



April 27, 2018

Ms. Raena C. Blumenthal
Director, Parks & Recreation
Town of Coventry
1277 Main Street
Coventry, Rhode Island 02816

Sent Via Email: rblumenthal@coventryri.org

**RE: Tiogue Lake
Surface Water Sampling Report
Coventry, Rhode Island
AEG Project # 1832-02**

Dear Ms. Blumenthal:

Alliance Environmental Group / An F.W. Webb Company (AEG) is pleased to submit this surface water sampling report for Tiogue Lake; referred to herein as the "Site".

BACKGROUND

The Town of Coventry (Town) is a Potentially Responsible Party (PRP) for the former Town of Coventry Landfill (CLF) project. The Town agreed to sample Tiogue Lake on a quarterly basis during project implementation, until the placement of the final impermeable cap, which is estimated to be completed in 2019 or 2020. The initial sampling event took place in June 2016, and AEG is currently sampling Tiogue Lake on a generally quarterly basis.

CURRENT SAMPLING EVENT

The 2nd quarter 2018 sampling was conducted on April 11, 2018. During the event, an AEG representative collected three surface water samples at Tiogue Lake (Surface Water 1 through Surface Water 3), replicating the collection points from the initial and subsequent sampling events. A representative of the Town of Coventry Department of Parks and Recreation was present on-Site during sampling.

The surface water samples were submitted to a Rhode Island-certified laboratory (R.I. Analytical of Warwick, Rhode Island) for analysis of total and dissolved lead, referencing EPA Method 200.8, on a standard turnaround.

The surface water sampling results are summarized in Table 1 (located in Attachment 1). A copy of the laboratory analytical report is included as Attachment 2.

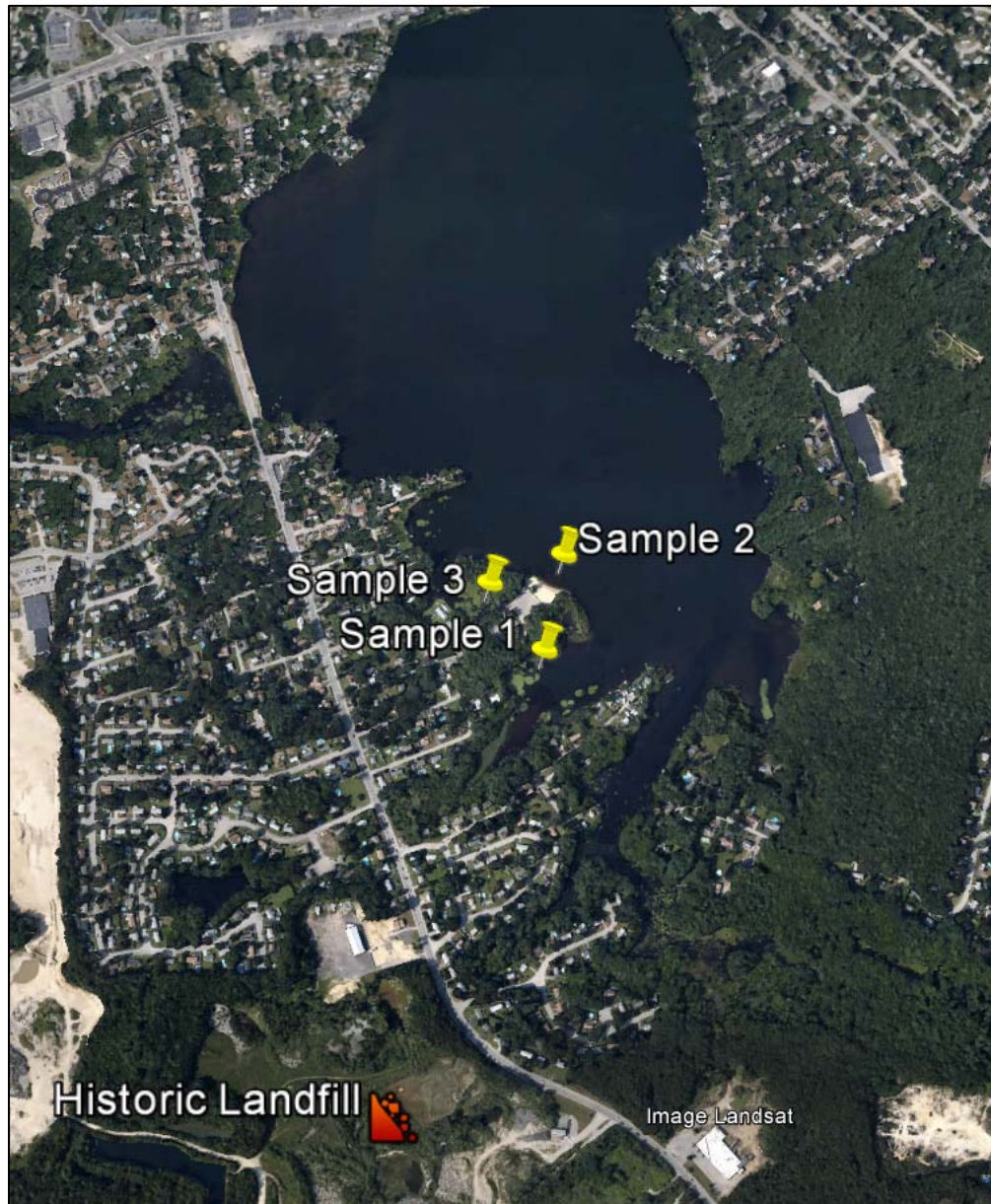


Figure 1 – Surface Water Sampling Locations (Map Data ©Google 2016)

SURFACE WATER SAMPLING RESULTS

According to the Rhode Island Department of Environmental Management (RIDEM), Tiogue Lake (water body identification number RI0006014L-02) is classified as Surface Water B (partial use designation) and a Warmwater Fishery.

The RIDEM Water Quality Regulations, amended in May 2009, contain the equations and criteria used to calculate the Aquatic Life Fresh Water Acute and Chronic Exposure Concentrations. There are no criteria recommendations for human health regarding the consumption of aquatic organisms impacted with lead.

In order to utilize the equations and criteria promulgated in the Water Quality Regulations, AEG first obtained the alkalinity hardness value of 22.7 milligrams per liter (mg/L) (i.e., the mean yearly concentration of calcium carbonate (CaCO₃) for Tiogue Lake¹). The conversion factor (CF) used to derive the aquatic life freshwater acute and chronic exposure included: $CF = 1.46203 - [(\ln H) \times 0.145712]$; where $[\ln H]$ = natural log of hardness measured as CaCO₃. In accordance with the Water Quality Regulations, when an ambient hardness of less than 25 mg/L is used to establish criteria for lead, the hardness dependent CF should not exceed 1. Since the calculated CF was 1.0071, a CF value of 1.0 was used for the calculation.

For an alternative comparison, AEG compared the dissolved lead concentrations against the United States Environmental Protection Agency (USEPA) Lowest National Ambient Water Quality Criteria (NAWQC). USEPA's compilation of national recommended water quality criteria contains the recommended water quality criteria for the protection of aquatic life and human health in surface water for approximately 150 pollutants. These criteria are published pursuant to Section 304(a) of the Clean Water Act (CWA).

The analytical results indicated that the total lead concentrations ranged from 0.58 micrograms per liter (µg/L) in the Surface Water 1 sample to 0.67 µg/L in the Surface Water 3 sample. The dissolved lead concentrations were below the laboratory reporting limit of 0.50 µg/L in each of the three samples, indicating that no exceedances of applicable criteria were present at the time of sampling.

SAMPLING SCHEDULE

The lead sampling at Tiogue Lake will continue on a quarterly schedule until the final impermeable cap is constructed at the former CLF. The next sampling event is anticipated to be completed in July 2018.

If you have any questions or concerns, please contact the undersigned at 401-732-7600.

Very truly yours,
Alliance Environmental Group



Joseph Liljegren
Environmental Scientist



Joel Walcott, PE
Sr. Principal Engineer

cc: Ms. Abby Pimentel, Coventry Parks and Recreation

¹ <http://cefs.uri.edu/docslink/ww/14WebFiles/14Alkalinity.pdf>

ATTACHMENT 1

Data Summary Table

Table 1
Surface Water Sampling Results
Tiogue Lake - Coventry RI

	Surface Water Sample 1	Surface Water Sample 2	Surface Water Sample 3	Aquatic Life Criteria Freshwater Acute	Aquatic Life Criteria Freshwater Chronic	Human Health Criteria Consumption of Aquatic Organisms	Lowest NAWQC*
Sampling Date 6/9/2016 - Total and Dissolved Lead (µg/L)							
Total Lead	1.2	<1.0	3.5	NS	NS	NS	NS
Dissolved Lead	<0.5	<0.5	1.2	12	0.5	NS	0.5
Sampling Date 7/1/16 - Total and Dissolved Lead (µg/L)							
Total Lead	<1.0	1.2	<1.0	NS	NS	NS	NS
Dissolved Lead	<0.5	<0.50	<0.50	12	0.5	NS	0.5
Sampling Date 8/24/16 - Total and Dissolved Lead (µg/L)							
Total Lead	<1.0	<1.0	1.4	NS	NS	NS	NS
Dissolved Lead	<0.50	<0.50	<0.50	12	0.5	NS	0.5
Sampling Date 11/30/16 - Total and Dissolved Lead (µg/L)							
Total Lead	1.4	1.9	92	NS	NS	NS	NS
Dissolved Lead	0.55	<0.40	<0.40	12	0.5	NS	0.5
Sampling Date 3/9/17 - Total and Dissolved Lead (µg/L)							
Total Lead	0.73	1.73	0.74	NS	NS	NS	NS
Dissolved Lead	<0.50	<0.50	<0.50	12	0.5	NS	0.5
Sampling Date 6/2/17 - Total and Dissolved Lead (µg/L)							
Total Lead	<1.0	<1.0	1.1	NS	NS	NS	NS
Dissolved Lead	<0.5	<0.5	<0.5	12	0.5	NS	0.5
Sampling Date 9/15/17 - Total and Dissolved Lead (µg/L)							
Total Lead	<1.0	<1.0	<1.0	NS	NS	NS	NS
Dissolved Lead	<0.5	<0.5	<0.5	12	0.5	NS	0.5
Sampling Date 1/3/18 - Total and Dissolved Lead (µg/L)							
Total Lead	N/A	1.1	N/A	NS	NS	NS	NS
Dissolved Lead	N/A	1.1	N/A	12	0.5	NS	0.5
Sampling Date 4/11/18 - Total and Dissolved Lead (µg/L)							
Total Lead	0.58	0.61	0.67	NS	NS	NS	NS
Dissolved Lead	<0.5	<0.5	<0.5	12	0.5	NS	0.5
Notes: NS = No Criteria Established NAWQC = National Ambient Water Quality Criteria Bold = Aquatic Life Criteria Freshwater Chronic and Lowest NAWQC Exceedance <i>Italics</i> = Aquatic Life Criteria Freshwater Acute Exceedance N/A = No Sample Collected							

ATTACHMENT 2

Laboratory Analytical Report

LABORATORY REPORT

Alliance Environmental
Attn: Mr. Felix Perriello
100 Jefferson Boulevard
Suite 220
Warwick, RI 02888

Date Received: 4/11/2018
Date Reported: 4/23/2018
P.O. Number

Work Order #: 1804-07351

Project Name: PROJECT #1832 TIOGUE LAKE

Enclosed are the analytical results and Chain of Custody for your project referenced above. The sample(s) were analyzed by our Warwick, RI laboratory unless noted otherwise. When applicable, indication of sample analysis at our Hudson, MA laboratory and/or subcontracted results are noted and subcontracted reports are enclosed in their entirety.

All samples were analyzed within the established guidelines of US EPA approved methods with all requirements met, unless otherwise noted at the end of a given sample's analytical results or in a case narrative.

The Detection Limit is defined as the lowest level that can be reliably achieved during routine laboratory conditions.

These results only pertain to the samples submitted for this Work Order # and this report shall not be reproduced except in its entirety.

We certify that the following results are true and accurate to the best of our knowledge. If you have questions or need further assistance, please contact our Customer Service Department.

Approved by:



Dawne E. Smart
Data Reporting Manager

Laboratory Certification Numbers (as applicable to sample's origin state):

Warwick RI * RI LAI00033, MA M-RI015, CT PH-0508, ME RI00015, NH 2070, NY 11726

Hudson MA * M-MA1117, RI LAO00319

R.I. Analytical Laboratories, Inc.
Laboratory Report

Alliance Environmental

Work Order #: 1804-07351

Project Name: PROJECT #1832 TIOGUE LAKE

Sample Number: 001
Sample Description: SURFACE WATER 1
Sample Type : GRAB
Sample Date / Time : 4/11/2018 @ 10:00

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Total Metals						
Lead	0.58	0.5	ug/l	EPA 200.8	4/20/2018 16:45	JRW
Dissolved Metals Analyzed by ICPMS						
Lead	<0.5	0.5	ug/l	EPA 200.8	4/18/2018 18:29	AJD
ICPMS Digestion				EPA 200.8	4/17/2018 10:31	DDP
ICPMS Digestion (Dissolved)				EPA 200.8	4/18/2018 14:58	RBR

Sample Number: 002
Sample Description: SURFACE WATER 2
Sample Type : GRAB
Sample Date / Time : 4/11/2018 @ 10:15

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Total Metals						
Lead	0.61	0.5	ug/l	EPA 200.8	4/20/2018 17:07	JRW
Dissolved Metals Analyzed by ICPMS						
Lead	<0.5	0.5	ug/l	EPA 200.8	4/18/2018 18:33	AJD
ICPMS Digestion				EPA 200.8	4/17/2018 10:31	DDP
ICPMS Digestion (Dissolved)				EPA 200.8	4/18/2018 14:58	RBR

Sample Number: 003
Sample Description: SURFACE WATER 3
Sample Type : GRAB
Sample Date / Time : 4/11/2018 @ 10:20

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Total Metals						
Lead	0.67	0.5	ug/l	EPA 200.8	4/20/2018 17:12	JRW
Dissolved Metals Analyzed by ICPMS						
Lead	<0.5	0.5	ug/l	EPA 200.8	4/18/2018 18:34	AJD
ICPMS Digestion				EPA 200.8	4/17/2018 10:31	DDP
ICPMS Digestion (Dissolved)				EPA 200.8	4/18/2018 14:58	RBR

R.I. Analytical Laboratories, Inc.
Laboratory Report

Alliance Environmental

Work Order #: 1804-07351

Project Name: PROJECT #1832 TIOGUE LAKE

Quality Control Sample Report

-Method Blanks-

Parameter	Units	Results	Date Analyzed
Dissolved Metals by ICPMS			
Lead	ug/l	<0.5	4/18/2018
Metals by ICP MassSpec			
Lead	ug/l	<0.5	4/20/2018

-Laboratory Control Standard-

Parameter	Units	Spike Conc.	Detected Conc.	% Rec.	Date Analyzed
Dissolved Metals by ICPMS					
Lead	ug/l	100	99	99	4/18/2018
Lead	ug/l	100	99	99	4/18/2018
Metals by ICP MassSpec					
Lead	ug/l	50	50	100	4/20/2018
Lead	ug/l	50	49	98	4/20/2018

CHAIN OF CUSTODY RECORD

41 Illinois Avenue
Warwick, RI 02888-3007
800-937-2580 • Fax: 401-738-1970

131 Coolidge St., Suite 105
Hudson, MA 01749-1331
800-937-2580 • Fax: 978-568-0078

Field Sample Identification

Date Collected	Time Collected	Field Sample Identification
4/11/18	10:00	Surface Water 1
4/11/18	10:15	Surface Water 2
4/11/18	10:20	Surface Water 3

Grab or Composite	# of Containers & Type ^c	Preservation Code ^p	Matrix Code ^m	Total Lead	Dissolved Lead
G	P2	MMP	SW	X	X
G	P2	MMP	SW	X	X
G	P2	MMP	SW	X	X

Client Information

Company Name: Alliance Environmental Group
Address: 100 Jefferson Blvd
City/State/Zip: Warwick, RI 02888
Telephone: 401-732-7600
Contact Person: Felix Perrillo

Project Information

Project Name: Tioque Lake
P.O. Number: 1832
Project Number: 1832
Report To: Felix Perrillo
Phone: 401-732-7600
Sampled By: Joe C. Jensen
Fax: 401-732-7670
Quote No:
Email report to these addresses: Felix.Perrillo@allenv.com
Bethany.Mong@fwebb.com

Relinquished By Signatures	Date	Time	Received By Signatures	Date	Time
JL	4/11/18	14:39	[Signature]	4/11/18	14:39

Turn Around Time	EMAIL Report fee
Normal	
5 Business days. Possible surcharge	
Rush - Date Due:	/ /

Project Comments

Circle if applicable: GW-1, GW-2, GW-3, S-1, S-2, S-3 MCP Data Enhancement QC Package? Yes No

Dissolved samples not field filtered.

0.5 µg/L detection limit is required.

Temp. Upon Receipt 26 °C

Lab Use Only
Sample Pick-Up Only
RIAL sampled; attach field hours
Shipped on ice
Workorder No: 1801-07351