REAL-LIFE STRUGGLES WITH READING/INTERPRETING CHAIN-OF-CUSTODY FORMS AND LAB REPORTS

25th Annual NERPCA Workshop

Thursday, October 26, 2023

Jay Pimpare (EPA) & Stephanie Rochefort (Somersworth, NH)

PLEASE DON'T FALL ASLEEP!

This really is an interesting topic

AND PLEASE DON'T LEAVE!

This is going to be quick


ALL ABOARD
STRUGGLE

WHY ARE CHAIN-OF-CUSTODY FORMS IMPORTANT?

Because…

if you ever need to bring an IU to court, an inaccurate chain-of-custody could result in the information being discarded.

an inaccurate chain-of-custody can result in wrong lab tests being reported

It makes for an easier EPA-audit

HERE'S A REALLY-GOOD EXAMPLE

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

FOR LAB USE ONLY

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC: 524.2 MTBE ONLY; 524.2 BTEX; 8260 624 VTICS; 1, 4 DIOXANE; 8021 BTEX HALOS; 8015 GRO MAVPH	SVOC: 8270 625 SVTICS EDB DBCP; ABN A BN PAH; TPH8100 LI L2; 8015 DRO MAEPH; PEST 608 PCB 608; PEST 8081 PCB 8082; OIL & GREASE 1664 TPH 1664	TCLP: TCLP 1311 ABN METALS; VOC PEST HERB	METALS: DISSOLVED METALS (LIST BELOW); TOTAL METALS (LIST BELOW)	INORGANICS: TS TDS SPEC CON.; BR CL F SO4 NO2 NO3 NO2/NO3; CBOD T. ALK.; TKN T. PHOS. O. PHOS.; NH3 T. RES. CHLORINE; PH; COD PHENOLS TOC DOC; TOTAL CYANIDE TOTAL SULFIDE; REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	MICRO: TOTAL COLIFORM E. COLI; FECAL COLIFORM ENTEROCOCCI; HETEROTROPHIC PLATE COUNT	OTHER	# OF CONTAINERS	NOTES MEOH VIAL #
Industry #1	2/1-2/23 0800-0800	WW	C					TS (TDS)		CBOD	TKN					2	
Industry #1	2/1/23 0830	WW	G		✓											1	

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER

PRESERVATIVE: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH

PROJECT MANAGER: Stephanie Rochefort

COMPANY: City of Somersworth WWTF

ADDRESS: 99 Duffarnsville Rd

CITY: Somersworth STATE: NH ZIP: 03878

PHONE: 603-841-2567 EXT.:

FAX: no Fax

E-MAIL: srochefort@somersworthnh.gov

SITE NAME:

PROJECT #: IPP annual

STATE: (NH) MA ME VT OTHER:

REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR GWP, OIL FUND, BROWNFIELD OR OTHER:

QUOTE #: PO #:

DATE NEEDED:

QA/QC REPORTING LEVEL A B C OR MA MCP

REPORTING OPTIONS PRELIMS: YES OR NO

ELECTRONIC OPTIONS E-MAIL PDF EQUIS EXCEL

TEMP. °C ICE? YES NO

SAMPLER(S): S. Rochefort

	DATE:	TIME:	
RELINQUISHED BY:	2/1/23	1030	RECEIVED BY:
RELINQUISHED BY:	2/1/23	1300	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS:

SAMPLES FIELD FILTERED? ☐ YES ☐ NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

SITE HISTORY:

SUSPECTED CONTAMINATION:

FIELD READINGS:

Eastern Analytical, Inc.
professional laboratory and drilling services
25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | E-MAIL: CUSTOMERSERVICE@EASTERNANALYTICAL.COM | WWW.EASTERNANALYTICAL.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)

Absolute Resource

64212

CHAIN OF CUSTODY DOCUMENTATION

Lab Number assigned by laboratory	Your Field ID (and any other identifying marks)	Date Sampled	Time Sampled	Sampled By	Container Size & Type	Preservative
64212 -01	1/5-1/6	1/5	712			
	1/5-1/6	1/5	710			
	1/5-1/6	1/5	709			
	1/5 1/6	1/5	700			

Relinquished by: [signature] Date 1-6-23 Time 1:00 Received by: [signature] Date 1/6/23 Time 11:20

Relinquished by: [signature] Date 1/6/23 Time 14:10 Received by: [signature] Date 1/6/23 Time 1410

Reporting Instructions:

TAT Requested:

Comments:

WHAT CAN WE DO TO FIX THIS PROBLEM?

THIS IS WHAT I'VE TRIED

DOES IT WORK?

NOW LET'S TALK ABOUT LAB REPORTS!

THE CHOSEN LAB MAKES A DIFFERENCE!

Make sure the chosen lab is accredited for all parameters being analyzed

THERE'S A LOT OF ALPHABET SOUP!

Qualifier	Description
B	Method blank contaminated with target analyte
B1	BOD had total oxygen loss. Result reported as ">" the highest dilution
B2	BOD had no oxygen loss. Result reported as "<" the lowest dilution
G	Reporting limit elevated due to matrix interference
H	Method prescribed holding time exceeded
J	Indicates an estimated value. Value is less than the quantitation limit.
IL	Internal standard(s) recovery was low due to matrix. Result may be biased high
IH	Internal standard(s) recovery was high due to matrix. Result may be biased low

I DID SAY A LOT!

Qualifier	Description
LH	Laboratory control spike(s) was high. Results may be biased high.
LL	Laboratory control spike(s) was low. Results may be biased low.
MH	Matrix spike recovery high due to matrix. Results may be biased high.
ML	Matrix spike recovery low due to matrix. Results may be biased low.
N	Non-target compound. Reported as a TIC
NC	Spike recovery was not calculated due to the concentration of the analyte being >4 times the concentration of the spike added
R	RPD outside acceptable recovery limits.

Qualifier	Description
RO	sample received out of holding time
SH	surrogate recovery high due to matrix
SL	surrogate recovery low due to matrix
U	BOD/CBOD blank had an oxygen depletion greater than
	the suggested amount of 0.2
V	Sample pH for analysis was not within the required range
	when checked at time of analysis.
Z	Too numerous to count (TNTC)

THIS ISN'T ALL THAT YOU MAY SEE, BUT YOU GET THE IDEA…

EXAMPLE LAB REPORT

- This was requested analytical for an "unknown"

Eastern Analytical, Inc.
professional laboratory and drilling services

Brett Deyling
CMA Engineers, Inc. (Portsmouth)
35 Bow Street
Portsmouth , NH 03801-3819

Laboratory Report for:

Eastern Analytical, Inc. ID: 228003
Client Identification: Lamprey 1198
Date Received: 6/22/2021

Enclosed are the analytical results per the Chain of Custody for sample(s) in the referenced project. All analyses were performed in accordance with our QA/QC Program, NELAP and other applicable state requirements. All quality control criteria was within acceptance criteria unless noted on the report pages. Results are for the exclusive use of the client named on this report and will not be released to a third party without consent.

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the written approval of the laboratory.

The following standard abbreviations and conventions apply to all EAI reports:
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Certifications:
Eastern Analytical, Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012), New York (12072), West Virginia (9910C) and Alabama (41620). Please refer to our website at www.easternanalytical.com for a copy of our certificates and accredited parameters.

References:
- EPA 600/4-79-020, 1983
- Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd edition or noted revision year.
- Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- Hach Water Analysis Handbook, 4th edition, 1992

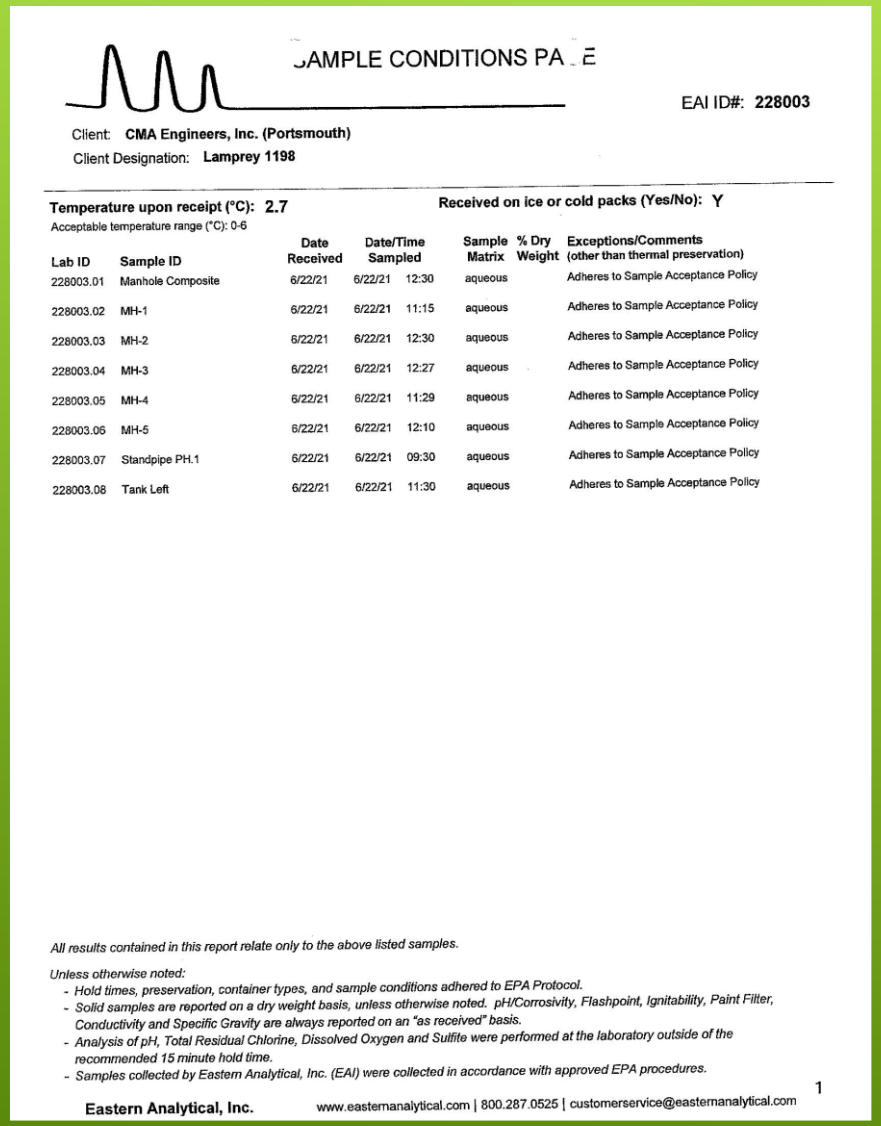
If you have any questions regarding the results contained within, please feel free to contact customer service. Unless otherwise requested, we will dispose of the sample(s) 6 weeks from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director — 7.13.21 Date — 101 # of pages (excluding cover letter)

Check out the certifications, references and number of pages!



SAMPLE CONDITIONS PAGE

EAI ID#: 228003

Client: **CMA Engineers, Inc. (Portsmouth)**

Client Designation: **Lamprey 1198**

Temperature upon receipt (°C): 2.7 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date/Time Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
228003.01	Manhole Composite	6/22/21	6/22/21 12:30	aqueous		Adheres to Sample Acceptance Policy
228003.02	MH-1	6/22/21	6/22/21 11:15	aqueous		Adheres to Sample Acceptance Policy
228003.03	MH-2	6/22/21	6/22/21 12:30	aqueous		Adheres to Sample Acceptance Policy
228003.04	MH-3	6/22/21	6/22/21 12:27	aqueous		Adheres to Sample Acceptance Policy
228003.05	MH-4	6/22/21	6/22/21 11:29	aqueous		Adheres to Sample Acceptance Policy
228003.06	MH-5	6/22/21	6/22/21 12:10	aqueous		Adheres to Sample Acceptance Policy
228003.07	Standpipe PH.1	6/22/21	6/22/21 09:30	aqueous		Adheres to Sample Acceptance Policy
228003.08	Tank Left	6/22/21	6/22/21 11:30	aqueous		Adheres to Sample Acceptance Policy

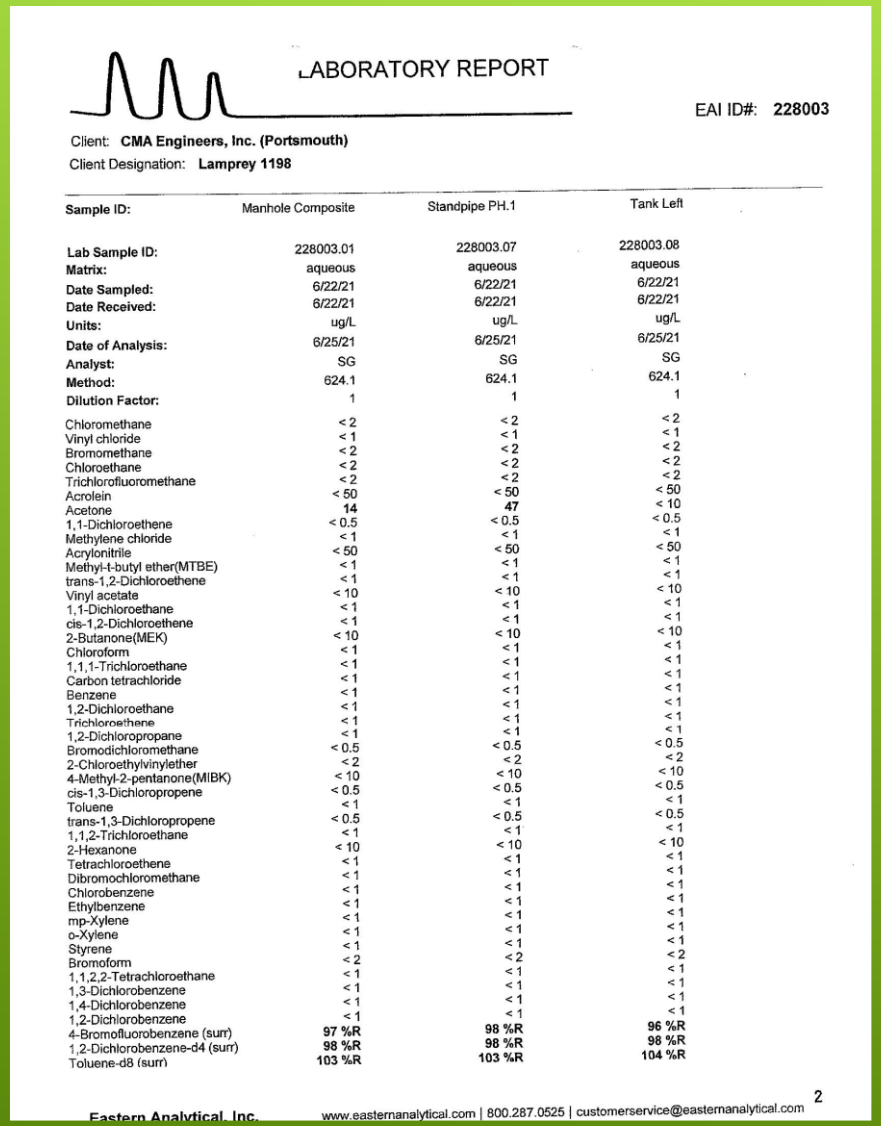
All results contained in this report relate only to the above listed samples.

Unless otherwise noted:

- *Hold times, preservation, container types, and sample conditions adhered to EPA Protocol.*
- *Solid samples are reported on a dry weight basis, unless otherwise noted. pH/Corrosivity, Flashpoint, Ignitability, Paint Filter, Conductivity and Specific Gravity are always reported on an "as received" basis.*
- *Analysis of pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite were performed at the laboratory outside of the recommended 15 minute hold time.*
- *Samples collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures.*

Eastern Analytical, Inc. www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

I love this page – the lab will tell me if the samples were not received in an acceptable condition!



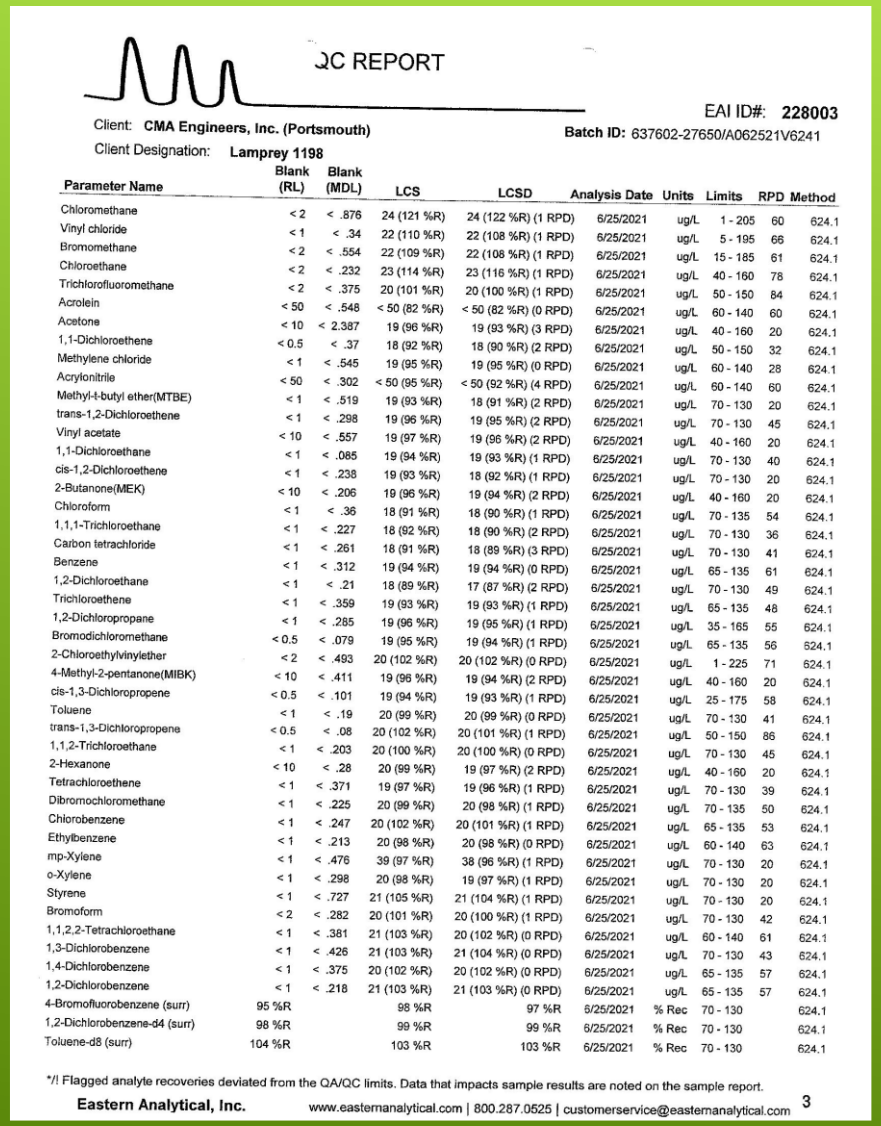
LABORATORY REPORT

EAI ID#: **228003**

Client: **CMA Engineers, Inc. (Portsmouth)**
Client Designation: **Lamprey 1198**

Sample ID:	Manhole Composite	Standpipe PH.1	Tank Left
Lab Sample ID:	228003.01	228003.07	228003.08
Matrix:	aqueous	aqueous	aqueous
Date Sampled:	6/22/21	6/22/21	6/22/21
Date Received:	6/22/21	6/22/21	6/22/21
Units:	ug/L	ug/L	ug/L
Date of Analysis:	6/25/21	6/25/21	6/25/21
Analyst:	SG	SG	SG
Method:	624.1	624.1	624.1
Dilution Factor:	1	1	1
Chloromethane	< 2	< 2	< 2
Vinyl chloride	< 1	< 1	< 1
Bromomethane	< 2	< 2	< 2
Chloroethane	< 2	< 2	< 2
Trichlorofluoromethane	< 2	< 2	< 2
Acrolein	< 50	< 50	< 50
Acetone	**14**	**47**	< 10
1,1-Dichloroethene	< 0.5	< 0.5	< 0.5
Methylene chloride	< 1	< 1	< 1
Acrylonitrile	< 50	< 50	< 50
Methyl-t-butyl ether(MTBE)	< 1	< 1	< 1
trans-1,2-Dichloroethene	< 1	< 1	< 1
Vinyl acetate	< 10	< 10	< 10
1,1-Dichloroethane	< 1	< 1	< 1
cis-1,2-Dichloroethene	< 1	< 1	< 1
2-Butanone(MEK)	< 10	< 10	< 10
Chloroform	< 1	< 1	< 1
1,1,1-Trichloroethane	< 1	< 1	< 1
Carbon tetrachloride	< 1	< 1	< 1
Benzene	< 1	< 1	< 1
1,2-Dichloroethane	< 1	< 1	< 1
Trichloroethene	< 1	< 1	< 1
1,2-Dichloropropane	< 1	< 1	< 1
Bromodichloromethane	< 0.5	< 0.5	< 0.5
2-Chloroethylvinylether	< 2	< 2	< 2
4-Methyl-2-pentanone(MIBK)	< 10	< 10	< 10
cis-1,3-Dichloropropene	< 0.5	< 0.5	< 0.5
Toluene	< 1	< 1	< 1
trans-1,3-Dichloropropene	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	< 1	< 1	< 1
2-Hexanone	< 10	< 10	< 10
Tetrachloroethene	< 1	< 1	< 1
Dibromochloromethane	< 1	< 1	< 1
Chlorobenzene	< 1	< 1	< 1
Ethylbenzene	< 1	< 1	< 1
mp-Xylene	< 1	< 1	< 1
o-Xylene	< 1	< 1	< 1
Styrene	< 1	< 1	< 1
Bromoform	< 2	< 2	< 2
1,1,2,2-Tetrachloroethane	< 1	< 1	< 1
1,3-Dichlorobenzene	< 1	< 1	< 1
1,4-Dichlorobenzene	< 1	< 1	< 1
1,2-Dichlorobenzene	< 1	< 1	< 1
4-Bromofluorobenzene (surr)	**97 %R**	**98 %R**	**96 %R**
1,2-Dichlorobenzene-d4 (surr)	**98 %R**	**98 %R**	**98 %R**
Toluene-d8 (surr)	**103 %R**	**103 %R**	**104 %R**

This lab helpfully BOLDS the results that are above detection limits



QC REPORT

EAI ID#: **228003**

Client: **CMA Engineers, Inc. (Portsmouth)**

Batch ID: 637602-27650/A062521V6241

Client Designation: **Lamprey 1198**

Parameter Name	Blank (RL)	Blank (MDL)	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 2	< .876	24 (121 %R)	24 (122 %R) (1 RPD)	6/25/2021	ug/L	1 - 205	60	624.1
Vinyl chloride	< 1	< .34	22 (110 %R)	22 (108 %R) (1 RPD)	6/25/2021	ug/L	5 - 195	66	624.1
Bromomethane	< 2	< .554	22 (109 %R)	22 (108 %R) (1 RPD)	6/25/2021	ug/L	15 - 185	61	624.1
Chloroethane	< 2	< .232	23 (114 %R)	23 (116 %R) (1 RPD)	6/25/2021	ug/L	40 - 160	78	624.1
Trichlorofluoromethane	< 2	< .375	20 (101 %R)	20 (100 %R) (1 RPD)	6/25/2021	ug/L	50 - 150	84	624.1
Acrolein	< 50	< .548	< 50 (82 %R)	< 50 (82 %R) (0 RPD)	6/25/2021	ug/L	60 - 140	60	624.1
Acetone	< 10	< 2.387	19 (96 %R)	19 (93 %R) (3 RPD)	6/25/2021	ug/L	40 - 160	20	624.1
1,1-Dichloroethene	< 0.5	< .37	18 (92 %R)	18 (90 %R) (2 RPD)	6/25/2021	ug/L	50 - 150	32	624.1
Methylene chloride	< 1	< .545	19 (95 %R)	19 (95 %R) (0 RPD)	6/25/2021	ug/L	60 - 140	28	624.1
Acrylonitrile	< 50	< .302	< 50 (95 %R)	< 50 (92 %R) (4 RPD)	6/25/2021	ug/L	60 - 140	60	624.1
Methyl-t-butyl ether(MTBE)	< 1	< .519	19 (93 %R)	18 (91 %R) (2 RPD)	6/25/2021	ug/L	70 - 130	20	624.1
trans-1,2-Dichloroethene	< 1	< .298	19 (96 %R)	19 (95 %R) (2 RPD)	6/25/2021	ug/L	70 - 130	45	624.1
Vinyl acetate	< 10	< .557	19 (97 %R)	19 (96 %R) (2 RPD)	6/25/2021	ug/L	40 - 160	20	624.1
1,1-Dichloroethane	< 1	< .085	19 (94 %R)	19 (93 %R) (1 RPD)	6/25/2021	ug/L	70 - 130	40	624.1
cis-1,2-Dichloroethene	< 1	< .238	19 (93 %R)	18 (92 %R) (1 RPD)	6/25/2021	ug/L	70 - 130	20	624.1
2-Butanone(MEK)	< 10	< .206	19 (96 %R)	19 (94 %R) (2 RPD)	6/25/2021	ug/L	40 - 160	20	624.1
Chloroform	< 1	< .36	18 (91 %R)	18 (90 %R) (1 RPD)	6/25/2021	ug/L	70 - 135	54	624.1
1,1,1-Trichloroethane	< 1	< .227	18 (92 %R)	18 (90 %R) (2 RPD)	6/25/2021	ug/L	70 - 130	36	624.1
Carbon tetrachloride	< 1	< .261	18 (91 %R)	18 (89 %R) (3 RPD)	6/25/2021	ug/L	70 - 130	41	624.1
Benzene	< 1	< .312	19 (94 %R)	19 (94 %R) (0 RPD)	6/25/2021	ug/L	65 - 135	61	624.1
1,2-Dichloroethane	< 1	< .21	18 (89 %R)	17 (87 %R) (2 RPD)	6/25/2021	ug/L	70 - 130	49	624.1
Trichloroethene	< 1	< .359	19 (93 %R)	19 (93 %R) (1 RPD)	6/25/2021	ug/L	65 - 135	48	624.1
1,2-Dichloropropane	< 1	< .285	19 (96 %R)	19 (95 %R) (1 RPD)	6/25/2021	ug/L	35 - 165	55	624.1
Bromodichloromethane	< 0.5	< .079	19 (95 %R)	19 (94 %R) (1 RPD)	6/25/2021	ug/L	65 - 135	56	624.1
2-Chloroethylvinylether	< 2	< .493	20 (102 %R)	20 (102 %R) (0 RPD)	6/25/2021	ug/L	1 - 225	71	624.1
4-Methyl-2-pentanone(MIBK)	< 10	< .411	19 (96 %R)	19 (94 %R) (2 RPD)	6/25/2021	ug/L	40 - 160	20	624.1
cis-1,3-Dichloropropene	< 0.5	< .101	19 (94 %R)	19 (93 %R) (1 RPD)	6/25/2021	ug/L	25 - 175	58	624.1
Toluene	< 1	< .19	20 (99 %R)	20 (99 %R) (0 RPD)	6/25/2021	ug/L	70 - 130	41	624.1
trans-1,3-Dichloropropene	< 0.5	< .08	20 (102 %R)	20 (101 %R) (1 RPD)	6/25/2021	ug/L	50 - 150	86	624.1
1,1,2-Trichloroethane	< 1	< .203	20 (100 %R)	20 (100 %R) (0 RPD)	6/25/2021	ug/L	70 - 130	45	624.1
2-Hexanone	< 10	< .28	20 (99 %R)	19 (97 %R) (2 RPD)	6/25/2021	ug/L	40 - 160	20	624.1
Tetrachloroethene	< 1	< .371	19 (97 %R)	19 (96 %R) (1 RPD)	6/25/2021	ug/L	70 - 130	39	624.1
Dibromochloromethane	< 1	< .225	20 (99 %R)	20 (98 %R) (1 RPD)	6/25/2021	ug/L	70 - 135	50	624.1
Chlorobenzene	< 1	< .247	20 (102 %R)	20 (101 %R) (1 RPD)	6/25/2021	ug/L	65 - 135	53	624.1
Ethylbenzene	< 1	< .213	20 (98 %R)	20 (98 %R) (0 RPD)	6/25/2021	ug/L	60 - 140	63	624.1
mp-Xylene	< 1	< .476	39 (97 %R)	38 (96 %R) (1 RPD)	6/25/2021	ug/L	70 - 130	20	624.1
o-Xylene	< 1	< .298	20 (98 %R)	19 (97 %R) (1 RPD)	6/25/2021	ug/L	70 - 130	20	624.1
Styrene	< 1	< .727	21 (105 %R)	21 (104 %R) (1 RPD)	6/25/2021	ug/L	70 - 130	20	624.1
Bromoform	< 2	< .282	20 (101 %R)	20 (100 %R) (1 RPD)	6/25/2021	ug/L	70 - 130	42	624.1
1,1,2,2-Tetrachloroethane	< 1	< .381	21 (103 %R)	20 (102 %R) (0 RPD)	6/25/2021	ug/L	60 - 140	61	624.1
1,3-Dichlorobenzene	< 1	< .426	21 (103 %R)	21 (104 %R) (0 RPD)	6/25/2021	ug/L	70 - 130	43	624.1
1,4-Dichlorobenzene	< 1	< .375	20 (102 %R)	20 (102 %R) (0 RPD)	6/25/2021	ug/L	65 - 135	57	624.1
1,2-Dichlorobenzene	< 1	< .218	21 (103 %R)	21 (103 %R) (0 RPD)	6/25/2021	ug/L	65 - 135	57	624.1
4-Bromofluorobenzene (surr)	95 %R		98 %R	97 %R	6/25/2021	% Rec	70 - 130		624.1
1,2-Dichlorobenzene-d4 (surr)	98 %R		99 %R	99 %R	6/25/2021	% Rec	70 - 130		624.1
Toluene-d8 (surr)	104 %R		103 %R	103 %R	6/25/2021	% Rec	70 - 130		624.1

*/! Flagged analyte recoveries deviated from the QA/QC limits. Data that impacts sample results are noted on the sample report.

How cool is this?! They ran a blank!

I'm not going to show you ALL 61 pages of that lab report!

WHAT QUESTIONS DO YOU HAVE FOR US?