASSACHUSETTS LABORATORY I.D. NO. MA092

EPA METHOD 7196A/SM 18 3500 CR (d) ANALYSIS
Hexavalent Chromium by Colorometric Method

QUALITY CONTROL - AQUEOUS

Date Prepared: 06/18/09

QC Sample	Method Blank	Lab Control Sample	Lab Control Sample Duplicate	LC/LCD Difference
Units	mg/L	% Recovery	% Recovery	RPD
Acceptance Limits	Results	80-120	80-120	20%
Analyte				
Hex Cr (Cr+6)	<0.010	110	100	9.52

RPD = Relative Percent Difference

GZA GEOENVIRONMENTAL, INC.
ENVIRONMENTAL CHEMISTRY LABORATORY
106 SOUTH ST, HOPKINTON, MA 01748
MASSACHUSETTS LABORATORY I.D. NO. MA092

EPA METHOD 6010B ANALYSIS
Metals by ICP

QUALITY CONTROL - AQUEOUS

DATE PREPARED: 6/19/2009 B

QC Sample	Method Blank	Lab Control Sample	LC Duplicate	LC/LCD Diff.
Units	mg/L	% Recovery	% Recovery	RPD
Acceptance Limits	Results	80-120	80-120	20%
Analyte				
Silver (Ag)	<0.0050	94.0	94.6	0.64
Aluminum (Al)	NA	NA	NA	NA
Arsenic (As)	<0.0050	99.8	101	1.32
Boron (B)	NA	NA	NA	NA
Barium (Ba)	NA	NA	NA	NA
Beryllium (Be)	NA	NA	NA	NA
Calcium (Ca)	NA	NA	NA	NA
Cadmium (Cd)	<0.0050	98.7	99.2	0.57
Cobalt (Co)	NA	NA	NA	NA
Chromium (Cr)	<0.0050	100	101	0.58
Copper (Cu)	<0.0030	111	112	0.14
Iron (Fe)	<0.025	104	102	2.00
Magnesium (Mg)	NA	NA	NA	NA
Manganese (Mn)	NA	NA	NA	NA
Molybdenum (Mo)	NA	NA	NA	NA
Nickel (Ni)	<0.010	102	102	0.27
Lead (Pb)	<0.010	98.1	99.6	1.51
Antimony (Sb)	<0.025	102	103	1.39
Selenium (Se)	<0.025	102	103	1.14
Strontium (Sr)	NA	NA	NA	NA
Titanium (Ti)	NA	NA	NA	NA
Thallium (Tl)	NA	NA	NA	NA
Vanadium (V)	NA	NA	NA	NA
Zinc (Zn)	<0.010	106	106	0.16
Zirconium (Zr)	NA	NA	NA	NA
Tin (Sn)	NA	NA	NA	NA

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.

GZA GEOENVIRONMENTAL, INC.
ENVIRONMENTAL CHEMISTRY LABORATORY
106 SOUTH ST, HOPKINTON, MA 01748
MASSACHUSETTS LABORATORY I.D. NO. MA092

EPA METHOD 7470A ANALYSIS
Mercury by Cold Vapor Atomic Absorption

QUALITY CONTROL - AQUEOUS

Date Prepared : 06/24/09

QC Sample	Method Blank	Lab Control Sample	Lab Control Sample Duplicate	LC/LCD Difference
Units	mg/L	% Recovery	% Recovery	RPD
Acceptance Limits	Results	80-120	80-120	20%
Analyte				
Mercury (Hg)	<0.00020	93.0	96.2	3.36

RPD = Relative Percent Difference

CHAIN-OF-CUSTODY RECORD

W.O. #_

Sample I.D.	Date/Time Sampled	Matrix (A=Air, S=Soil, GW=Ground W., SW=Surface W., WW=Waste W., DW=Drinking W., P=Product, Other (specify))	ANALYSIS REQUIRED: J pH J Cond.	GC Methane, Ethane, Ethene	EPA 8260	EPA 8260 - 5010 List (Chlor.)	EPA 8260 - 8021 list	EPA 8021 - 602C List (BTEX)	EPA 524.2 DW VOCs	EPA 624 WW VOCs	J 601 J 602 WW VOCs	EPA 8270 FULL SVOCs	EPA 8270 J PAH J A J BN	EPA 625 WW SVOCs	EPA 8082-PCBs	EPA 8081-Pest	TPH-GC (Mod. 8100)	TPH-GC w/FING.	EPH (MA DEP)	VPH (MA DEP)	Metals J PPM-13 J R-8	MCP 14 Metals (MA)	Metals (List Below) 1	TCLP - Specify Below	SPLP - Specify Below	EPA 300 J Cl J SO4
[redacted]																										
WETLAND GW 01809	6/18/09 9:15	GW			X							X											X			
WETLAND SW 01809	6/18/09 9:30	SW			X							X											X			
PRESERVATIVE (Cl - HCl, M=Methanol, N - HNO3, S - H2SO4, Na - NaOH, O - Other)*					10																		N			
CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, T-Teflon, O-Other)*					V							G											P			

RELINQUISHED BY: (AFFILIATION) DATE/TIME RECEIVED BY: (AFFILIATION)

J. Mello (GZA) 6/18/09 1010 B Briggs

RELINQUISHED BY: (AFFILIATION) DATE/TIME RECEIVED BY: (AFFILIATION)

B Briggs 6/18/09 1535 [illegible] 6/18/09 1730

RELINQUISHED BY: (AFFILIATION) DATE/TIME RECEIVED BY: (AFFILIATION)

NOTES: (Unless otherwise noted, all samples have been refrigerated to 4° C)
"Specify "Other" preservatives and containers types in this space.

1. Method 6010 - Test For SB, AS, CD, CR CU, PB, NI, SE, AG, ZN, & FE
2. Method SM4500CLD
3. Method EPA 608

4. Method SM
5. Method 1
6. Method 7

SEE ATTACHED RGP

PROJECT MANAGER: T. Briggs EXT:

TURNAROUND TIME: Standard Rush___ Days, Approved by _____ LAB USE: TEMP. OF COOL

GZA GeoEnvironmental, Inc.
Labaratory Division

106 South Street
Hopkinton, MA 01748
(781) 278-4700
FAX (508) 435-9912

GZA FILE NO: 01.0012920.53 TASK NO: 064 P.O.

PROJECT Duffy Wetlands

LOCATION 411 Waverly Oaks Rd, Waltham MA

COLLECTOR(S) J. Mello SHEET

CHAIN-OF-CUSTODY RECORD

W.O. # 0906-00131
(for lab use only)

Sample I.D.	Date/Time Sampled	Matrix (A=Air, S=Soil, GW=Ground W., SW=Surface W., WW=Waste W., DW=Drinking W., P=Product, Other (specify))	pH Cond.	GC Methane, Ethane, Ethene	EPA 8260	EPA 8260 - 8010 List (Chlor.)	EPA 8260 - 8021 list	EPA 8021 - 8020 List (BTEX)	EPA 524.2 DW VOCs	EPA 624 WW VOCs	601 602 WW VOCs	EPA 8270 FULL SVOCs	EPA 8270 PAH A BN	EPA 625 WW SVOCs	EPA 8082-PCBs	EPA 8081-Pest	TPH-GC (Mod. 8100)	TPH-GC w/FING.	EPH (MA DEP)	VPH (MA DEP)	Metals PPM-13 R-8	MCP 14 Metals (MA)	Metals (List Below)**	TCLP - Specify Below	SPLP - Specify Below	EPA 300 Cl SO4	EPA 300 NO2 NO3	(1) HEXACHROM	(2) TOTAL CYANIDE	(3) EDB			Total # of Cont.	Note #
WETLANDGW061809	6/18/09 9:15	GW																										X	X	X			5 (15)	
WETLANDSW061809	6/18/09 9:30	SW																										X	X	X			5 (15)	

PRESERVATIVE (Cl - HCl, M=Methanol, N - HNO3, S - H2SO4, Na - NaOH, O - Other)*: (2) NaOH; (3) Cl

CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, T-Teflon, O-Other)*: (1) P; (2) P; (3) V

RELINQUISHED BY: (AFFILIATION)	DATE/TIME	RECEIVED BY: (AFFILIATION)	DATE/TIME
J. Mello (GZA)	6/18/09 1010	Bill Bearon	
Bill Bearon	6/18/09 1055	[illegible]	6/18/09 1430

NOTES: (Unless otherwise noted, all samples have been refrigerated to 4° C)
*Specify "Other" preservatives and containers types in this space.

(1) Method SM3500CRD
(2) Method SM4500CN-CE
(3) Method 504.1

SEE ATTACHED RGP

PROJECT MANAGER: T. Biggs EXT:

TURNAROUND TIME: Standard Rush___ Days, Approved by ________

LAB USE:
TEMP. OF COOLER 2.7 °C Temp Blank / Cooler Air (circled) 6/18/09 1100

GZA FILE NO: 01.0012820.53 TASK NO: 004 P.O. NO.

PROJECT Duffy's Wetlands

LOCATION 411 Waverley Oaks Rd, Waltham MA

COLLECTOR(S) J. Mello

SHEET 2 OF 2

GZA GeoEnvironmental, Inc.
Labaratory Division

106 South Street
Hopkinton, MA 01748
(781) 278-4700
FAX (508) 435-9912

ATTACHMENT 6

SUPPLEMENTAL INFORMATION – 7Q10 DATA FOR BEAVER BROOK

StreamStats

Streamflow Statistics Report

Date: Mon Jul 21 2008 14:58:35
Site Location: Massachusetts
Drainage Area: 5.31 mi2
Latitude (NAD83): 42.3846 (42 23 04)
Longitude (NAD83): -71.2034 (-71 12 12)

Low Flow Basin Characteristics			
100% Statewide Low Flow (5.31 mi2)			
Parameter	Value	Min	Max
Drainage Area (square miles)	5.31	1.61	149
Mean Basin Slope from 250K DEM (percent)	2.31	0.32	24.6
Stratified Drift per Stream Length (square mile per mile)	0.12	0	1.29
Massachusetts Region (dimensionless)	0	0	1

Streamflow Statistics					
Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
D50	5.24	18		2.63	10.4
D60	3.65	20		0.32	41
D70	2.09	24		0.26	16.5
D75	1.59	26		0.23	11
D80	1.2	28		0.56	2.54
D85	0.87	32		0.39	1.93
D90	0.61	37		0.26	1.43
D95	0.35	46		0.13	0.89
D98	0.22	60		0.0722	0.65
D99	0.16	65		0.0496	0.5
Low-Flow Statistics					
M7D2Y	0.38	50		0.14	1.01
AUGD50	0.93	33		0.41	2.09

GZA
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http://www.gza.com

Engineers and Scientists

JOB 01.0012820.53
SHEET NO. 1 OF 1
CALCULATED BY Saroj Chintalapati DATE 7/24/09
CHECKED BY Tim Briggs DATE 7/24/09
SCALE N/A

Dilution factor Calculations:

$$\text{Dilution Factor, } D_F = \frac{Q_d + Q_s}{Q_d}$$

where, Q_d = Maximum flowrate of discharge in cubic feet Per second (cfs)

(1 GPm = 0.00223 cfs)

Q_s = Receiving water 7Q10 flow (cfs)

(From USGS streamstats website)

Q_d = 125 GPm = 0.278 cfs

Q_s = 0.14 cfs

$$\therefore D_F = \frac{0.278 + 0.14}{0.278} = 1.50$$