D'Amore Associates, Inc.

1135 Stafford Road Tiverton, Rhode Island 02878 Email: damoreinc@gmail.com Phone: (978) 807-8301

Environmental Engineering and Ground Water Consulting

September 5, 2019

Melissa Danza
Conservation Agent
Town of Southborough
17 Common Street
Southborough, MA 01772

Re: Breakneck Hill Conservation Area
Leachate Sampling Results

Dear Ms. Danza:

This letter summarizes the results of a leachate sample collected from the downslope side of the farm dump off Breakneck Hill Road. The sample was collected on the morning of August 14, 2019 behind 48 Breakneck Hill Road in an area where an iron-stained seep was observed discharging to an ephemeral stream. The sampling locus is depicted on Figure 1.

The sample, which was analyzed for the full spectrum of contaminants; Priority Pollutant 13 metals, iron, pesticides, volatile organic compounds, PCBs, base/neutral and acid extractable compounds, polyaromatic hydrocarbons, halogenated volatile organic compounds, EPH/VPH compounds, 2,3,7,8-TCDD (indicators for dioxins and furans), was collected from a shallow depression that was created to collect leachate as it travelled toward the ephemeral stream (refer to Figure 2).

The only analytes that were detected were iron and zinc. There is no regulatory standard for iron; and zinc, which was detected at a concentration of 0.006 mg/l is below the GW-3 standard (0.9 mg/l). The sampling results for all of the parameters that were analyzed are included in Table 1. The laboratory report is included as Attachment 1.

Please do not hesitate to contact me with any questions that you may have.

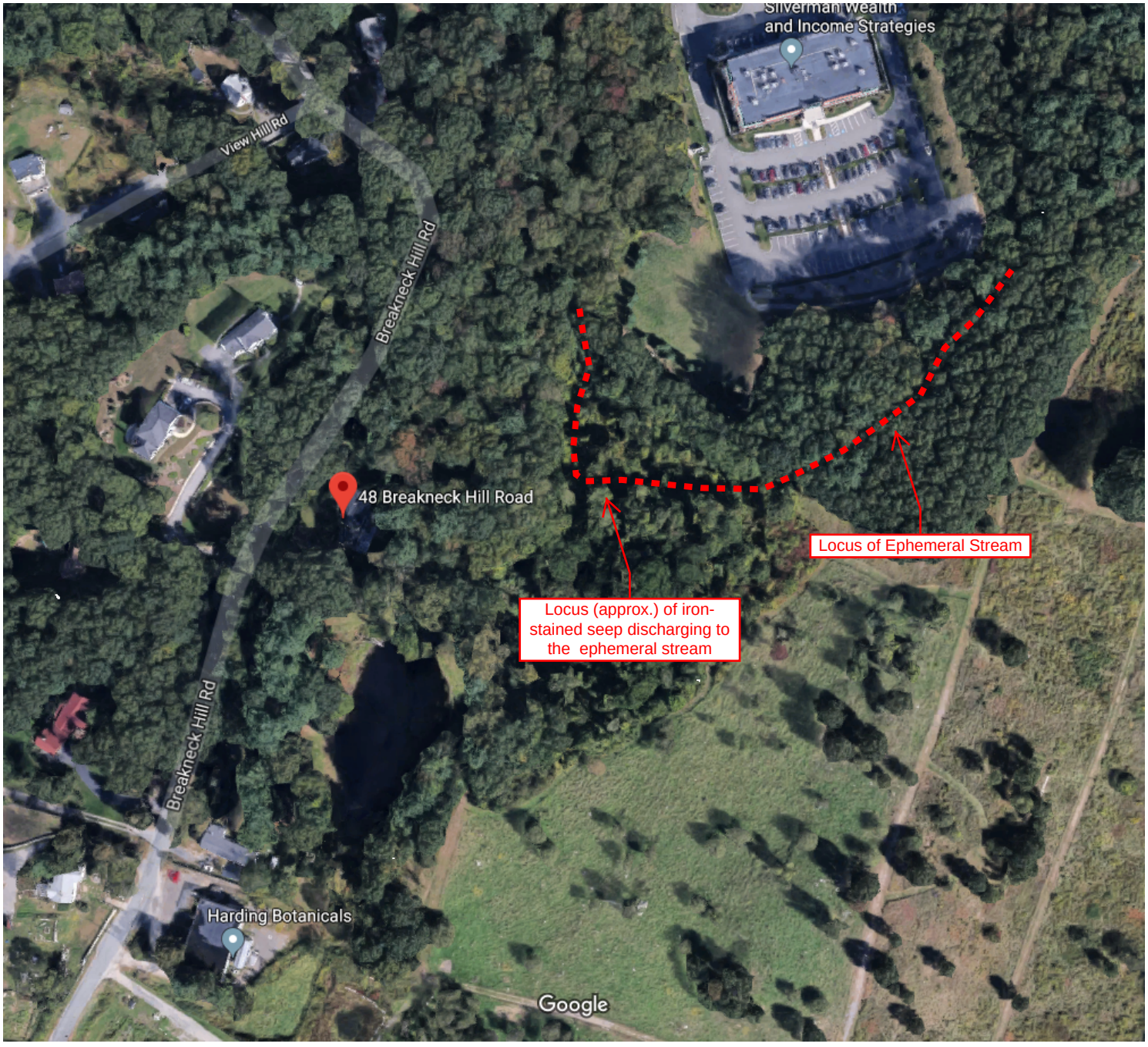
Sincerely,

D'Amore Associates, Inc.

Denis D'Amore, Ph.D., P.E.
Licensed Site Professional

Figures, Table and Laboratory Report

Google Maps 48 Breakneck Hill Rd



Imagery ©2019 Google, Imagery ©2019 MassGIS, Commonwealth of Massachusetts EOEA, Maxar Technologies, Map data ©2019 100 ft

Figure 2

Table 1
Leachate Sampling Results, August 14, 2019
Breakneck Hill Conservation Area

Lab Sample Id	GW-3 Standard	CD86207
Collection Date		8/14/2019
Client Id		BHCA
Matrix		Surface Water
Metals, Dissolved (mg/l)		
Antimony (Dissolved)	8	< 0.005
Arsenic (Dissolved)	0.9	< 0.004
Beryllium (Dissolved)	0.2	< 0.001
Cadmium (Dissolved)	0.004	< 0.001
Chromium (Dissolved)	0.3	< 0.001
Copper (Dissolved)		< 0.005
Thallium (Dissolved)	3	< 0.0003
Iron (Dissolved)		1.43
Lead (Dissolved)	0.01	< 0.002
Mercury (Dissolved)	0.02	< 0.0002
Nickel (Dissolved)	0.2	< 0.001
Selenium (Dissolved)	0.1	< 0.011
Silver (Dissolved)	0.007	< 0.001
Zinc (Dissolved)	0.9	0.006
TPH By MA VPH 5/2004 (ug/l)		
C5-C8 Aliphatic Hydrocarbons *1,2	50,000	< 100
C9-C10 Aromatic Hydrocarbons *1	50,000	< 100
C9-C12 Aliphatic Hydrocarbons *1,3	50,000	< 100
Benzene	10,000	< 1.0
Ethyl Benzene	5,000	< 1.0
MTBE	50,000	< 1.0
Naphthalene	20,000	< 5.0
Toluene	40,000	< 1.0
m,p-Xylenes		< 2.0
o-Xylene		< 1.0
MA EPH Aliphatic/Aromatic Ranges By MAEPH 5/2004 (ug/l)		
C11-C22 Aromatic Hydrocarbons 1,2*	5,000	< 190
C19-C36 Aliphatic Hydrocarbons 1*	50,000	< 190
C9-C18 Aliphatic Hydrocarbons 1*	50,000	< 190
PCBs By SW8082A (ug/l)		
PCB-1016	10	< 0.095
PCB-1221	10	< 0.095
PCB-1232	10	< 0.095
PCB-1242	10	< 0.095
PCB-1248	10	< 0.095
PCB-1254	10	< 0.095
PCB-1260	10	< 0.095
PCB-1262		< 0.095

PCB-1268		< 0.095
Volatiles By SW8260C (ug/l)		
1,1,1,2-Tetrachloroethane	50,000	< 1.0
1,1,1-Trichloroethane	20,000	< 1.0
1,1,2,2-Tetrachloroethane	50,000	< 0.50
1,1,2-Trichloroethane	50,000	< 1.0
1,1-Dichloroethane	20,000	< 1.0
1,1-Dichloroethene	30,000	< 1.0
1,1-Dichloropropene		< 1.0
1,2,3-Trichlorobenzene		< 1.0
1,2,3-Trichloropropane		< 1.0
1,2,4-Trichlorobenzene	50,000	< 1.0
1,2,4-Trimethylbenzene		< 1.0
1,2-Dibromo-3-chloropropane		< 1.0
1,2-Dibromoethane	50,000	< 1.0
1,2-Dichlorobenzene	2,000	< 1.0
1,2-Dichloroethane	20,000	< 0.60
1,2-Dichloropropane	50,000	< 1.0
1,3,5-Trimethylbenzene		< 1.0
1,3-Dichlorobenzene	50,000	< 1.0
1,3-Dichloropropane		< 1.0
1,4-Dichlorobenzene	8,000	< 1.0
2,2-Dichloropropane		< 1.0
2-Chlorotoluene		< 1.0
2-Hexanone		< 5.0
2-Isopropyltoluene		< 1.0
4-Chlorotoluene		< 1.0
4-Methyl-2-pentanone	50,000	< 5.0
Acetone	50,000	< 25
Acrylonitrile		< 1.0
Benzene	10,000	< 0.70
Bromobenzene		< 1.0
Bromochloromethane		< 1.0
Bromodichloromethane	50,000	< 0.50
Bromoform	50,000	< 1.0
Bromomethane	800	< 1.0
Carbon Disulfide		< 5.0
Carbon tetrachloride	5,000	< 1.0
Chlorobenzene	1,000	< 1.0
Chloroethane		< 1.0
Chloroform	20,000	< 1.0
Chloromethane		< 1.0
cis-1,2-Dichloroethene	50,000	< 1.0
cis-1,3-Dichloropropene		< 0.40
Dibromochloromethane	50,000	< 0.50
Dibromomethane		< 1.0
Dichlorodifluoromethane		< 1.0

Ethylbenzene	5,000	< 1.0
Hexachlorobutadiene	3,000	< 0.40
Isopropylbenzene		< 1.0
m&p-Xylene		< 1.0
Methyl ethyl ketone	50,000	< 5.0
Methyl t-butyl ether (MTBE)	50,000	< 1.0
Methylene chloride	50,000	< 1.0
Naphthalene	20,000	< 1.0
n-Butylbenzene		< 1.0
n-Propylbenzene		< 1.0
o-Xylene		< 1.0
p-Isopropyltoluene		< 1.0
sec-Butylbenzene		< 1.0
Styrene	6,000	< 1.0
tert-Butylbenzene		< 1.0
Tetrachloroethene	30,000	< 1.0
Tetrahydrofuran (THF)		< 2.5
Toluene	40,000	< 1.0
Total Xylenes	5,000	< 1.0
trans-1,2-Dichloroethene	50,000	< 1.0
trans-1,3-Dichloropropene		< 0.40
trans-1,4-dichloro-2-butene		< 5.0
Trichloroethene	5,000	< 1.0
Trichlorofluoromethane		< 1.0
Trichlorotrifluoroethane		< 1.0
Vinyl chloride	50,000	< 1.0
Semivolatiles by SIM, PAH By SW8270D (SIM) (ug/l)		
2-Methylnaphthalene	20,000	< 0.49
Acenaphthene	10,000	< 0.49
Acenaphthylene	40	< 0.10
Anthracene	30	< 0.09
Benz(a)anthracene	1,000	< 0.10
Benzo(a)pyrene	500	< 0.20
Benzo(b)fluoranthene	400	< 0.10
Benzo(ghi)perylene	20	< 0.02
Benzo(k)fluoranthene	100	< 0.10
Chrysene	70	< 0.05
Dibenz(a,h)anthracene	40	< 0.02
Fluoranthene	200	< 0.49
Fluorene	40	< 0.10
Indeno(1,2,3-cd)pyrene	100	< 0.10
Naphthalene	20,000	< 0.49
Phenanthrene	10,000	< 0.49
Pyrene	20	< 0.07
Pesticides By SW8081B (ug/l)		
4,4' -DDD	50	< 0.048
4,4' -DDE	400	< 0.048

4,4' -DDT	1	< 0.048
a-BHC		< 0.024
Alachlor		< 0.071
Aldrin	30	< 0.001
b-BHC		< 0.005
Chlordane	2	< 0.019
d-BHC		< 0.024
Dieldrin	0.5	< 0.050
Endosulfan I		< 0.048
Endosulfan II		< 0.048
Endosulfan Sulfate		< 0.048
Endrin	5	< 0.048
Endrin Aldehyde		< 0.048
Endrin ketone		< 0.048
g-BHC (Lindane)	4	< 0.024
Heptachlor	1	< 0.024
Heptachlor epoxide	2	< 0.024
Hexachlorobenzene	6,000	< 0.005
Methoxychlor	10	< 0.095
Toxaphene		< 0.95
Oxygenates & Dioxane By SW8260C (OXY) (ug/l)		
1,4-Dioxane	50,000	< 100
Diethyl ether		< 1.0
Di-isopropyl ether		< 1.0
Ethyl tert-butyl ether		< 1.0
tert-amyl methyl ether		< 1.0

Result Detected

RL Exceeds Criteria

Result Exceeds Criteria

Attachment 1

Laboratory Report

PHOENIX
Environmental Laboratories, Inc.

Wednesday, September 04, 2019

Attn: Mr. Denis D'Amore
D'Amore Associates
1135 Stafford Road
Tiverton, RI 02878

Project ID: SOUTHBORO CON COM
SDG ID: GCD86207
Sample ID#s: CD86207 - CD86208

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
UT Lab Registration #CT00007
VT Lab Registration #VT11301

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

SDG Comments

September 04, 2019

SDG I.D.: GCD86207

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

September 04, 2019

SDG I.D.: GCD86207

Project ID: SOUTHBORO CON COM

Client Id	Lab Id	Matrix
BHCA	CD86207	SURFACE WATER
TRIP BLANK	CD86208	SURFACE WATER

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 04, 2019

FOR: Attn: Mr. Denis D'Amore
D'Amore Associates
1135 Stafford Road
Tiverton, RI 02878

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:		08/14/19	10:30
Location Code:	DAMORE	Received by:	SW	08/15/19	17:56
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCD86207
Phoenix ID: CD86207

Project ID: SOUTHBORO CON COM
Client ID: BHCA

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
Silver (Dissolved)	< 0.001	0.001	mg/L	1	08/16/19	TH	SW6010D	
Arsenic (Dissolved)	< 0.004	0.004	mg/L	1	08/16/19	TH	SW6010D	
Beryllium (Dissolved)	< 0.001	0.001	mg/L	1	08/16/19	TH	SW6010D	
Cadmium (Dissolved)	< 0.001	0.001	mg/L	1	08/16/19	TH	SW6010D	
Chromium (Dissolved)	< 0.001	0.001	mg/L	1	08/16/19	TH	SW6010D	
Copper (Dissolved)	< 0.005	0.005	mg/L	1	08/16/19	TH	SW6010D	
Iron (Dissolved)	1.43	0.011	mg/L	1	08/16/19	TH	E200.7	
Mercury (Dissolved)	< 0.0002	0.0002	mg/L	1	08/20/19	RS	SW7470A	
Nickel (Dissolved)	< 0.001	0.001	mg/L	1	08/16/19	TH	SW6010D	
Lead (Dissolved)	< 0.002	0.002	mg/L	1	08/16/19	TH	SW6010D	
Antimony (Dissolved)	< 0.005	0.005	mg/L	1	08/16/19	TH	SW6010D	
Selenium (Dissolved)	< 0.011	0.011	mg/L	1	08/16/19	TH	E200.7-4.4	
Thallium (Dissolved)	< 0.0003	0.0003	mg/L	1	08/22/19	CPP	SW6020B	
Zinc (Dissolved)	0.006	0.002	mg/L	1	08/16/19	TH	SW6010D	
Filtration	Completed				08/15/19	AG	0.45um Filter	
Dissolved Mercury Digestion	Completed				08/19/19	LS/I	SW7470A	
EPH Extraction	Completed				08/16/19	JS/VT	SW3510C	
MA Petroleum Hydrocarbon (EPH)	Completed				08/15/19		MADEP EPH-04	
PCB Extraction	Completed				08/15/19	N	SW3510C	
Extraction for Pest (2 Liter)	Completed				08/15/19	N	SW3510C	
Semi-Volatile Extraction	Completed				08/16/19	P/D	SW3520C	
Dissolved Metals Preparation	Completed				08/15/19	AG	SW3005A	
Dissolved Metals Preparation	Completed				08/19/19	AG	SW3005A	
MA Petroleum Hydrocarbon (VPH)	Completed				08/16/19	RM	MADEP VPH04	
Dioxin	Completed	1.0	pg/L		08/24/19	*	E1613B	C
Polychlorinated Biphenyls								
PCB-1016	ND	0.095	ug/L	1	08/16/19	SC	SW8082A	

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1221	ND	0.095	ug/L	1	08/16/19	SC	SW8082A
PCB-1232	ND	0.095	ug/L	1	08/16/19	SC	SW8082A
PCB-1242	ND	0.095	ug/L	1	08/16/19	SC	SW8082A
PCB-1248	ND	0.095	ug/L	1	08/16/19	SC	SW8082A
PCB-1254	ND	0.095	ug/L	1	08/16/19	SC	SW8082A
PCB-1260	ND	0.095	ug/L	1	08/16/19	SC	SW8082A
PCB-1262	ND	0.095	ug/L	1	08/16/19	SC	SW8082A
PCB-1268	ND	0.095	ug/L	1	08/16/19	SC	SW8082A
QA/QC Surrogates							
% DCBP	69		%	1	08/16/19	SC	30 - 150 %
% DCBP (Confirmation)	77		%	1	08/16/19	SC	30 - 150 %
% TCMX	77		%	1	08/16/19	SC	30 - 150 %
% TCMX (Confirmation)	80		%	1	08/16/19	SC	30 - 150 %
Pesticides							
4,4' -DDD	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
4,4' -DDE	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
4,4' -DDT	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
a-BHC	ND	0.024	ug/L	1	08/17/19	AW	SW8081B
Alachlor	ND	0.071	ug/L	1	08/17/19	AW	SW8081B
Aldrin	ND	0.001	ug/L	1	08/17/19	AW	SW8081B
b-BHC	ND	0.005	ug/L	1	08/17/19	AW	SW8081B
Chlordane	ND	0.019	ug/L	1	08/17/19	AW	SW8081B
d-BHC	ND	0.024	ug/L	1	08/17/19	AW	SW8081B
Dieldrin	ND	0.050	ug/L	1	08/17/19	AW	SW8081B
Endosulfan I	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
Endosulfan II	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
Endosulfan Sulfate	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
Endrin	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
Endrin Aldehyde	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
Endrin ketone	ND	0.048	ug/L	1	08/17/19	AW	SW8081B
g-BHC (Lindane)	ND	0.024	ug/L	1	08/17/19	AW	SW8081B
Heptachlor	ND	0.024	ug/L	1	08/17/19	AW	SW8081B
Heptachlor epoxide	ND	0.024	ug/L	1	08/17/19	AW	SW8081B
Hexachlorobenzene	ND	0.005	ug/L	1	08/17/19	AW	SW8081B
Methoxychlor	ND	0.095	ug/L	1	08/17/19	AW	SW8081B
Toxaphene	ND	0.95	ug/L	1	08/17/19	AW	SW8081B
QA/QC Surrogates							
%DCBP (Surrogate Rec)	98		%	1	08/17/19	AW	30 - 150 %
%DCBP (Surrogate Rec) (Confirmation)	40		%	1	08/17/19	AW	30 - 150 %
%TCMX (Surrogate Rec)	72		%	1	08/17/19	AW	30 - 150 %
%TCMX (Surrogate Rec) (Confirmation)	58		%	1	08/17/19	AW	30 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	08/18/19	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,1-Dichloroethene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C

Project ID: SOUTHBORO CON COM
Client ID: BHCA

Phoenix I.D.: CD86207

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1-Dichloropropene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,2-Dibromoethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	08/18/19	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	08/18/19	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	08/18/19	MH	SW8260C
Acetone	ND	25	ug/L	1	08/18/19	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Benzene	ND	0.70	ug/L	1	08/18/19	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	08/18/19	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	08/18/19	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
cis-1,2-Dichloroethene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	08/18/19	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	08/18/19	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Dichlorodifluoromethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	08/18/19	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	08/18/19	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
n-Propylbenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
o-Xylene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Styrene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Tetrachloroethene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	08/18/19	MH	SW8260C
Toluene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Total Xylenes	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	08/18/19	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	08/18/19	MH	SW8260C
Trichloroethene	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Trichlorotrifluoroethane	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	08/18/19	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	96		%	1	08/18/19	MH	70 - 130 %
% Bromofluorobenzene	95		%	1	08/18/19	MH	70 - 130 %
% Dibromofluoromethane	109		%	1	08/18/19	MH	70 - 130 %
% Toluene-d8	91		%	1	08/18/19	MH	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	100	ug/L	1	08/18/19	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	08/18/19	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	08/18/19	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	08/18/19	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	08/18/19	MH	SW8260C (OXY)
Semivolatiles by SIM, PAH							
2-Methylnaphthalene	ND	0.49	ug/L	1	08/20/19	WB	SW8270D (SIM)
Acenaphthene	ND	0.49	ug/L	1	08/20/19	WB	SW8270D (SIM)
Acenaphthylene	ND	0.10	ug/L	1	08/20/19	WB	SW8270D (SIM)
Anthracene	ND	0.09	ug/L	1	08/20/19	WB	SW8270D (SIM)
Benz(a)anthracene	ND	0.10	ug/L	1	08/20/19	WB	SW8270D (SIM)
Benzo(a)pyrene	ND	0.20	ug/L	1	08/20/19	WB	SW8270D (SIM)
Benzo(b)fluoranthene	ND	0.10	ug/L	1	08/20/19	WB	SW8270D (SIM)
Benzo(ghi)perylene	ND	0.02	ug/L	1	08/20/19	WB	SW8270D (SIM)
Benzo(k)fluoranthene	ND	0.10	ug/L	1	08/20/19	WB	SW8270D (SIM)
Chrysene	ND	0.05	ug/L	1	08/20/19	WB	SW8270D (SIM)
Dibenz(a,h)anthracene	ND	0.02	ug/L	1	08/20/19	WB	SW8270D (SIM)
Fluoranthene	ND	0.49	ug/L	1	08/20/19	WB	SW8270D (SIM)
Fluorene	ND	0.10	ug/L	1	08/20/19	WB	SW8270D (SIM)
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	1	08/20/19	WB	SW8270D (SIM)
Naphthalene	ND	0.49	ug/L	1	08/20/19	WB	SW8270D (SIM)
Phenanthrene	ND	0.49	ug/L	1	08/20/19	WB	SW8270D (SIM)
Pyrene	ND	0.07	ug/L	1	08/20/19	WB	SW8270D (SIM)
QA/QC Surrogates							
% 2-Fluorobiphenyl	63		%	1	08/20/19	WB	30 - 130 %
% Nitrobenzene-d5	79		%	1	08/20/19	WB	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
% Terphenyl-d14	17		%	1	08/20/19	WB	30 - 130 %	3
MA EPH Aliphatic/Aromatic Ranges								
C11-C22 Aromatic Hydrocarbons 1,2*	ND	190	ug/L	1	08/16/19	AW	MAEPH 5/2004	
C11-C22 Aromatic Hydrocarbons Unadj	ND	190	ug/L	1	08/16/19	AW	MAEPH 5/2004	
C19-C36 Aliphatic Hydrocarbons 1*	ND	190	ug/L	1	08/16/19	AW	MAEPH 5/2004	
C9-C18 Aliphatic Hydrocarbons 1*	ND	190	ug/L	1	08/16/19	AW	MAEPH 5/2004	
Total TPH 1,2*	ND	190	ug/L	1	08/16/19	AW	MAEPH 5/2004	
QA/QC Surrogates								
% 1-chlorooctadecane (aliphatic)	84		%	1	08/16/19	AW	40 - 140 %	
% 2-Bromonaphthalene (Fractionation)	80		%	1	08/16/19	AW	40 - 140 %	
% 2-Fluorobiphenyl (Fractionation)	90		%	1	08/16/19	AW	40 - 140 %	
% o-terphenyl (aromatic)	79		%	1	08/16/19	AW	40 - 140 %	
MA Volatile Petroleum Hydrocarbons (VPH)								
Unadjusted C5-C8 Aliphatics (*1)	ND	100	ug/L	1	08/16/19	RM	MA VPH 5/2004	
Unadjusted C9-C12 Aliphatics (*1)	ND	100	ug/L	1	08/16/19	RM	MA VPH 5/2004	
C5-C8 Aliphatic Hydrocarbons *1,2	ND	100	ug/L	1	08/16/19	RM	MA VPH 5/2004	
C9-C12 Aliphatic Hydrocarbons *1,3	ND	100	ug/L	1	08/16/19	RM	MA VPH 5/2004	
C9-C10 Aromatic Hydrocarbons *1	ND	100	ug/L	1	08/16/19	RM	MA VPH 5/2004	
Benzene	ND	1.0	ug/L	1	08/16/19	RM	MA VPH 5/2004	
Ethyl Benzene	ND	1.0	ug/L	1	08/16/19	RM	MA VPH 5/2004	
MTBE	ND	1.0	ug/L	1	08/16/19	RM	MA VPH 5/2004	
Naphthalene	ND	5.0	ug/L	1	08/16/19	RM	MA VPH 5/2004	
Toluene	ND	1.0	ug/L	1	08/16/19	RM	MA VPH 5/2004	
m,p-Xylenes	ND	2.0	ug/L	1	08/16/19	RM	MA VPH 5/2004	
o-Xylene	ND	1.0	ug/L	1	08/16/19	RM	MA VPH 5/2004	
QA/QC Surrogates								
% 2,5-Dibromotoluene (FID)	87		%	1	08/16/19	RM	70 - 130 %	
% 2,5-Dibromotoluene (PID)	82		%	1	08/16/19	RM	70 - 130 %	

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

3 = This parameter exceeds laboratory specified limits.
C = This parameter is subcontracted.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

* See Attached.

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C12 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

MA VPH method is not approved for drinking water matrices.
The analysis should not be used for compliance purposes.

Semi-Volatile Comment:
Poor surrogate recovery was observed for one acid and/or one base surrogate. The other surrogates associated with this sample were within QA/QC criteria. No significant bias suspected.

Dioxin (E1613B) was analyzed by MN certified lab #027053137.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
September 04, 2019
Reviewed and Released by: Rashmi Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

September 04, 2019

FOR: Attn: Mr. Denis D'Amore
D'Amore Associates
1135 Stafford Road
Tiverton, RI 02878

Sample Information		Custody Information		Date	Time
Matrix:	SURFACE WATER	Collected by:		08/14/19	
Location Code:	DAMORE	Received by:	SW	08/15/19	17:56
Rush Request:	72 Hour	Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GCD86207
Phoenix ID: CD86208

Project ID: SOUTHBORO CON COM
Client ID: TRIP BLANK

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,1,1-Trichloroethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	08/15/19	MH	SW8260C
1,1,2-Trichloroethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,1-Dichloroethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,1-Dichloroethene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,1-Dichloropropene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,2,3-Trichloropropane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,2-Dibromoethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,2-Dichlorobenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,2-Dichloroethane	ND	0.60	ug/L	1	08/15/19	MH	SW8260C
1,2-Dichloropropane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,3-Dichlorobenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,3-Dichloropropane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
1,4-Dichlorobenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
2,2-Dichloropropane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
2-Chlorotoluene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
2-Hexanone	ND	5.0	ug/L	1	08/15/19	MH	SW8260C
2-Isopropyltoluene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
4-Chlorotoluene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
4-Methyl-2-pentanone	ND	5.0	ug/L	1	08/15/19	MH	SW8260C

Project ID: SOUTHBORO CON COM
Client ID: TRIP BLANK

Phoenix I.D.: CD86208

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	25	ug/L	1	08/15/19	MH	SW8260C
Acrylonitrile	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Benzene	ND	0.70	ug/L	1	08/15/19	MH	SW8260C
Bromobenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Bromochloromethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Bromodichloromethane	ND	0.50	ug/L	1	08/15/19	MH	SW8260C
Bromoform	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Bromomethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Carbon Disulfide	ND	5.0	ug/L	1	08/15/19	MH	SW8260C
Carbon tetrachloride	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Chlorobenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Chloroethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Chloroform	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Chloromethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
cis-1,2-Dichloroethene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	08/15/19	MH	SW8260C
Dibromochloromethane	ND	0.50	ug/L	1	08/15/19	MH	SW8260C
Dibromomethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Dichlorodifluoromethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Ethylbenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Hexachlorobutadiene	ND	0.40	ug/L	1	08/15/19	MH	SW8260C
Isopropylbenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
m&p-Xylene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Methyl ethyl ketone	ND	5.0	ug/L	1	08/15/19	MH	SW8260C
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Methylene chloride	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Naphthalene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
n-Butylbenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
n-Propylbenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
o-Xylene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
p-Isopropyltoluene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
sec-Butylbenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Styrene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
tert-Butylbenzene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Tetrachloroethene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	08/15/19	MH	SW8260C
Toluene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Total Xylenes	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	08/15/19	MH	SW8260C
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	08/15/19	MH	SW8260C
Trichloroethene	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Trichlorofluoromethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Trichlorotrifluoroethane	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
Vinyl chloride	ND	1.0	ug/L	1	08/15/19	MH	SW8260C
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	94		%	1	08/15/19	MH	70 - 130 %
% Bromofluorobenzene	97		%	1	08/15/19	MH	70 - 130 %
% Dibromofluoromethane	99		%	1	08/15/19	MH	70 - 130 %

Project ID: SOUTHBORO CON COM
Client ID: TRIP BLANK

Phoenix I.D.: CD86208

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	93		%	1	08/15/19	MH	70 - 130 %

Oxygenates & Dioxane

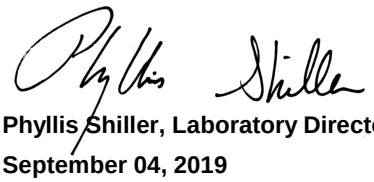
1,4-Dioxane	ND	100	ug/L	1	08/15/19	MH	SW8260C (OXY)
Diethyl ether	ND	1.0	ug/L	1	08/15/19	MH	SW8260C (OXY)
Di-isopropyl ether	ND	1.0	ug/L	1	08/15/19	MH	SW8260C (OXY)
Ethyl tert-butyl ether	ND	1.0	ug/L	1	08/15/19	MH	SW8260C (OXY)
tert-amyl methyl ether	ND	1.0	ug/L	1	08/15/19	MH	SW8260C (OXY)

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TRIP BLANK INCLUDED.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
September 04, 2019
Reviewed and Released by: Rashmi Makol, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
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QA/QC Report

September 04, 2019

QA/QC Data

SDG I.D.: GCD86207

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 492675 (mg/L), QC Sample No: CD86230 (CD86207)													
Mercury (Dissolved)	BRL	0.0002	<0.0002	<0.0003	NC	95.3			93.4			75 - 125	30
Comment:													
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%													
QA/QC Batch 492629 (mg/L), QC Sample No: CD84736 (CD86207)													
ICP Metals - Dissolved													
Antimony	BRL	0.005	<0.005	<0.005	NC	99.1	91.1	8.4	94.5			75 - 125	20
Arsenic	BRL	0.004	<0.004	<0.004	NC	91.1	83.8	8.3	86.8			75 - 125	20
Beryllium	BRL	0.001	<0.001	<0.001	NC	92.8	89.3	3.8	93.3			75 - 125	20
Cadmium	BRL	0.001	<0.001	<0.001	NC	93.6	84.7	10.0	88.3			75 - 125	20
Chromium	BRL	0.001	<0.001	<0.001	NC	93.0	84.4	9.7	88.1			75 - 125	20
Copper	BRL	0.005	<0.005	<0.005	NC	87.8	85.1	3.1	89.1			75 - 125	20
Iron	BRL	0.011	0.571	0.564	1.20	94.9	85.9	10.0	87.9			75 - 125	20
Lead	BRL	0.002	<0.002	<0.002	NC	92.4	84.3	9.2	87.0			75 - 125	20
Nickel	BRL	0.001	<0.001	<0.001	NC	92.3	83.7	9.8	87.0			75 - 125	20
Selenium	BRL	0.011	<0.011	<0.011	NC	92.1	83.2	10.2	86.7			75 - 125	20
Silver	BRL	0.001	<0.001	<0.001	NC	85.1	81.7	4.1	84.1			75 - 125	20
Zinc	BRL	0.002	<0.002	<0.002	NC	92.8	84.4	9.5	87.8			75 - 125	20
QA/QC Batch 493016 (mg/L), QC Sample No: CD85618 (CD86207)													
ICP Metals MS - Dissolved													
Thallium	BRL	0.0003	<0.0003	<0.0003	NC	101	95.6	5.5	102			75 - 125	20

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
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QA/QC Report

September 04, 2019

QA/QC Data

SDG I.D.: GCD86207

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 492699 (ug/L), QC Sample No: CD86207 (CD86207)											
MAEPH - Surface Water											
C11-C22 Aromatic Hydrocarbons 1	ND	100	60	64	6.5				40 - 140	25	
C11-C22 Aromatic Hydrocarbons U	ND	100							40 - 140	25	
C19-C36 Aliphatic Hydrocarbons 1*	ND	100	65	74	12.9				40 - 140	25	
C9-C18 Aliphatic Hydrocarbons 1*	ND	100	48	52	8.0				40 - 140	25	
Total TPH 1,2*	ND	100	58	64	9.8				40 - 140	25	
% 1-chlorooctadecane (aliphatic)	51	%	60	64	6.5				40 - 140	25	
% 2-Bromonaphthalene (Fractionati	101	%	100	90	10.5				40 - 140	25	
% 2-Fluorobiphenyl (Fractionation)	74	%	76	74	2.7				40 - 140	25	
% 2-Methylnaphthalene BT		%	0	0	NC				0 - 5		
% Naphthalene BT		%	0	0	NC				0 - 5		
% o-terphenyl (aromatic)	53	%	67	70	4.4				40 - 140	25	
Comment:											
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.											
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%											
QA/QC Batch 492646 (ug/L), QC Sample No: CD83157 (CD86207)											
Polychlorinated Biphenyls - Surface Water											
PCB-1016	ND	0.050	75	95	23.5				40 - 140	20	r
PCB-1221	ND	0.050							40 - 140	20	
PCB-1232	ND	0.050							40 - 140	20	
PCB-1242	ND	0.050							40 - 140	20	
PCB-1248	ND	0.050							40 - 140	20	
PCB-1254	ND	0.050							40 - 140	20	
PCB-1260	ND	0.050	86	96	11.0				40 - 140	20	
PCB-1262	ND	0.050							40 - 140	20	
PCB-1268	ND	0.050							40 - 140	20	
% DCBP (Surrogate Rec)	78	%	76	87	13.5				30 - 150	20	
% DCBP (Surrogate Rec) (Confirm	63	%	67	90	29.3				30 - 150	20	r
% TCMX (Surrogate Rec)	85	%	68	77	12.4				30 - 150	20	
% TCMX (Surrogate Rec) (Confirm	72	%	65	80	20.7				30 - 150	20	r
Comment:											
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.											
QA/QC Batch 492647 (ug/L), QC Sample No: CD83157 (CD86207)											
Pesticides - Surface Water											
4,4' -DDD	ND	0.003	94	107	12.9				40 - 140	20	
4,4' -DDE	ND	0.003	71	84	16.8				40 - 140	20	
4,4' -DDT	ND	0.003	87	99	12.9				40 - 140	20	
a-BHC	ND	0.002	77	85	9.9				40 - 140	20	
Alachlor	ND	0.005	NA	NA	NC				40 - 140	20	
Aldrin	ND	0.002	60	69	14.0				40 - 140	20	

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
b-BHC	ND	0.002	105	119	12.5				40 - 140	20	
Chlordane	ND	0.050	83	95	13.5				40 - 140	20	
d-BHC	ND	0.005	74	80	7.8				40 - 140	20	
Dieldrin	ND	0.002	85	97	13.2				40 - 140	20	
Endosulfan I	ND	0.005	102	115	12.0				40 - 140	20	
Endosulfan II	ND	0.005	102	115	12.0				40 - 140	20	
Endosulfan sulfate	ND	0.005	118	133	12.0				40 - 140	20	
Endrin	ND	0.005	88	101	13.8				40 - 140	20	
Endrin aldehyde	ND	0.005	105	113	7.3				40 - 140	20	
Endrin ketone	ND	0.005	112	128	13.3				40 - 140	20	
g-BHC	ND	0.002	86	96	11.0				40 - 140	20	
Heptachlor	ND	0.005	95	103	8.1				40 - 140	20	
Heptachlor epoxide	ND	0.005	88	99	11.8				40 - 140	20	
Hexachlorobenzene	ND	0.005	71	62	13.5				40 - 140	20	
Methoxychlor	ND	0.005	78	87	10.9				40 - 140	20	
Toxaphene	ND	0.20	NA	NA	NC				40 - 140	20	
% DCBP	99	%	95	111	15.5				30 - 150	20	
% DCBP (Confirmation)	69	%	71	76	6.8				30 - 150	20	
% TCMX	126	%	71	108	41.3				30 - 150	20	r
% TCMX (Confirmation)	57	%	66	64	3.1				30 - 150	20	

Comment:

A LCS and LCS duplicate were performed instead of a MS and MSD. Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. Gamma chlordane recovery is reported as chlordane in the LCS and LCSD

QA/QC Batch 492789 (ug/L), QC Sample No: CD84885 (CD86207)

Semivolatiles by SIM, PAH - Surface Water

2-Methylnaphthalene	ND	0.50	73	73	0.0	74	82	10.3	30 - 130	20	
Acenaphthene	ND	0.50	83	93	11.4	91	66	31.8	30 - 130	20	r
Acenaphthylene	ND	0.10	86	97	12.0	95	26	114.0	30 - 130	20	m,r
Anthracene	ND	0.10	92	105	13.2	102	64	45.8	30 - 130	20	r
Benz(a)anthracene	ND	0.05	101	111	9.4	93	62	40.0	30 - 130	20	r
Benzo(a)pyrene	ND	0.20	91	105	14.3	39	39	0.0	30 - 130	20	
Benzo(b)fluoranthene	ND	0.07	99	108	8.7	74	59	22.6	30 - 130	20	r
Benzo(ghi)perylene	ND	0.02	76	83	8.8	43	43	0.0	30 - 130	20	
Benzo(k)fluoranthene	ND	0.10	100	109	8.6	73	47	43.3	30 - 130	20	r
Chrysene	ND	0.05	89	97	8.6	78	63	21.3	30 - 130	20	r
Dibenz(a,h)anthracene	ND	0.02	92	100	8.3	58	58	0.0	30 - 130	20	
Fluoranthene	ND	0.50	95	105	10.0	101	80	23.2	30 - 130	20	r
Fluorene	ND	0.10	88	97	9.7	94	83	12.4	30 - 130	20	
Indeno(1,2,3-cd)pyrene	ND	0.10	93	101	8.2	56	56	0.0	30 - 130	20	
Naphthalene	ND	0.50	68	71	4.3	73	82	11.6	30 - 130	20	
Phenanthrene	ND	0.06	84	93	10.2	92	81	12.7	30 - 130	20	
Pyrene	ND	0.07	97	106	8.9	101	33	101.5	30 - 130	20	r
% 2-Fluorobiphenyl	75	%	70	80	13.3	78	71	9.4	30 - 130	20	
% Nitrobenzene-d5	75	%	72	82	13.0	85	76	11.2	30 - 130	20	
% Terphenyl-d14	84	%	71	86	19.1	44	32	31.6	30 - 130	20	r

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 492770 (ug/L), QC Sample No: CD85841 (CD86208)

Volatiles - Surface Water

1,1,1,2-Tetrachloroethane	ND	1.0	90	96	6.5				70 - 130	30	
1,1,1-Trichloroethane	ND	1.0	89	93	4.4				70 - 130	30	

QA/QC Data

SDG I.D.: GCD86207

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,1,2,2-Tetrachloroethane	ND	0.50	86	96	11.0				70 - 130	30
1,1,2-Trichloroethane	ND	1.0	76	97	24.3				70 - 130	30
1,1-Dichloroethane	ND	1.0	87	89	2.3				70 - 130	30
1,1-Dichloroethene	ND	1.0	95	92	3.2				70 - 130	30
1,1-Dichloropropene	ND	1.0	89	90	1.1				70 - 130	30
1,2,3-Trichlorobenzene	ND	1.0	82	100	19.8				70 - 130	30
1,2,3-Trichloropropane	ND	1.0	86	99	14.1				70 - 130	30
1,2,4-Trichlorobenzene	ND	1.0	88	99	11.8				70 - 130	30
1,2,4-Trimethylbenzene	ND	1.0	90	89	1.1				70 - 130	30
1,2-Dibromo-3-chloropropane	ND	1.0	73	90	20.9				70 - 130	30
1,2-Dibromoethane	ND	1.0	84	95	12.3				70 - 130	30
1,2-Dichlorobenzene	ND	1.0	91	96	5.3				70 - 130	30
1,2-Dichloroethane	ND	1.0	86	100	15.1				70 - 130	30
1,2-Dichloropropane	ND	1.0	89	98	9.6				70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	91	90	1.1				70 - 130	30
1,3-Dichlorobenzene	ND	1.0	91	90	1.1				70 - 130	30
1,3-Dichloropropane	ND	1.0	87	95	8.8				70 - 130	30
1,4-Dichlorobenzene	ND	1.0	87	90	3.4				70 - 130	30
1,4-dioxane	ND	100	87	94	7.7				40 - 160	30
2,2-Dichloropropane	ND	1.0	90	91	1.1				70 - 130	30
2-Chlorotoluene	ND	1.0	93	92	1.1				70 - 130	30
2-Hexanone	ND	5.0	80	96	18.2				40 - 160	30
2-Isopropyltoluene	ND	1.0	95	96	1.0				70 - 130	30
4-Chlorotoluene	ND	1.0	90	89	1.1				70 - 130	30
4-Methyl-2-pentanone	ND	5.0	82	111	30.1				40 - 160	30
Acetone	ND	5.0	72	94	26.5				40 - 160	30
Acrylonitrile	ND	5.0	75	90	18.2				70 - 130	30
Benzene	ND	0.70	86	92	6.7				70 - 130	30
Bromobenzene	ND	1.0	93	93	0.0				70 - 130	30
Bromochloromethane	ND	1.0	79	89	11.9				70 - 130	30
Bromodichloromethane	ND	0.50	86	98	13.0				70 - 130	30
Bromoform	ND	1.0	83	95	13.5				70 - 130	30
Bromomethane	ND	1.0	103	104	1.0				40 - 160	30
Carbon Disulfide	ND	1.0	89	86	3.4				70 - 130	30
Carbon tetrachloride	ND	1.0	91	88	3.4				70 - 130	30
Chlorobenzene	ND	1.0	90	92	2.2				70 - 130	30
Chloroethane	ND	1.0	97	94	3.1				70 - 130	30
Chloroform	ND	1.0	79	91	14.1				70 - 130	30
Chloromethane	ND	1.0	96	96	0.0				40 - 160	30
cis-1,2-Dichloroethene	ND	1.0	84	89	5.8				70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	82	99	18.8				70 - 130	30
Dibromochloromethane	ND	0.50	88	103	15.7				70 - 130	30
Dibromomethane	ND	1.0	82	96	15.7				70 - 130	30
Dichlorodifluoromethane	ND	1.0	110	98	11.5				40 - 160	30
Ethyl ether	ND	1.0	82	96	15.7				70 - 130	30
Ethylbenzene	ND	1.0	91	92	1.1				70 - 130	30
Hexachlorobutadiene	ND	0.40	111	97	13.5				70 - 130	30
Isopropylbenzene	ND	1.0	88	88	0.0				70 - 130	30
m&p-Xylene	ND	1.0	89	91	2.2				70 - 130	30
Methyl ethyl ketone	ND	5.0	78	103	27.6				40 - 160	30
Methyl t-butyl ether (MTBE)	ND	1.0	74	96	25.9				70 - 130	30
Methylene chloride	ND	1.0	78	83	6.2				70 - 130	30
Naphthalene	ND	1.0	86	104	18.9				70 - 130	30

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
n-Butylbenzene	ND	1.0	88	92	4.4				70 - 130	30
n-Propylbenzene	ND	1.0	89	90	1.1				70 - 130	30
o-Xylene	ND	1.0	90	94	4.3				70 - 130	30
p-Isopropyltoluene	ND	1.0	89	89	0.0				70 - 130	30
sec-Butylbenzene	ND	1.0	90	95	5.4				70 - 130	30
Styrene	ND	1.0	89	93	4.4				70 - 130	30
tert-Butylbenzene	ND	1.0	88	89	1.1				70 - 130	30
Tetrachloroethene	ND	1.0	86	97	12.0				70 - 130	30
Tetrahydrofuran (THF)	ND	2.5	80	104	26.1				70 - 130	30
Toluene	ND	1.0	87	94	7.7				70 - 130	30
trans-1,2-Dichloroethene	ND	1.0	86	91	5.6				70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	80	95	17.1				70 - 130	30
trans-1,4-dichloro-2-butene	ND	5.0	81	97	18.0				70 - 130	30
Trichloroethene	ND	1.0	91	92	1.1				70 - 130	30
Trichlorofluoromethane	ND	1.0	107	100	6.8				70 - 130	30
Trichlorotrifluoroethane	ND	1.0	101	99	2.0				70 - 130	30
Vinyl chloride	ND	1.0	95	88	7.7				70 - 130	30
% 1,2-dichlorobenzene-d4	95	%	100	103	3.0				70 - 130	30
% Bromofluorobenzene	97	%	97	102	5.0				70 - 130	30
% Dibromofluoromethane	103	%	92	102	10.3				70 - 130	30
% Toluene-d8	93	%	99	99	0.0				70 - 130	30

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

QA/QC Batch 492983 (ug/L), QC Sample No: CD86207 (CD86207)

Volatiles - Surface Water

1,1,1,2-Tetrachloroethane	ND	1.0	103	98	5.0				70 - 130	30
1,1,1-Trichloroethane	ND	1.0	96	89	7.6				70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	99	101	2.0				70 - 130	30
1,1,2-Trichloroethane	ND	1.0	91	96	5.3				70 - 130	30
1,1-Dichloroethane	ND	1.0	96	91	5.3				70 - 130	30
1,1-Dichloroethene	ND	1.0	98	90	8.5				70 - 130	30
1,1-Dichloropropene	ND	1.0	93	87	6.7				70 - 130	30
1,2,3-Trichlorobenzene	ND	1.0	117	119	1.7				70 - 130	30
1,2,3-Trichloropropane	ND	1.0	92	95	3.2				70 - 130	30
1,2,4-Trichlorobenzene	ND	1.0	108	108	0.0				70 - 130	30
1,2,4-Trimethylbenzene	ND	1.0	96	91	5.3				70 - 130	30
1,2-Dibromo-3-chloropropane	ND	1.0	104	100	3.9				70 - 130	30
1,2-Dibromoethane	ND	1.0	96	95	1.0				70 - 130	30
1,2-Dichlorobenzene	ND	1.0	101	99	2.0				70 - 130	30
1,2-Dichloroethane	ND	1.0	83	91	9.2				70 - 130	30
1,2-Dichloropropane	ND	1.0	99	98	1.0				70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	96	90	6.5				70 - 130	30
1,3-Dichlorobenzene	ND	1.0	97	96	1.0				70 - 130	30
1,3-Dichloropropane	ND	1.0	95	96	1.0				70 - 130	30
1,4-Dichlorobenzene	ND	1.0	99	94	5.2				70 - 130	30
1,4-dioxane	ND	100	105	90	15.4				40 - 160	30
2,2-Dichloropropane	ND	1.0	102	94	8.2				70 - 130	30
2-Chlorotoluene	ND	1.0	103	97	6.0				70 - 130	30
2-Hexanone	ND	5.0	98	98	0.0				40 - 160	30
2-Isopropyltoluene	ND	1.0	104	97	7.0				70 - 130	30
4-Chlorotoluene	ND	1.0	96	91	5.3				70 - 130	30

QA/QC Data

SDG I.D.: GCD86207

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
4-Methyl-2-pentanone	ND	5.0	99	105	5.9				40 - 160	30
Acetone	ND	5.0	92	91	1.1				40 - 160	30
Acrylonitrile	ND	5.0	97	93	4.2				70 - 130	30
Benzene	ND	0.70	95	92	3.2				70 - 130	30
Bromobenzene	ND	1.0	99	96	3.1				70 - 130	30
Bromochloromethane	ND	1.0	100	95	5.1				70 - 130	30
Bromodichloromethane	ND	0.50	97	98	1.0				70 - 130	30
Bromoform	ND	1.0	109	108	0.9				70 - 130	30
Bromomethane	ND	1.0	104	99	4.9				40 - 160	30
Carbon Disulfide	ND	1.0	94	86	8.9				70 - 130	30
Carbon tetrachloride	ND	1.0	90	86	4.5				70 - 130	30
Chlorobenzene	ND	1.0	101	96	5.1				70 - 130	30
Chloroethane	ND	1.0	99	92	7.3				70 - 130	30
Chloroform	ND	1.0	93	91	2.2				70 - 130	30
Chloromethane	ND	1.0	98	92	6.3				40 - 160	30
cis-1,2-Dichloroethene	ND	1.0	96	95	1.0				70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	100	100	0.0				70 - 130	30
Dibromochloromethane	ND	0.50	105	104	1.0				70 - 130	30
Dibromomethane	ND	1.0	91	95	4.3				70 - 130	30
Dichlorodifluoromethane	ND	1.0	94	88	6.6				40 - 160	30
Ethyl ether	ND	1.0	95	93	2.1				70 - 130	30
Ethylbenzene	ND	1.0	100	94	6.2				70 - 130	30
Hexachlorobutadiene	ND	0.40	106	97	8.9				70 - 130	30
Isopropylbenzene	ND	1.0	93	90	3.3				70 - 130	30
m&p-Xylene	ND	1.0	98	92	6.3				70 - 130	30
Methyl ethyl ketone	ND	5.0	95	100	5.1				40 - 160	30
Methyl t-butyl ether (MTBE)	ND	1.0	92	101	9.3				70 - 130	30
Methylene chloride	ND	1.0	87	87	0.0				70 - 130	30
Naphthalene	ND	1.0	114	118	3.4				70 - 130	30
n-Butylbenzene	ND	1.0	95	90	5.4				70 - 130	30
n-Propylbenzene	ND	1.0	99	92	7.3				70 - 130	30
o-Xylene	ND	1.0	100	93	7.3				70 - 130	30
p-Isopropyltoluene	ND	1.0	95	90	5.4				70 - 130	30
sec-Butylbenzene	ND	1.0	98	95	3.1				70 - 130	30
Styrene	ND	1.0	99	94	5.2				70 - 130	30
tert-Butylbenzene	ND	1.0	95	90	5.4				70 - 130	30
Tetrachloroethene	ND	1.0	99	95	4.1				70 - 130	30
Tetrahydrofuran (THF)	ND	2.5	103	108	4.7				70 - 130	30
Toluene	ND	1.0	97	96	1.0				70 - 130	30
trans-1,2-Dichloroethene	ND	1.0	100	94	6.2				70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	97	98	1.0				70 - 130	30
trans-1,4-dichloro-2-butene	ND	5.0	113	114	0.9				70 - 130	30
Trichloroethene	ND	1.0	103	96	7.0				70 - 130	30
Trichlorofluoromethane	ND	1.0	92	86	6.7				70 - 130	30
Trichlorotrifluoroethane	ND	1.0	93	83	11.4				70 - 130	30
Vinyl chloride	ND	1.0	91	83	9.2				70 - 130	30
% 1,2-dichlorobenzene-d4	97	%	100	103	3.0				70 - 130	30
% Bromofluorobenzene	97	%	96	97	1.0				70 - 130	30
% Dibromofluoromethane	104	%	96	103	7.0				70 - 130	30
% Toluene-d8	90	%	99	99	0.0				70 - 130	30

QA/QC Data

SDG I.D.: GCD86207

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.										
QA/QC Batch 492758 (ug/L), QC Sample No: CD86238 (CD86207)										
Volatile Petroleum Hydrocarbons - Surface Water										
Unadjusted C5-C8 Aliphatics (*1)	ND	100	95	95	0.0	94	97	3.1	70 - 130	20
Unadjusted C9-C12 Aliphatics (*1)	ND	100	90	89	1.1	86	92	6.7	70 - 130	20
C5-C8 Aliphatic Hydrocarbons *1,2	ND	100	95	95	0.0	94	97	3.1	70 - 130	20
C9-C12 Aliphatic Hydrocarbons *1,	ND	100	90	89	1.1	85	90	5.7	70 - 130	20
C9-C10 Aromatic Hydrocarbons *1	ND	100	95	95	0.0	93	97	4.2	70 - 130	20
Benzene	ND	1.0	88	89	1.1	90	93	3.3	70 - 130	20
Ethyl Benzene	ND	1.0	91	91	0.0	91	95	4.3	70 - 130	20
MTBE	ND	1.0	94	94	0.0	93	96	3.2	70 - 130	20
Naphthalene	ND	5.0	89	89	0.0	86	87	1.2	70 - 130	20
Toluene	ND	1.0	90	91	1.1	91	95	4.3	70 - 130	20
m,p-Xylenes	ND	2.0	92	92	0.0	92	95	3.2	70 - 130	20
o-Xylene	ND	1.0	89	90	1.1	89	93	4.4	70 - 130	20
% 2,5-Dibromotoluene (PID)	89	%	93	93	0.0	87	86	1.2	70 - 130	20
Comment:										
A blank MS/MSD was analyzed with this batch.										

m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
September 04, 2019

Wednesday, September 04, 2019

Criteria: MA: CAM, GW3

State: MA

Sample Criteria Exceedances Report

GCD86207 - DAMORE

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CD86207	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CD86207	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CD86207	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CD86207	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L
CD86208	$8260GWR	trans-1,4-dichloro-2-butene	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CD86208	$8260GWR	Tetrahydrofuran (THF)	MA / CAM Protocol / VOA AQ RL	ND	2.5		2	ug/L
CD86208	$8260GWR	Carbon Disulfide	MA / CAM Protocol / VOA AQ RL	ND	5.0		2	ug/L
CD86208	$8260GWR	Acetone	MA / CAM Protocol / VOA AQ RL	ND	25		10	ug/L

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: SOUTHBORO CON COM **RTN:**

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

CD86207, CD86208

Matrices: ☑ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☑	7470/7471 Hg CAM III B ☑	MassDEP VPH CAM IV A ☑	8081 Pesticides CAM V B ☑	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☑	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☑	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☑	6020 Metals CAM III D ☐	8082 PCB CAM V A ☑	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☑ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements speified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☑ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☑ No

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350

H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Sections: PCB, PEST Narrations .	☐ Yes ☑ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☑ No

All negative responses must be addressed in an attached laboratory 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.

Authorized Signature: Rashmi Makol

Date: Wednesday, September 04, 2019

Printed Name: Rashmi Makol

Position: Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

September 04, 2019

SDG I.D.: GCD86207

SDG Comments

Metals Analysis:
The client requested a site specific list of elements which is shorter than the 6010 MCP list.

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.

EPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-FID4 08/16/19-1 Adam Werner, Chemist 08/16/19

CD86207

The initial calibration (AL0730BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

QC (Batch Specific):

Batch 492699 (CD86207)

CD86207

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 25% with the following exceptions: None.
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

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

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 08/20/19 07:18 Rick Schweitzer, Chemist 08/20/19

CD86207

The method preparation blank contains all of the acids and reagents as the samples; the instrument blanks do not.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 492675 (CD86230)

CD86207

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Certification Report

September 04, 2019

SDG I.D.: GCD86207

Mercury Narration

All LCS recoveries were within 75 - 125 with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BLUE 08/15/19 08:57 Tina Hall, Chemist 08/15/19

CD86207

The initial calibration met criteria.
The continuing calibration standards met criteria for all the elements reported. The linear range is defined daily by the calibration range.
The continuing calibration blanks were less than the reporting level for the elements reported.
The ICSA and ICSAB were analyzed at the beginning and end of the run and were within criteria.The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 492629 (CD84736)

CD86207

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.

ICPMS Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

ICPMS 08/22/19 12:34 Cindy Pearce, Chemist 08/22/19

CD86207

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following samples did not meet internal standard criteria: None.

QC (Batch Specific):

Batch 493016 (CD85618)

CD86207

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.

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MCP Certification Report

September 04, 2019

SDG I.D.: GCD86207

PCB Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 492646 (Samples: CD86207): -----

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (PCB-1016)

The LCS/LCSD RPD exceeds the method criteria for one or more surrogates, therefore there may be variability in the reported result. (% DCBP (Surrogate Rec) (Confirmation), % TCMX (Surrogate Rec) (Confirmation))

Instrument:

AU-ECD1 08/16/19-1 Saadia Chudary, Chemist 08/16/19

CD86207

The initial calibration (PC814AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC814BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 492646 (CD83157)

CD86207

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: % DCBP (Surrogate Rec) (Confirmation)(29.3%), % TCMX (Surrogate Rec) (Confirmation)(20.7%), PCB-1016(23.5%)
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

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

PEST Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 492647 (Samples: CD86207): -----

The LCS/LCSD RPD exceeds the method criteria for one or more surrogates, therefore there may be variability in the reported result. (% TCMX)

Instrument:

AU-ECD4 08/16/19-1 Adam Werner, Chemist 08/16/19

CD86207

The initial calibration (PS808AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS808BI) RSD for the compound list was less than 20% except for the following compounds: None.
The Endrin and DDT breakdown does not exceed 15% except for the following compounds:None.
The Endrin and DDT breakdown does not exceed the maximum of 20% except for the following compounds:None.
The continuing calibration %D for the compound list was less than 20% except for the following compounds:

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MCP Certification Report

September 04, 2019

SDG I.D.: GCD86207

PEST Narration

Samples: CD86207
Preceding CC 816A061 - Methoxychlor -21%L (20%)
Succeeding CC 816A072 - None.
A low "1A" standard was run after the samples to demonstrate capability to detect any compounds outside of the CC acceptance criteria. All reported samples were ND for the affected compounds.

QC (Batch Specific):

Batch 492647 (CD83157)

CD86207

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: % TCMX(41.3%)
A LCS and LCS duplicate were performed instead of a MS and MSD. Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. Gamma chlordane recovery is reported as chlordane in the LCS and LCSD

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

SVOASIM Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM27 08/20/19-1 Wes Bryon, Chemist 08/20/19

CD86207

For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM27/27_BNSIM18_0819):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM27/0820_03-27_BNSIM18_0819) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 492789 (CD84885)

CD86207

All LCS recoveries were within 30 - 130 with the following exceptions: None.
All LCSD recoveries were within 30 - 130 with the following exceptions: None.

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MCP Certification Report

September 04, 2019

SDG I.D.: GCD86207

SVOASIM Narration

All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

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

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM17 08/15/19-2 Michael Hahn, Chemist 08/15/19

CD86208

Initial Calibration Evaluation (CHEM17/VT-S081419):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.042 (0.05), 2-Hexanone 0.073 (0.1), 4-Methyl-2-pentanone 0.097 (0.1), Acetone 0.049 (0.1), Bromoform 0.092 (0.1), Methyl ethyl ketone 0.056 (0.1), Tetrahydrofuran (THF) 0.032 (0.05)
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM17/0815_28-VT-S081419) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.041 (0.05), 2-Hexanone 0.073 (0.1), Acetone 0.046 (0.1), Acrylonitrile 0.048 (0.05), Bromoform 0.096 (0.1), Methyl ethyl ketone 0.055 (0.1), Tetrahydrofuran (THF) 0.035 (0.05)
The following compounds did not meet minimum response factors: None.

CHEM17 08/18/19-1 Michael Hahn, Chemist 08/18/19

CD86207

Initial Calibration Evaluation (CHEM17/VT-S081419):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.042 (0.05), 2-Hexanone 0.073 (0.1), 4-Methyl-2-pentanone 0.097 (0.1), Acetone 0.049 (0.1), Bromoform 0.092 (0.1), Methyl ethyl ketone 0.056 (0.1), Tetrahydrofuran (THF) 0.032 (0.05)
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM17/0818_02-VT-S081419) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.045 (0.05), 2-Hexanone 0.079 (0.1), Acetone 0.044 (0.1), Acrylonitrile 0.049 (0.05), Methyl ethyl ketone 0.057 (0.1), Tetrahydrofuran (THF) 0.035 (0.05)

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

September 04, 2019

SDG I.D.: GCD86207

VOA Narration

The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 492770 (CD85841)

CD86208

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

Batch 492983 (CD86207)

CD86207

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.

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

VPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

PIDFID 08/16/19-2 Raman Makol, Chemist 08/16/19

CD86207

Initial Calibration Evaluation (PIDFID/VPH_071719_T):
The following compounds exceeded %RSD criteria: None.

QC (Batch Specific):

Batch 492758 (CD86238)

CD86207

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
A blank MS/MSD was analyzed with this batch.

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

EPH Fractionation Standard

SDG I.D.: GCD86207

Wednesday, September 04, 2019

Effective Date(s): 10/20/18 - 10/20/19 **Analyst:** aw

AS #	TV	20ml	22ml	25ml	30ml	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
C9 - Nonane	40	18.96	20.27	20.49	18.72	47.4	50.7	51.2	46.8	
C-10 Decane	40	22.86	24.41	24.96	22.64	57.2	61.0	62.4	56.6	
1,2,3-Trimethylbenzene	40	32.15	32.70	29.72	32.49	80.4	81.7	74.3	81.2	
Naphthalene	40	35.31	35.92	32.63	35.76	88.3	89.8	81.6	89.4	
2-Methylnaphthalene	40	36.24	36.93	33.55	36.75	90.6	92.3	83.9	91.9	
C12 - Dodecane	40	25.51	27.21	27.57	25.45	63.8	68.0	68.9	63.6	
Acenaphthalene	40	37.76	38.39	34.67	38.23	94.4	96.0	86.7	95.6	
Acenaphthene	40	38.58	39.12	35.34	39.01	96.5	97.8	88.3	97.5	
C14 - Tetradecane	40	28.57	30.45	30.82	28.72	71.4	76.1	77.1	71.8	
Fluorene	40	40.44	40.86	36.93	40.77	101.1	102.1	92.3	101.9	
C16 - Hexadecane	40	32.57	34.72	34.82	32.64	81.4	86.8	87.1	81.6	
Anthracene	40	38.92	38.81	35.41	39.01	97.3	97.0	88.5	97.5	
Phenanthrene	40	39.66	39.52	36.02	39.67	99.2	98.8	90.0	99.2	
C18 - Octadecane	40	35.54	37.74	37.80	35.57	88.9	94.3	94.5	88.9	
Fluoranthene	40	38.97	38.68	35.51	39.03	97.4	96.7	88.8	97.6	
Pyrene	40	39.20	38.87	35.63	39.29	98.0	97.2	89.1	98.2	
C20 - Eicosane	40	37.67	40.11	39.74	37.68	94.2	100.3	99.4	94.2	
C21 - Heneicosane	40	36.65	39.06	38.49	36.41	91.6	97.7	96.2	91.0	
C22 - Docosane	40	38.25	41.01	40.01	37.71	95.6	102.5	100.0	94.3	
Benzo(a)anthracene	40	39.10	37.48	34.74	38.88	97.7	93.7	86.9	97.2	
Chyrsene	40	37.05	38.18	35.03	38.36	92.6	95.5	87.6	95.9	
C24 - Tetracosane	40	37.34	40.13	39.11	36.91	93.3	100.3	97.8	92.3	
Benzo(b/K)fluor COPK	80	75.89	74.71	68.89	75.77	94.9	93.4	86.1	94.7	
Benzo(a)pyrene	40	40.14	39.73	35.90	40.28	100.4	99.3	89.8	100.7	
C26 - Hexacosane	40	38.34	41.64	40.56	38.11	95.8	104.1	101.4	95.3	
C28 - Octacosane	40	39.72	42.67	41.97	39.37	99.3	106.7	104.9	98.4	
Indeno/Dibenz copk	80	13.90	74.92	71.31	31.64	17.4	93.7	89.1	39.5	
Benzo(ghi)perylene	40	39.27	35.61	34.83	36.15	98.2	89.0	87.1	90.4	
C30 - Tricotane	40	37.50	40.32	39.72	37.25	93.7	100.8	99.3	93.1	
C32 - Dotriacontance	40	37.09	39.88	39.50	36.81	92.7	99.7	98.7	92.0	
C34 - Tetratriacontane	40	36.67	39.41	38.78	36.38	91.7	98.5	97.0	90.9	
C36 - Hexatriacontane	40	35.46	37.75	37.62	35.32	88.6	94.4	94.1	88.3	

EPH Fractionation Standard

SDG I.D.: GCD86207

Effective Date(s): 10/20/18 - 10/20/19 **Analyst:** aw

AS #	TV	20ml	22ml	25ml	30ml	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
C38 - Octatriacontane	40	35.41	37.31	37.18	35.44	88.5	93.3	92.9	88.6	
C40 - Tetracontane	40	35.55	36.94	37.28	35.41	88.9	92.4	93.2	88.5	

Notes: EPH Frac Check Solution EPH10b-solvent transfer into hex, frac 1ml. Dilute 5x to run tv=40 Lot:140118-1165992
AU-FID3 10/29/18 EPH O29_062/O29_064/O29_066/O29_068

Cooler: Yes [X] No [ ]
Coolant: IPK [X] ICE [ ] No [ ]
Temp 1.6 °C Pg of

PHOENIX
Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

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Client Services (860) 645-8726

Data Delivery/Contact Options:
[ ] Fax:
[ ] Phone:
[ ] Email:

Customer: D Thomas Assoc.
Address: 1135 Stafford Rd
Tiverton RI 02878

Project: Southbridge ConCom
Report to:
Invoice to:
QUOTE #

Project P.O:

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature: [signature] Date: 8/14/19

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe **OIL**=Oil
B=Bulk **L**=Liquid **X** = _____(Other)

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	EPH	VOC	VPH	GL Amber 8 oz. w/H3PO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] HCl [ ] H2SO4 [ ]	PL As is [ ] 250ml [ ] 1500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 1500ml	PL [ ] 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
8Q207	BHCA	SW	8/14/19	10:30	X						2							
	BHCA	SW				X					2							
	BHCA	SW					X				2							
	BHCA	SW						X						1				
	BHCA	SW							X									
	BHCA	SW								X	1							
	BHCA	SW									1							
	BHCA	SW								X								
	BHCA	SW									3							
8Q208	TRIP BLANK		8/14/19	10:30			X				2							
											2							

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	8-15-19	11:05
[signature]	[signature]	8/19	1751

Comments, Special Requirements or Regulations:
Filter Metals before Fixing

Turnaround Time:
[ ] 1 Day*
[ ] 2 Days*
[ ] 3 Days*
[X] Standard
[ ] Other
* SURCHARGE APPLIES

RI
[ ] (Residential) Direct Exposure
[ ] (Comm/Industrial) Direct Exposure
[ ] GA Leachability
[ ] GB Leachability
[ ] GA-GW Objectives
[ ] GB-GW Objectives

CT
[ ] RCP Cert
[ ] GW Protection
[ ] SW Protection
[ ] GA Mobility
[ ] GB Mobility
[ ] Residential DEC
[ ] I/C DEC
[ ] Other

MA
[X] MCP Certification
[ ] GW-1 [ ] MWRA eSMART
[ ] GW-2
[X] GW-3
[ ] S-1 GW-1 [ ] S-1 GW-2 [ ] S-1 GW-3
[ ] S-2 GW-1 [ ] S-2 GW-2 [ ] S-2 GW-3
[ ] S-3 GW-1 [ ] S-3 GW-2 [ ] S-3 GW-3
[ ] SW Protection

State where samples were collected: MA

Data Format
[ ] Excel
[ ] PDF
[ ] GIS/Key
[ ] EQuIS
[ ] Other

Data Package
[ ] Tier II Checklist
[ ] Full Data Package*
[ ] Phoenix Std Report
[ ] Other
* SURCHARGE APPLIES

Pace Analytical Services, LLC.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

Bobbi Aloisa
Phoenix Environmental Laboratories
587 East Middle Turnpike
Manchester CT 06040

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Prepared Date:
September 3, 2019

Report Information:

Pace Project #: 10488182
Sample Receipt Date: 08/20/2019
Client Project #: CD86207
Client Sub PO #: N/A
State Cert #: M-MN064

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Joanne Richardson, your Pace Project Manager.

This report has been reviewed by:

Joanne Richardson

September 03, 2019

Joanne Richardson,
(612) 607-6453
(612) 607-6444 (fax)

Report of Laboratory Analysis

Pace Analytical Services, LLC.
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DISCUSSION

This report presents the results from the analysis performed on one sample submitted by a representative of Phoenix Environmental Laboratories, Inc. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 1-Liter sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 52-83%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample preparation procedures did not significantly impact the results reported for the field sample.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 87-118% with relative percent differences of 0.0-7.9%. These results were within the target ranges for the method. Matrix spikes were not prepared with the sample batch.

Pace Analytical Services, LLC
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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Minnesota - Pet	1240
Alabama	40770	Mississippi	MN00064
Alaska - DW	MN00064	Missouri - DW	10100
Alaska - UST	17-009	Montana	CERT0092
Arizona	AZ0014	Nebraska	NE-OS-18-06
Arkansas - DW	MN00064	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
CNMI Saipan	MP0003	New Jersey (NE	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Carolina -	27700
EPA Region 8+	via MN 027-053	North Carolina -	530
Florida (NELAP	E87605	North Dakota	R-036
Georgia	959	Ohio - DW	41244
Guam	17-001r	Ohio - VAP	CL101
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon - Primar	MN300001
Illinois	200011	Oregon - Secon	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky - DW	90062	South Dakota	NA
Kentucky - WW	90062	Tennessee	TN02818
Louisiana - DE	03086	Texas	T104704192
Louisiana - DW	MN00064	Utah (NELAP)	MN00064
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Massachusetts	M-MN064	West Virginia -	382
Michigan	9909	West Virginia -	9952C
Minnesota	027-053-137	Wisconsin	999407970
Minnesota - De	via MN 027-053	Wyoming - UST	2926.01

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

Cooler: Yes ☐ No ☐
Coolant: IPK ☐ ICE ☐ No ☐

CHAIN OF CUSTODY RECORD

WO# : 10488182

10488182

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

~~Customer~~ TO: Pace Analytical
Address:

Project:
Report to: Bobbi Aloisa
Invoice to:
QUOTE #

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe **OIL**=Oil
B=Bulk **L**=Liquid **X** = _____(Other)

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Analysis Request: Dioxin 1613	GL Amber 8 oz. w/H3PO4	Soil VOA Vials [ ] methanol [ ] H2O	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
CD86207		SW	8-14-19	10:30	X												2

Relinquished by:	Accepted by:	Date:	Time:
Kyle Bailey	FIRST	8-19-19	
	Pace	8/20/19	0910

Comments, Special Requirements or Regulations:
T=5.3

Turnaround Time:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☒ Standard
☐ Other
* SURCHARGE APPLIES

RI
☐ Direct Exposure (Residential)
☐ GW
☐ Other

CT
☐ RCP Cert
☐ GW Protection
☐ SW Protection
☐ GA Mobility
☐ GB Mobility
☐ Residential DEC
☐ I/C DEC
☐ Other

MA
☐ MCP Certification
☐ GW-1
☐ GW-2
☐ GW-3
☐ S-1 GW-1 ☐ S-1 GW-2 ☐ S-1 GW-3
☐ S-2 GW-1 ☐ S-2 GW-2 ☐ S-2 GW-3
☐ S-3 GW-1 ☐ S-3 GW-2 ☐ S-3 GW-3
☐ MWRA eSMART ☐ Other

State where samples were collected: MA

Data Format
☐ Excel
☐ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist
☐ Full Data Package*
☐ Phoenix Std Report
☐ Other
* SURCHARGE APPLIES

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 09May2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.28	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** Phoenix Environmental **Project #:** **WO#: 10488182**

PM: JMR **Due Date: 09/04/19**

CLIENT: Phoenix Env.

Courier: ☐Fed Ex ☒UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☐Commercial **See Exception** ☐

Tracking Number: 12 6312 4A3 13 9625 7473

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☒Bubble Wrap ☐Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☒Yes ☐No

Thermometer: ☐T1(0461) ☒T2(1336) ☐T3(0459) ☐T4(0254) ☐T5(0489) **Type of Ice:** ☐Wet ☒Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 5.3 °C **Average Corrected Temp (no temp blank only):** _____ °C **See Exceptions** ☐

Correction Factor: +0.1 **Cooler Temp Corrected w/temp blank:** 5.4 °C

USDA Regulated Soil: (☒ N/A, water sample/Other:_____) **Date/Initials of Person Examining Contents:** CJG 8/20/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☐Yes	☒No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☐Yes	☒No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☒Water ☐Soil ☐Oil ☐Other_____				
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☒N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	13. **See Exception** ☐
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased): N/A

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review: Joanne Richardson **Date:** 8-20-19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: CJG

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Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

REPORTOFLABORATORY ANALYSIS

Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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Method 1613B Sample Analysis Results

Client - Phoenix Environmental Laboratories

Client's Sample ID	CD86207			
Lab Sample ID	10488182001			
Filename	U190824B_05			
Injected By	BAL			
Total Amount Extracted	504 mL	Matrix	Water	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	08/14/2019	10:30
ICAL ID	U190730	Received	08/20/2019	09:10
CCal Filename(s)	U190824A_14	Extracted	08/22/2019	10:55
Method Blank ID	BLANK-72884	Analyzed	08/24/2019	20:01

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	77
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	80
				1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	83
				1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	70
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	76
				1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	56
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	52
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Fax: 612-607-6444

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKVT		
Lab Sample ID	BLANK-72884	Matrix	Water
Filename	U190824A_11	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	08/22/2019 10:55
ICAL ID	U190730	Analyzed	08/24/2019 13:23
CCal Filename(s)	U190823B_17	Injected By	BAL

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	83
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	86
				1,2,3,7,8-PeCDF-13C	2.00	88
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	85
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	96
				1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	82
				1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	65
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	62
				1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	97
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-72885		
Filename	U190824A_12	Matrix	Water
Total Amount Extracted	1040 mL	Dilution	NA
ICAL ID	U190730	Extracted	08/22/2019 10:55
CCal Filename	U190823B_17	Analyzed	08/24/2019 14:07
Method Blank ID	BLANK-72884	Injected By	BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.4	7.5	15.8	94
2,3,7,8-TCDD	10	11	6.7	15.8	106
1,2,3,7,8-PeCDF	50	48	40.0	67.0	96
2,3,4,7,8-PeCDF	50	47	34.0	80.0	95
1,2,3,7,8-PeCDD	50	46	35.0	71.0	91
1,2,3,4,7,8-HxCDF	50	49	36.0	67.0	97
1,2,3,6,7,8-HxCDF	50	46	42.0	65.0	93
2,3,4,6,7,8-HxCDF	50	47	35.0	78.0	94
1,2,3,7,8,9-HxCDF	50	45	39.0	65.0	91
1,2,3,4,7,8-HxCDD	50	50	35.0	82.0	100
1,2,3,6,7,8-HxCDD	50	54	38.0	67.0	108
1,2,3,7,8,9-HxCDD	50	55	32.0	81.0	111
1,2,3,4,6,7,8-HpCDF	50	51	41.0	61.0	101
1,2,3,4,7,8,9-HpCDF	50	46	39.0	69.0	92
1,2,3,4,6,7,8-HpCDD	50	45	35.0	70.0	89
OCDF	100	110	63.0	170.0	109
OCDD	100	100	78.0	144.0	101
2,3,7,8-TCDD-37Cl4	10	9.2	3.1	19.1	92
2,3,7,8-TCDF-13C	100	79	22.0	152.0	79
2,3,7,8-TCDD-13C	100	79	20.0	175.0	79
1,2,3,7,8-PeCDF-13C	100	78	21.0	192.0	78
2,3,4,7,8-PeCDF-13C	100	79	13.0	328.0	79
1,2,3,7,8-PeCDD-13C	100	85	21.0	227.0	85
1,2,3,4,7,8-HxCDF-13C	100	69	19.0	202.0	69
1,2,3,6,7,8-HxCDF-13C	100	73	21.0	159.0	73
2,3,4,6,7,8-HxCDF-13C	100	73	22.0	176.0	73
1,2,3,7,8,9-HxCDF-13C	100	78	17.0	205.0	78
1,2,3,4,7,8-HxCDD-13C	100	65	21.0	193.0	65
1,2,3,6,7,8-HxCDD-13C	100	65	25.0	163.0	65
1,2,3,4,6,7,8-HpCDF-13C	100	61	21.0	158.0	61
1,2,3,4,7,8,9-HpCDF-13C	100	69	20.0	186.0	69
1,2,3,4,6,7,8-HpCDD-13C	100	68	26.0	166.0	68
OCDD-13C	200	110	26.0	397.0	56

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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Tel: 612-607-1700
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Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCSD-72886		
Filename	U190824A_13	Matrix	Water
Total Amount Extracted	1050 mL	Dilution	NA
ICAL ID	U190730	Extracted	08/22/2019 10:55
CCal Filename	U190823B_17	Analyzed	08/24/2019 14:50
Method Blank ID	BLANK-72884	Injected By	BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.5	7.5	15.8	95
2,3,7,8-TCDD	10	9.9	6.7	15.8	99
1,2,3,7,8-PeCDF	50	47	40.0	67.0	93
2,3,4,7,8-PeCDF	50	47	34.0	80.0	94
1,2,3,7,8-PeCDD	50	45	35.0	71.0	91
1,2,3,4,7,8-HxCDF	50	50	36.0	67.0	100
1,2,3,6,7,8-HxCDF	50	49	42.0	65.0	98
2,3,4,6,7,8-HxCDF	50	48	35.0	78.0	95
1,2,3,7,8,9-HxCDF	50	46	39.0	65.0	92
1,2,3,4,7,8-HxCDD	50	51	35.0	82.0	101
1,2,3,6,7,8-HxCDD	50	57	38.0	67.0	114
1,2,3,7,8,9-HxCDD	50	58	32.0	81.0	116
1,2,3,4,6,7,8-HpCDF	50	53	41.0	61.0	106
1,2,3,4,7,8,9-HpCDF	50	48	39.0	69.0	96
1,2,3,4,6,7,8-HpCDD	50	44	35.0	70.0	87
OCDF	100	120	63.0	170.0	118
OCDD	100	100	78.0	144.0	104
2,3,7,8-TCDD-37Cl4	10	9.6	3.1	19.1	96
2,3,7,8-TCDF-13C	100	91	22.0	152.0	91
2,3,7,8-TCDD-13C	100	92	20.0	175.0	92
1,2,3,7,8-PeCDF-13C	100	91	21.0	192.0	91
2,3,4,7,8-PeCDF-13C	100	90	13.0	328.0	90
1,2,3,7,8-PeCDD-13C	100	98	21.0	227.0	98
1,2,3,4,7,8-HxCDF-13C	100	77	19.0	202.0	77
1,2,3,6,7,8-HxCDF-13C	100	78	21.0	159.0	78
2,3,4,6,7,8-HxCDF-13C	100	83	22.0	176.0	83
1,2,3,7,8,9-HxCDF-13C	100	91	17.0	205.0	91
1,2,3,4,7,8-HxCDD-13C	100	77	21.0	193.0	77
1,2,3,6,7,8-HxCDD-13C	100	71	25.0	163.0	71
1,2,3,4,6,7,8-HpCDF-13C	100	67	21.0	158.0	67
1,2,3,4,7,8,9-HpCDF-13C	100	77	20.0	186.0	77
1,2,3,4,6,7,8-HpCDD-13C	100	79	26.0	166.0	79
OCDD-13C	200	120	26.0	397.0	61

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Method 1613B

Spike Recovery Relative Percent Difference (RPD) Results

Client	Phoenix Environmental Laboratories		
Spike 1 ID	LCS-72885	Spike 2 ID	LCSD-72886
Spike 1 Filename	U190824A_12	Spike 2 Filename	U190824A_13

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	94	95	1.1
2,3,7,8-TCDD	106	99	6.8
1,2,3,7,8-PeCDF	96	93	3.2
2,3,4,7,8-PeCDF	95	94	1.1
1,2,3,7,8-PeCDD	91	91	0.0
1,2,3,4,7,8-HxCDF	97	100	3.0
1,2,3,6,7,8-HxCDF	93	98	5.2
2,3,4,6,7,8-HxCDF	94	95	1.1
1,2,3,7,8,9-HxCDF	91	92	1.1
1,2,3,4,7,8-HxCDD	100	101	1.0
1,2,3,6,7,8-HxCDD	108	114	5.4
1,2,3,7,8,9-HxCDD	111	116	4.4
1,2,3,4,6,7,8-HpCDF	101	106	4.8
1,2,3,4,7,8,9-HpCDF	92	96	4.3
1,2,3,4,6,7,8-HpCDD	89	87	2.3
OCDF	109	118	7.9
OCDD	101	104	2.9

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

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