April 3, 2023 NY95-219-04

Gould Electronics Inc.
2555 West Fairview, Suite 103
Chandler, AZ 85224

SUBMITTED VIA ELECTRONIC MAIL

Attention: James F. Cronmiller

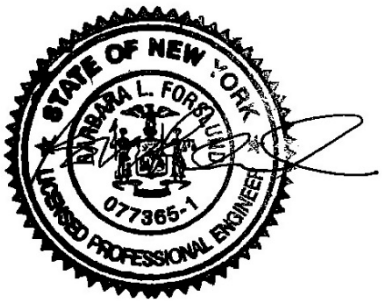
SAMPLING EVENT REPORT
YEAR TWENTY-SEVEN – OCTOBER 2022
LONG TERM MONITORING PROGRAM
MARATHON REMEDIATION SITE

Enclosed is the report of the sampling events conducted during Year 27 of the Long Term Monitoring Program for the Marathon Remediation Site. This report covers the October 2022 sampling of sediment in East Foundry Cove and the October 2022 groundwater sampling conducted in the former Plant Grounds.

If you have any questions concerning the contents of this report, please contact me at (610) 840-9145.

Very truly yours,

MONTROSE ENGINEERING & GEOLOGY, P.C.



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Introduction

This Sampling Event Report covers the Year 27 (2022) sampling events associated with the long term monitoring program for the Marathon Remediation Site. The sediment sampling work was conducted in accordance with Advanced GeoServices' recommendations for future monitoring presented in the "Five Year Review, Long Term Monitoring Program, Marathon Remediation Site" dated May 2, 2001. The sampling procedures and analytical protocols are described in the December 20, 1995 "Long Term Monitoring Plan for the Marathon Remediation Site" and the "Supplemental Long Term Monitoring Plan" issued February 21, 1996. The groundwater sampling was conducted as detailed in the December 20, 1995 Long Term Monitoring Plan at the two remaining long-term monitoring wells and one injection well that was sampled at the request of the U.S. Environmental Protection Agency (USEPA). Concentrations in the other 11 wells in the Long Term Monitoring Plan were at levels that no longer warranted monitoring and were decommissioned with the approval of the USEPA and the New York State Department of Environmental Conservation.

Sampling Event

The Year 27 event included sampling and analyses of three wells (MW-7S, MB-3 and IW-6) within the Plant Ground area (Area II) and sediment from East Foundry Cove (Area III). The groundwater sampling of the three wells was performed on October 20, 2022. The East Foundry Cove sediment samples were also collected on October 20, 2022 with a hand auger in accordance with the Supplemental Long Term Monitoring Plan of February 21, 1996.

Analytical Results

Laboratory analyses of the samples were conducted by Eurofins of Edison, NJ (NY Certification #11452). Validation of the analytical data was performed by Montrose Engineering & Geology, P.C. (formerly known as Advanced GeoServices Engineering & Geology, P.C.) The validation report for the sediment samples is included as Appendix A, and the validation report for the groundwater samples is included as Appendix B. Summaries of the analytical data are included in the validation reports in the Appendices, and the results are also presented on the following tables.

East Foundry Cove Sediments

Table A presents the cadmium levels detected in the sediment samples obtained from East Foundry Cove during this sampling event. For comparison purposes, the pre-remediation and post-remediation cadmium levels reported by others and the results from the previous Long Term Monitoring Program sampling events are also included in the table. The analytical results are within the range of variation experienced during previous sampling events. The average detected cadmium concentration of the sediment samples collected from East Foundry Cove in 2022 was 14.5 mg/kg, assuming a value of half the detection limit for the non-detect value reported for EFC-3S.

The results are presented graphically for each location on Figures 1 through 5. As shown on the graphs, the cadmium concentrations are overall trending downward with the exception of location 3S that is shown in Figure 3. The slight upward trend at that location is attributed to a single, anomalous measurement from 2009; when that measurement is removed, the trend is slightly downward, as shown in Figure 3A. The sample locations are presented on Figure 6.

The East Foundry Cove Inspection Summary Report from October 20, 2022, is included as Appendix C. Information previously collected during the quarterly inspections conducted in 2021 on GCL cover thickness and photographs of the marsh are included with the Inspection Summary Report.

Plant Ground Area Groundwater

Tables B-1, C-1, and D-1 present the Plant Ground Area groundwater sample analyses of the two long term monitoring wells (7S and MB-3) located along the southern property boundary. These tables show the concentrations of trichloroethene (TCE), 1,1,1-trichloroethane (TCA), and tetrachloroethene (PCE), respectively, since sampling began in 1985 for well MB-3 and in 1988 for well MW-7S; the results are depicted graphically on Figures 7 and 8. The TCE, TCA and PCE concentrations in Wells MB-3 and 7S are generally consistent with previous results and show the continued overall decrease in concentrations observed since sampling began. This Sampling Event Report also includes the most recent (September 2021) groundwater potentiometric map and isoconcentration maps for PCE and TCE, presented as Figures 9 through 11, respectively.

For reference purposes, we have also included Tables B-2, C-2, and D-2 that show the TCE, TCA, and PCE results from all wells during the period from their initial installation until 2003.

Future Sampling

The next annual sampling of the Area II groundwater and Area III sediments (East Foundry Cove) for the 2023 (Year 28) long term monitoring program will be performed in the fall of 2023.

Tables

TABLE A

CADMIUM CONCENTRATIONS (mg/kg)
AREA III SEDIMENTS
EAST FOUNDRY COVE

SAMPLE LOCATION	EFC-1S	EFC-2S	EFC-3S	EFC-4S	EFC-5S
PRE-REMED.(1)	171	873	127	998	43.1
POST REMED.(2)	15.7	19.4	4.0	12.9	6.3
11/95	16J (52J)	85	6	190	42
3/96	7.08	14.4J (29.0J)	1.55	0.959	21.2
6/96	6.91	7.76	3.15	50.6	9.69J (4.01J)
4/97	0.386	46.4	21.5 (16.0)	104	0.454
4/98	14.2J	46.3J	7J	2.9J	75J
4/99	20.8	58.7	0.34	67.1	9.4
4/00	142.J (13.5J)	96.9J	0.83J	277J	100J
8/01	10.5 (14.1)	19.8	12.7	69.8	57.3
10/02	16.7J	58.1J (145J)	0.31J	58.3J	3.5
11/03	6.3J	31.7J	0.16U	50J (50.3J)	20.8J
11/04	17.1	50.5	20.4	35 (32.7)	36.8
9/06	22.9	22.5	6	0.35J (0.55J)	18.6
8/07	13.5 (12)	130	0.22U	16.1	0.3U
11/08	4.9	79.4 (62.3)	0.32	31.4	8.6
10/09	3.7 (3.8)	15	263	28.4	1.8
9/10	6 (6.3)	20.2	30.8	17.6	7.3
10/11	5.3 (5.6)	16.6	1	25.2	25.1
8/12	5.8 (4.6)	137	1.3	28.2	16.3
9/13	5.4 (4)	18.3	U	23.8	3.4
8/14	5 (4.6)	U	0.49	0.57	3
9/15	4.6	19.3	U	33.6 (40.1)	1
8/16	8.5	20.8	U	3.1 (2.7)	0.69
11/17	3.8	57.8	6.4	0.96J (0.9J)	3.5
10/18	6.7	22.8	U	11.9 (7.3)	22.3
10/19	16.2	17.5	U	66.7	18.7
11/20	6.3	10.8	32.9	24	21
11/21	8.5	6.5	0.75J	U	7.3
10/22	10.1	20.7	U	0.48 J	40.3

NOTES:

(1) Samples obtained by Malcolm-Pirnie and others prior to the Remedial Action. These are the reported data closest to the present LTM sampling location.

(2) Average value of either the two closest post-remediation sample node locations or the analytical results of the various testing agencies (Sevenson, IQAT, and USCOE) for the same node location.

Values shown in parenthesis are field duplicates

J Estimated Value

U Undetected

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TABLE B-1

TRICHLOROETHENE (TCE) CONCENTRATIONS (µg/l)
AREA II (PLANT GROUNDS) GROUNDWATER

Date	Well 7S	Well MB-3
1985[1]	-	170
1988[1]	100	-
1988[1]	82	65
11/93[2]	110J	76J
2/94[2]	100 (100)	73
10/94[2]	100	110
11/95[3]	80	51
6/96	82	120
10/96	89	70
4/97	99 (86)	61
10/97	99	64
4/98	100	78
11/98	94J	23J
4/99	84	62
11/99	82J (71J)[6]	25J
4/00	77 (75)	33
10/00	82 (81)[5]	46
8/01	74	47 (46)
9/03	74	50
11/04	76	43 (45)
9/06	79 (74)	47
7/07	73	44
7/08	68	37
8/09	59	20
9/09	60	36
9/10	65 (65)	29
8/11	58 (58)	38
8/12	66 (64)	43
5/14	66	29
11/15	57	23
11/16	63	21
12/17	50	23
12/18	52	22
12/19	53	20
12/20	54	18
12/21	43	18
10/22	38 (38)	18

NOTES:
1 Sampling performed by others.
2 Sampling performed by Advanced GeoServices Corp. during the remedial action.
3 First long-term monitoring sampling event.
4 Blank spaces or hyphen indicate the well was not sampled.
5 ND-Not Detected (detection limit=5 *ug/l* for 1985 through 1995 samples, and 2 *ug/l* from 1996 to the present).
6 7S duplicate was a blind duplicate listed as 71 for analysis.
7 Data from interim, quarterly reports are not included on this table
8 Values shown in parenthesis are field duplicates

TABLE B-2

TRICHLOROETHENE (TCE) CONCENTRATIONS (ug/l)
AREA II (PLANT GROUNDS) GROUNDWATER

WELL	SAMPLING EVENTS																		
	8/85[1]	88(#1)[1]	88(#2)[1]	11/93[2]	2/94[2]	10/94[2]	11/95[3]	6/96	10/96	4/97	10/97	4/98	11/98	4/99	11/99	4/00	10/00	8/01	9/03
2S	[4]	ND[5]	4J	ND		ND	[6]	ND	0.4U	0.4U	0.4U(0.4U)	1U	1U	0.3U	1U	0.2U	1U		
4I		ND	ND	ND	ND	ND	3.3U	ND	0.4U	0.4U	16	4.5(4.3)	2.4J	0.3U	2.1J	0.2U	6		1U
4D		ND	ND	ND	ND	ND	12	2	0.4U	0.7	32	3.9	6.3J	2.3	0.8J	0.2U	1U		1U
5S		ND	1J	ND	ND	ND	5.6	ND	0.4U	0.4U	23	1U	1U	0.3U	1.1J	0.2U	1U		
5I		ND	ND	ND	ND	ND	22	4	0.4U	0.4U	35	7.7	15J	8.1	2J	0.2U	1U		
6I		ND	ND	ND	ND	ND	7.3(5.3)	ND	0.4U	0.4U	1.6	1U	3.4J	1	1U	0.2U	1U		
6D				ND	ND	ND	10	3.5(4.0)	1.4	0.4U	4.7	1U	34J	0.7	1U	0.2U	1J		
7S		100	82	110J	100(100)	100	80	82	89	99(86)	99	100	94J	84	82J(71J)[9]	77(75)	82(81)	74	74
7D				ND	4.3J	ND	4.4J	ND	0.4U	0.4U	0.4U	1U	1U	0.7	1U	0.2U	1U		
V5		ND	ND	ND		ND	22	ND	0.4U	0.4U	190	1U(1U)	1U	0.3U	1U	0.2U	1U		1U
MB-1			2J	ND	ND	ND	4.3J	2.8	2.5(2.1)	0.4U	0.4U	[8]	0.9J	1	1.6J	0.9	0.9J		
MB-2				ND			6.2	ND	0.4U	0.4U	0.4U	1U	1U	0.3U	1U	0.2U	1U		
MB-3	170		65	76J	73	110	51	120	70	61	64	78	23J	62	25J	33	46	47(46)	50

NOTES:

(1) Sampling performed by others.
(2) Sampling performed by Advanced GeoServices Corp. during the Remedial Action.
(3) First long term monitoring sampling event.
(4) Blank spaces indicate the well was not sampled.
(5) ND=Not detected (detection limit=5 µg/l) for 1985 through 1995 samples, and 2 µg/l from 1996 to the present).
(6) Well casing was bent; no sample was obtained.
(7) MB-1 duplicate was a blind duplicate listed as MB-100 for analysis.
(8) Well dry during sampling event.
(9) 7S duplicate was a blind duplicate listed as 71 for analysis.
-10 Values shown in parenthesis are field duplicates

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TABLE C-1

1,1,1 - TRICHLOROETHANE (TCA) CONCENTRATIONS (µg/l)
AREA II (PLANT GROUNDS) GROUNDWATER

Date	Well 7S	Well MB-3
11/93 (2)	3.2J	3J
2/94(2)	5U	7.9
10/94(2)	ND (4)	6
11/95(3)	2.7J	2.7J
6/96	ND	7
10/96	5.8	7.4
4/97	ND	3
10/97	0.4U	0.4U
4/98	2	4.3
11/98	3.8J	5U
4/99	3	3.7
11/99	2.1J (1.6J) (6)	1.2J
4/00	1.4 (1.2)	1.9
10/00	2.3J (2.2J) (5)	2.1J
8/01	2.1	2.2 (2.1)
10/02	1.4J (1.5J)	1.7J
9/03	1.2	2.4
11/04	0.9	2.1 (2.3)
9/06	0.7	1.6
7/07	0.6	1.4
7/08	0.4	1.2
8/09	0.39	0.71
9/09	0.47	1.9
9/10	0.53 (0.58)	0.98
8/11	0.44 (0.49)	1.2
8/12	0.39 (0.44)	1.6
5/14	ND	ND
11/15	0.29	0.61
11/16	0.38	0.54
12/17	ND	0.76
12/18	ND	0.97
12/19	ND	0.49
12/20	ND	0.54
12/21	0.3	ND
10/22	ND (0.27)	0.61

NOTES:
1 All other wells had non-detect results for all sampling events.
2 Sampling performed by Advanced GeoServices Corp. during the Remedial Action.
3 First long-term monitoring sampling event.
4 ND=Not Detected (detection limit= 5 *ug/l* for 1993 through 1995 samples, and 2 *ug/l* from 1996 to the present).
5 Blank spaces indicate the well was not sampled.
6 7S duplicate was a blind duplicate listed as 71 for analysis.
7 Data from interim, quarterly reports are not included on this table
8 Values shown in parenthesis are field duplicates

TABLE C-2

1,1,1-TRICHLOROETHANE (TCA) CONCENTRATIONS (UG/L)
AREA II (PLANT GROUNDS) GROUNDWATER

WELL[1]	SAMPLING EVENTS																
	11/93[2]	**2/94[2]**	**10/94[2]**	**11/95[3]**	**6/96**	**10/96**	**4/97**	**10/97**	**4/98**	**11/98**	**4/99**	**11/99**	**4/00**	**10/00**	**8/01**	**10/02**	**9/03**
7S	3.2J	5U	ND[4]	2.7J	0.4U	5.8	0.4U	0.4U	2	3.8J	3	2.1J(1.6J)[6]	1.4(1.2)	2.3J(2.2J)[5]	2.1	1.4J(1.5J)	1.2
7D	ND	4.8J	ND	ND	0.4U	0.4U	0.4U	0.4U	1U	5U	1.3U	5U	0.2U	5U			
MB-2	2J	[5]		ND	0.4U	0.4U	0.4U	0.4U	1.3	1.2J	1J	0.8J	0.8	0.7J			
MB-3	3J	7.9	6	2.7J	7	7.4	3	0.4U	4.3	5U	3.7	1.2J	1.9	2.1J	2.2(2.1)	1.7J	2.4
4D	ND	ND	ND	ND	0.4U	5.6	0.4U	0.4U	1U	5U	1.3U	5U	0.2U	5U			
4I					0.4U	0.4U	0.4U	0.4U	1U	5U	1.3U	5U	0.2U	5U		5U	5U
V5					0.4U	0.4U	0.4U	0.4U	1U	5U	1.3U	5U	0.2U	5U		5U	5U

NOTES:

(1) All other wells had non-detect results for all sampling events.
(2) Sampling performed by Advanced GeoServices Corp. during the Remedial Action.
(3) First long term monitoring sampling event.
(4) ND=Not detected (detection limit=5 µg/l) for 1993 through 1995 samples, and 2 µg/l from 1996 to the present).
(5) Blank spaces indicate the well was not sampled.
(6) 7S duplicate was a blind duplicate listed as 71 for analysis.
(7) Samples collected as part of in-situ bioremediation program.

Values shown in parenthesis are field duplicates

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TABLE D-1

TETRACHLOROETHENE (PCE) CONCENTRATIONS (µg/l)
AREA II (PLANT GROUNDS) GROUNDWATER

Date	Well 7S	Well MB-3
11/93 [2]	1.2J	ND[4]
2/94 [2]	5.2	ND
10/94 [2]	ND	ND
11/95 [3]	7.7	3.2J
6/96	3	3
10/96	1.3	0.4U
4/97	0.4UJ (7.2J)	ND
10/97	3.1	3.6
4/98	4.5	2.6
11/98	5.6J	2.2J
4/99	6.3	2.7
11/99	4.8J (4.3J) [5]	2.2J
4/00	4.0 (3.6)	3.3
10/00	5.4 (5.2) [5]	2.7
8/01	3.8	4.8 (4.9)
10/02	3.3 (3.2)	4
9/03	3.5	4.2
11/04	3.5	2.3 (2.5)
9/06	4.2 (4)	1.8
7/07	4.5	2
7/08	4.8	1.4
8/09	4.9	1.4
9/09	4.2	1.5
9/10	4.1 (3.9)	2.0
8/11	3.8 (4)	2
8/12	4.9 (4.8)	1.7
5/14	7.0	1.5
11/15	4.1	4
11/16	4.2	4.7
12/17	4.2	4
12/18	4	1.6
12/19	4	3.1
12/20	4.4	3.3
12/21	3	3.2
10/22	2.6 (2.5)	3.1

NOTES:
1 All other wells had non-detect results for all sampling events.
2 Sampling performed by Advanced GeoServices Corp. during the Remedial Action.
3 First long-term monitoring sampling event.
4 ND=Not detected (detection limit=5*ug/l*) for 1993 through 1995 samples, and 2 *ug/l* from 1996 to the present.
5 7S duplicate was a blind duplicate listed as 71 for analysis.
6 Data from interim, quarterly reports are not included on this table
7 Values shown in parenthesis are field duplicates

TABLE D-2

TETRACHLOROETHENE (PCE) CONCENTRATIONS (ug/l)
AREA II (PLANT GROUNDS) GROUNDWATER

WELL[1]	SAMPLING EVENTS																
	11/93[2]	2/94[2]	10/94[2]	11/95[3]	6/96	10/96	4/97	10/97	4/98	11/98	4/99	11/99	4/00	10/00	8/01	10/02	9/03
7S	1.2J	5.2	ND[4]	7.7	2.7	1.3	0.4UJ(7.2J)	3.1	4.5	5.6J	6.3	4.8J(4.3J)[5]	4.0(3.6)	5.4(5.2)[5]	3.8	3.3(3.2)	3.5
MB-3	ND	ND	ND	3.2J	2.6	0.4U	0.4U	3.6	2.6	2.2J	2.7	2.2J	3.3	2.7	4.8(4.9)	4	4.2
4I					0.4U	0.4U	0.4U	0.4U	1U	1U	0.3U	1UJ	0.4U	1U		1U	1U
V5					0.4U	0.4U	0.4U	0.4U	1U	1U	0.3U	1U	0.4U	1U		1U	0.6J

NOTES:

(1) All other wells had non-detect results for all sampling events.
(2) Sampling performed by Advanced GeoServices Corp. during the Remedial Action.
(3) First long term monitoring sampling event.
(4) ND=Not detected (detection limit=5 µg/l) for 1993 through 1995 samples, and 2 µg/l from 1996 to the present).
(5) 7S duplicate was a blind duplicate listed as 7I for analysis.
(6) Samples collected as part of in-situ bioremediation program

Values shown in parenthesis are field duplicates

Figures

FIGURE 1
CADMIUM CONCENTRATION TRENDS IN EFC-1S
Marathon Remediation Site
Cold Spring, New York

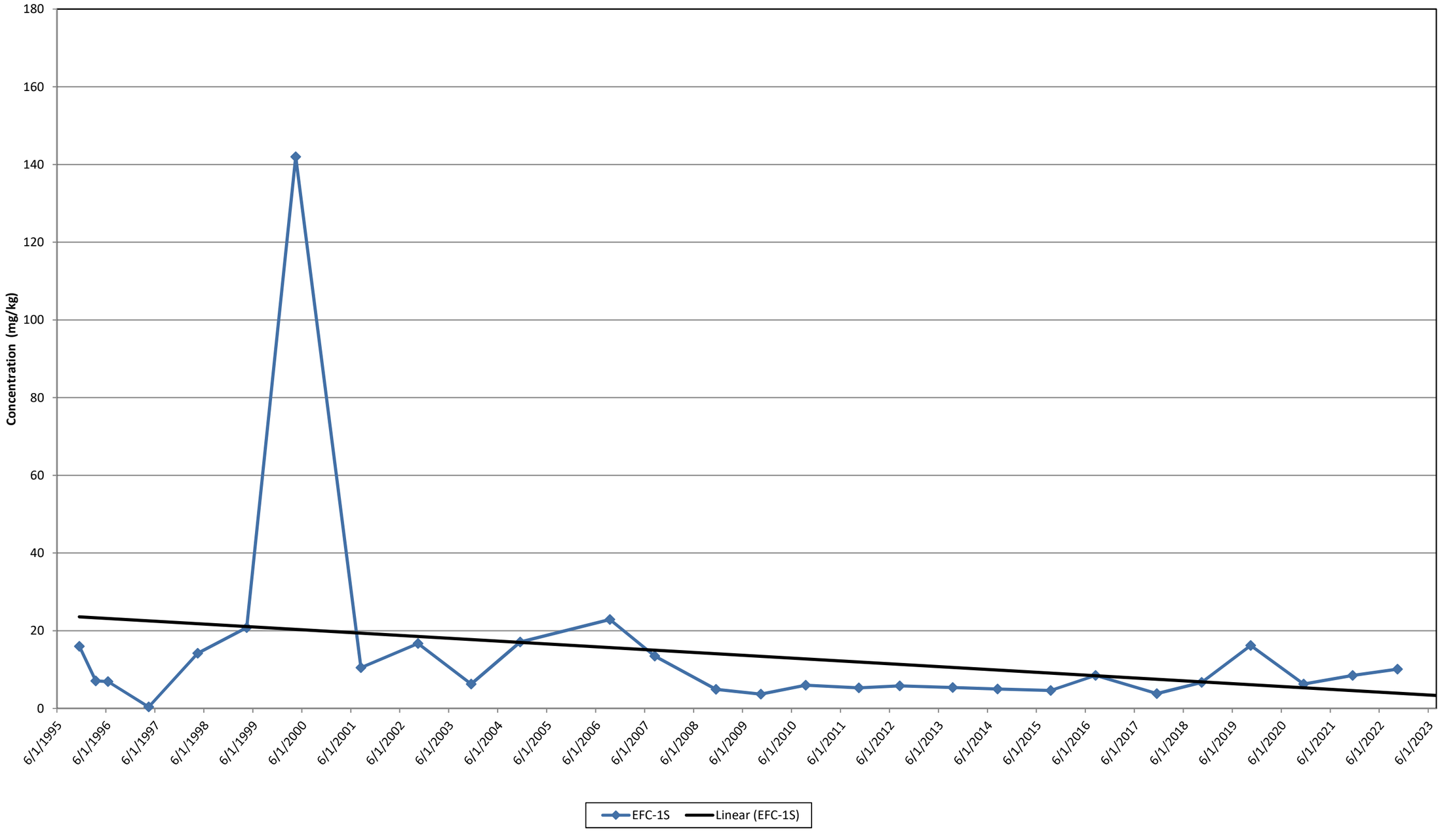

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FIGURE 2
CADMIUM CONCENTRATION TRENDS IN EFC-2S
Marathon Remediation Site
Cold Spring, New York

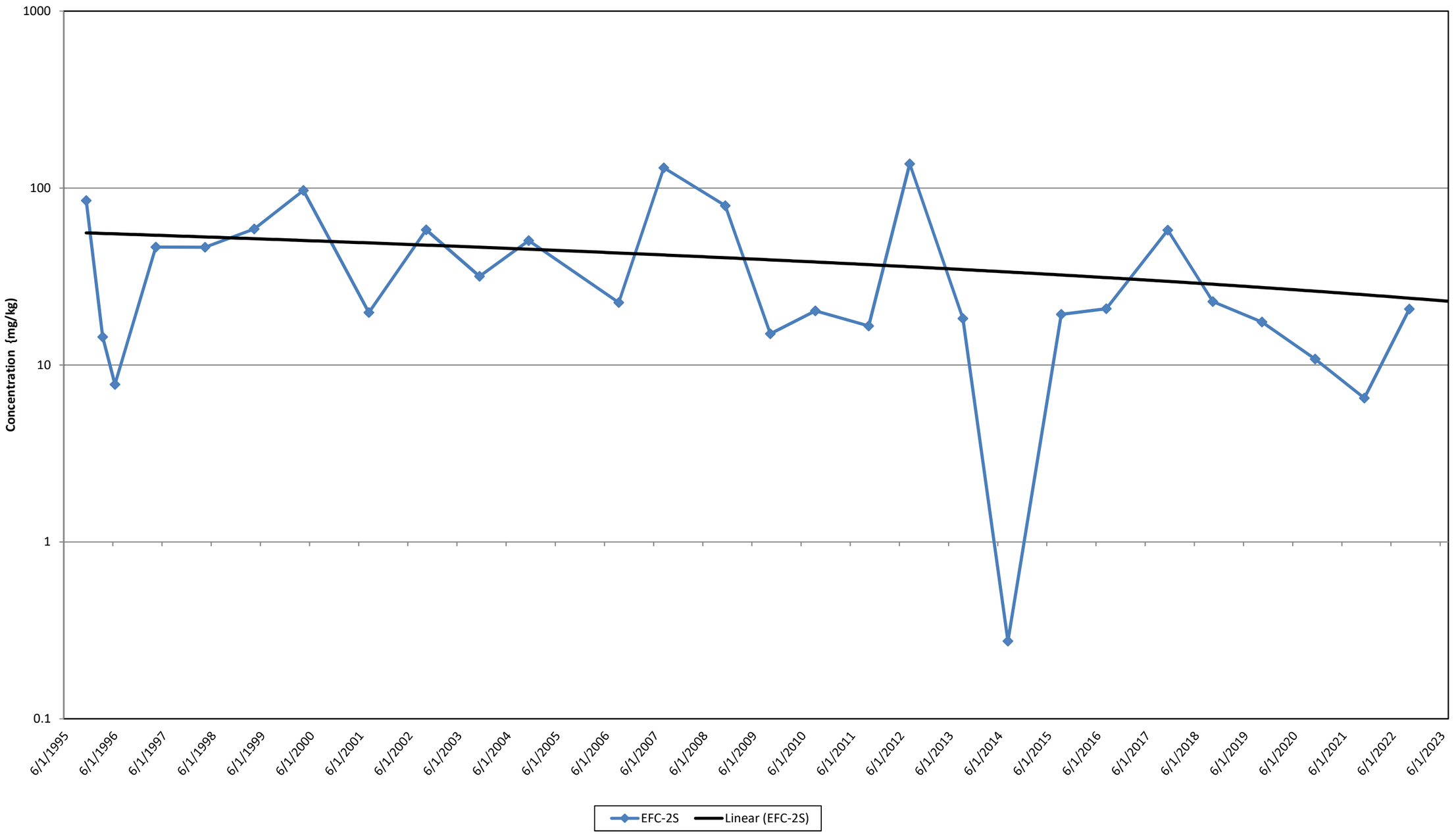

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FIGURE 3
CADMIUM CONCENTRATION TRENDS IN EFC-3S
Marathon Remediation Site
Cold Spring, New York

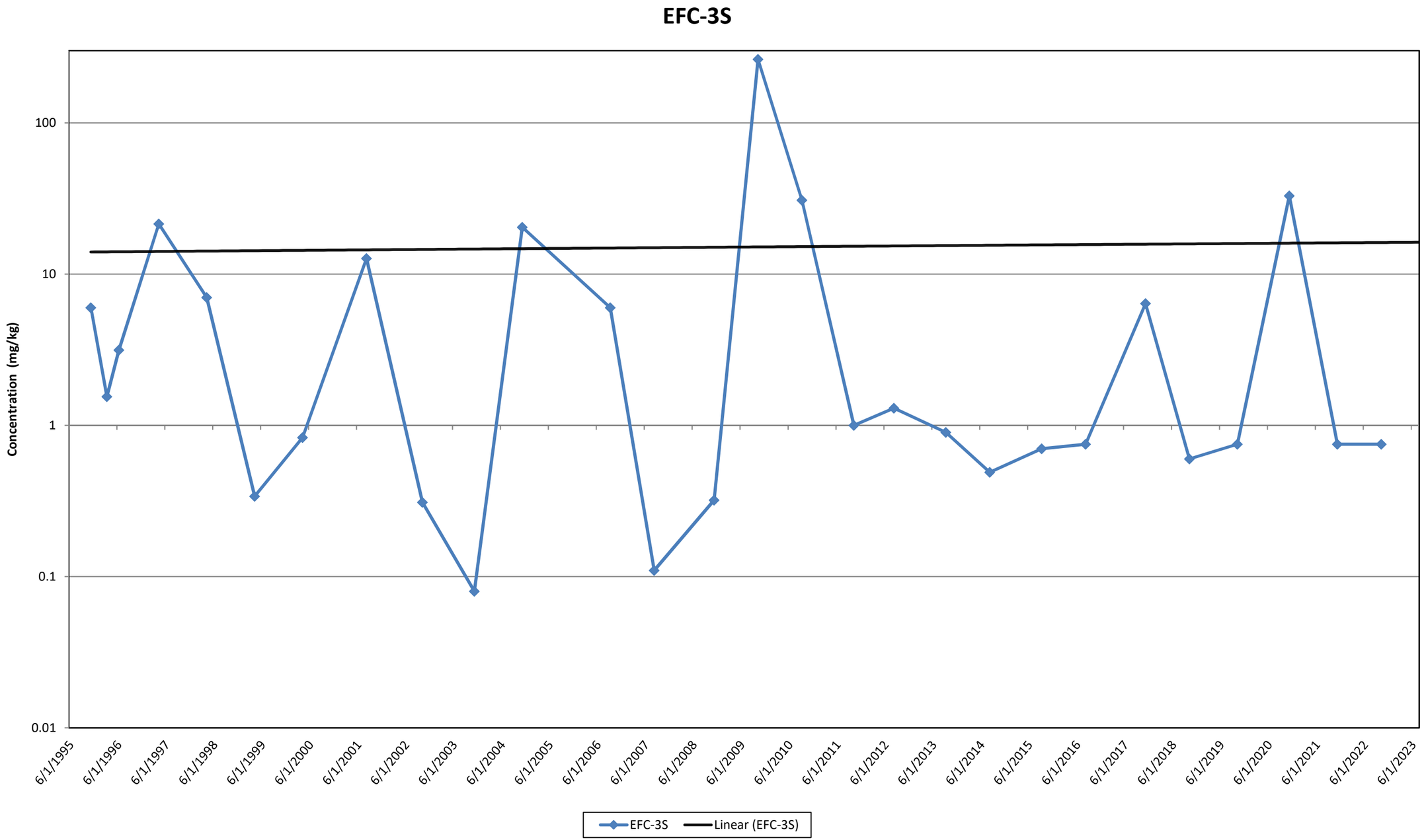

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FIGURE 3a
CADMIUM CONCENTRATION TRENDS IN EFC-3S
Marathon Remediation Site
Cold Spring, New York

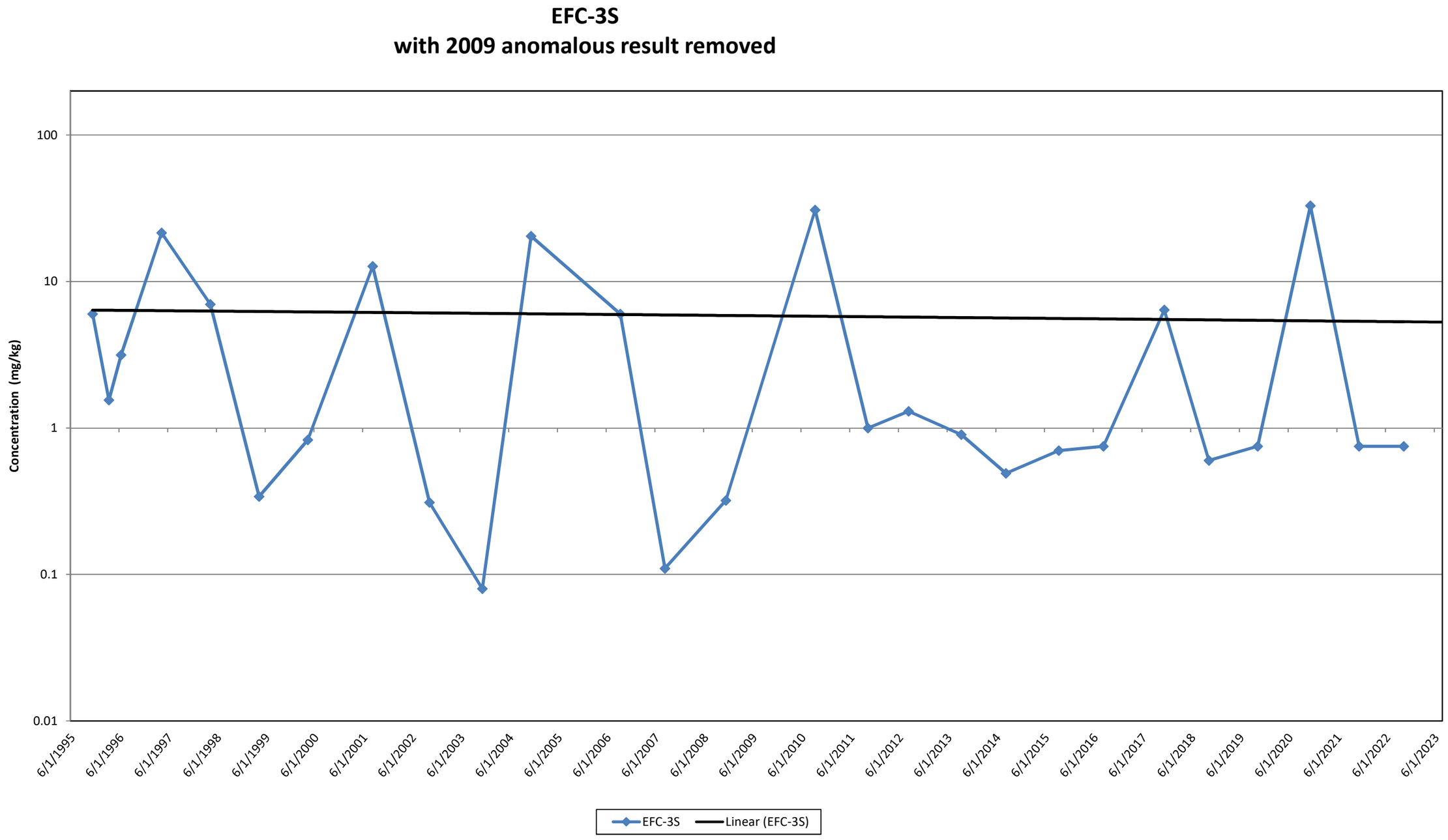

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FIGURE 4
CADMIUM CONCENTRATION TRENDS IN EFC-4S
Marathon Remediation Site
Cold Spring, New York

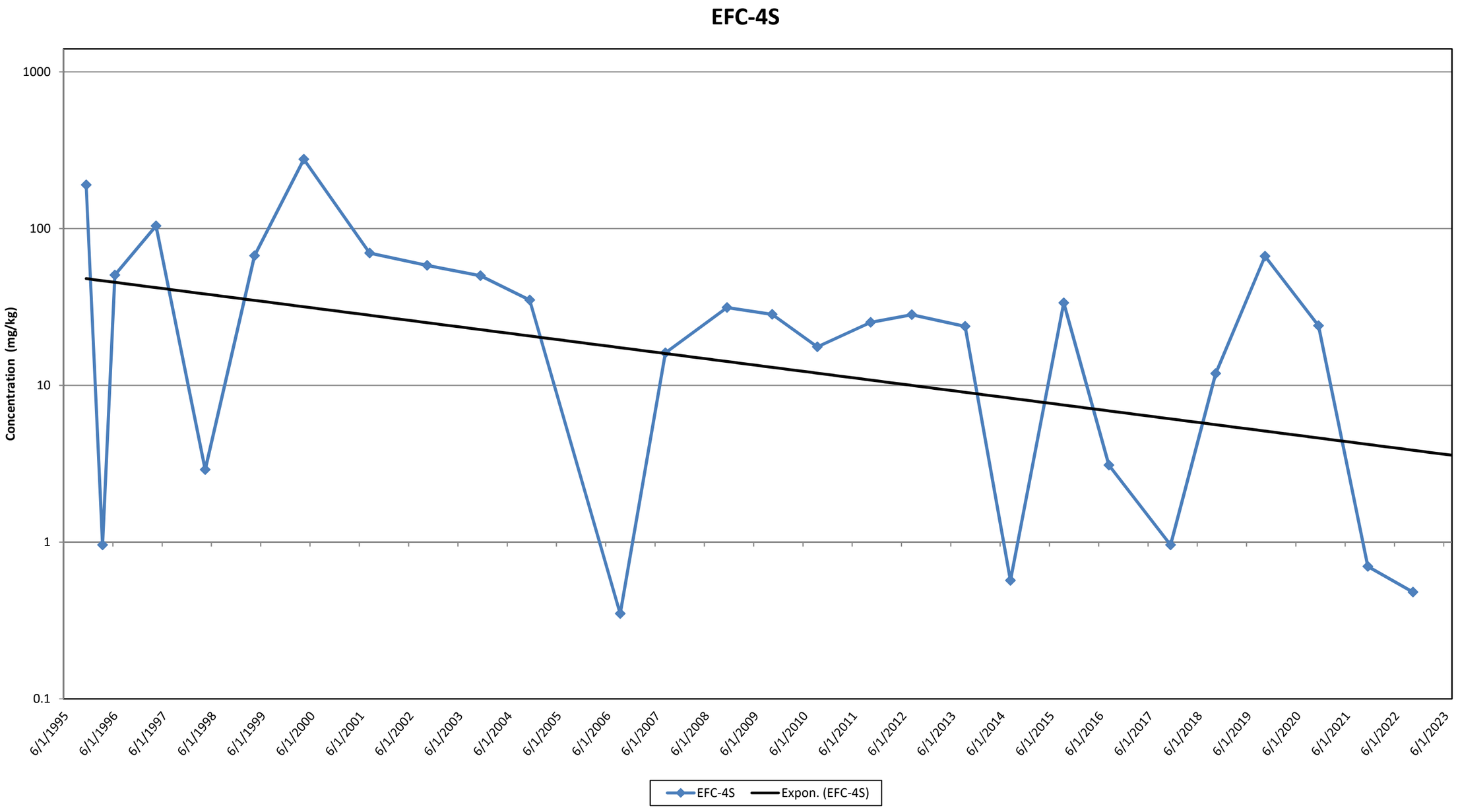

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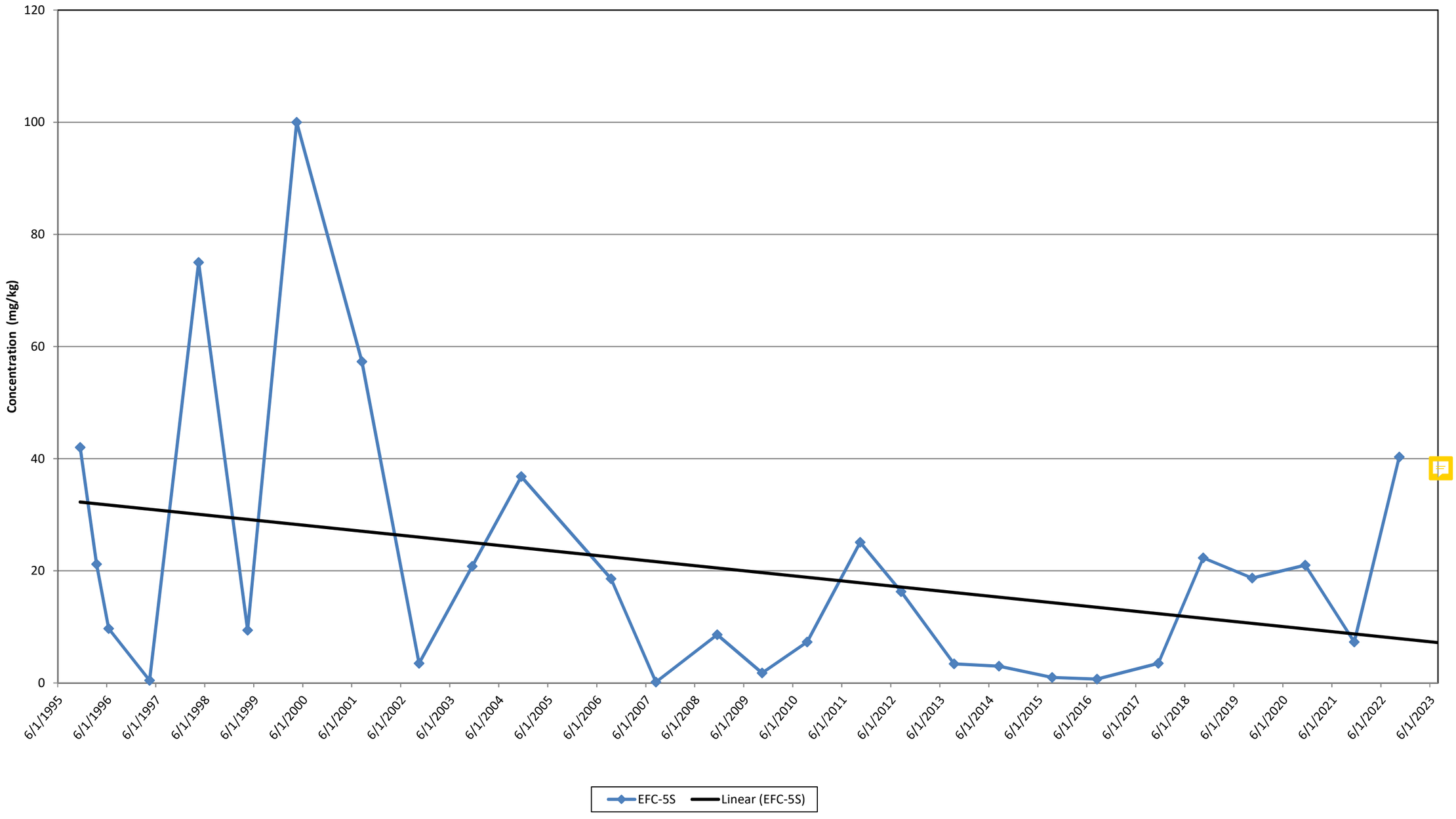
FIGURE 5
CADMIUM CONCENTRATION TRENDS IN EFC-5S
Marathon Remediation Site
Cold Spring, New York



G:\Projects\1995\NY95219-Marathon Long Term Mont\Work Documents\LONG TERM MONITORING REPORTS\Year 27 (2022) Sampling Report\Figures\Figure 1-5 2021 Annual Report

MONTROSE
Engineering & Geology, P.C.

1140 VALLEY FORGE ROAD,
PHOENIXVILLE, PENNSYLVANIA 19460–2658
Tel: 610.840.9100 Fax: 610.840.9199 montrose–env.com

APPROXIMATE LOCATION OF SEDIMENT SAMPLES
MARATHON REMEDIATION PROJECT
COLD SPRING, NEW YORK

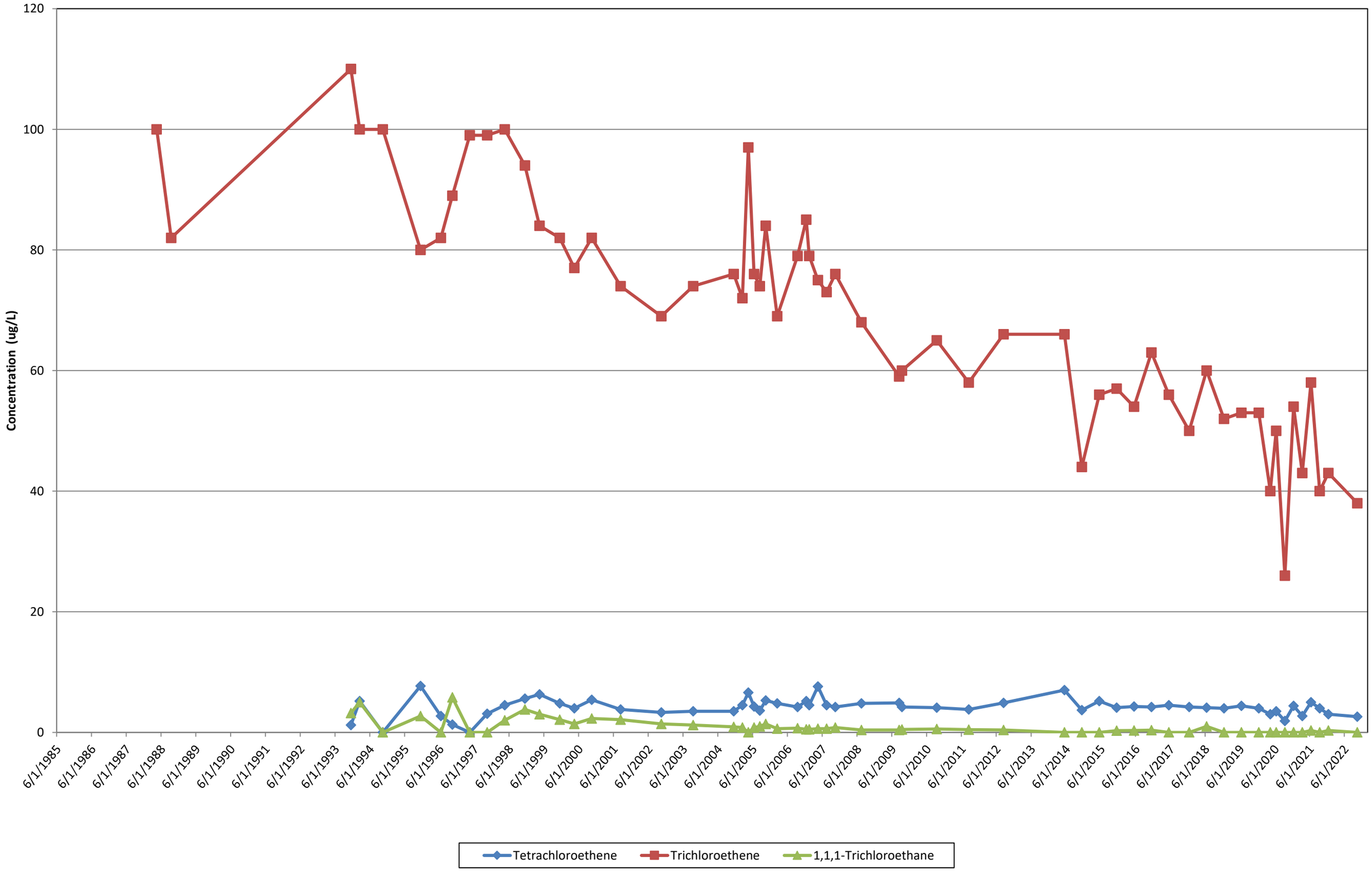
SCALE:	NTS
PROJECT NUMBER:	NY95219
DATE:	06/10/2020

FIGURE 6

F:\Projects\1995\NY95219-Marathon Long Term Mont\Cad\MARATHON\SEDIMENT LOCATIONS.dwg 3/31/2023 3:33:37 PM, AutoCAD PDF (General Documentation).pc3

FIGURE 7
VOC CONCENTRATION TRENDS IN MW-7S
Marathon Remediation Site
Cold Spring, New York

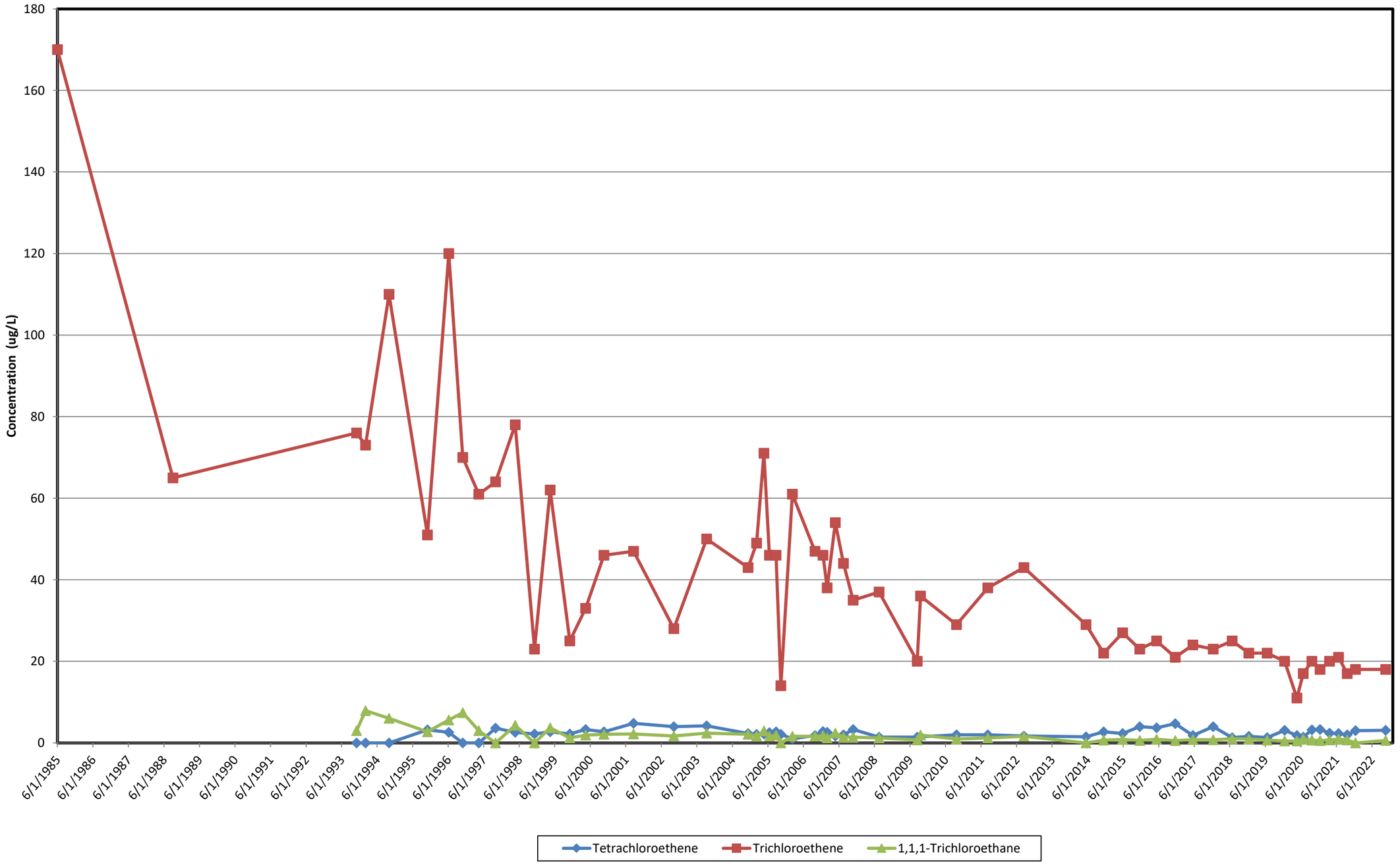
MONTROSE
Engineering & Geology, P.C.

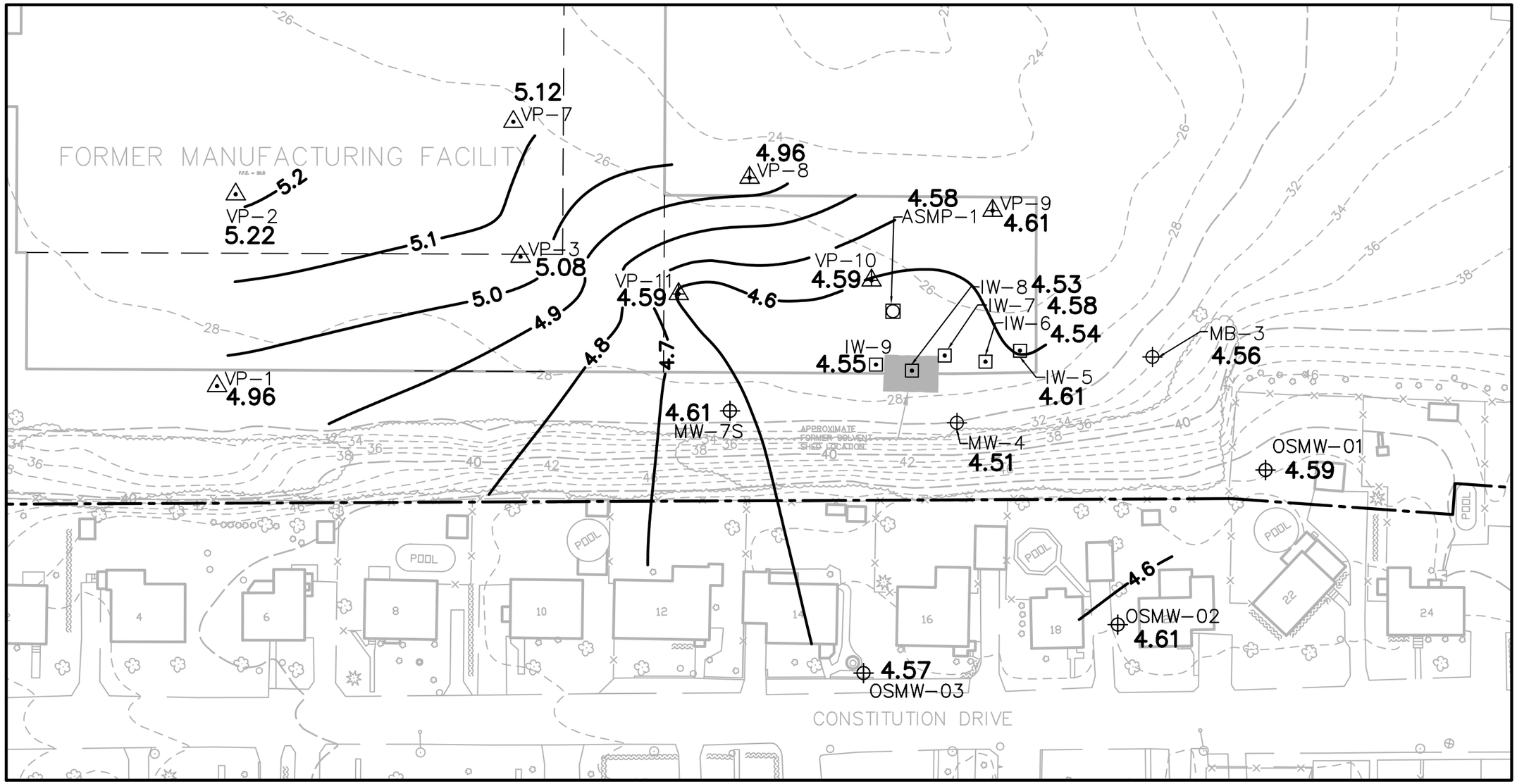


G:\Projects\1995\NY95219-Marathon Long Term Mont\Work Documents\LONG TERM MONITORING REPORTS\Year 27 (2022) Sampling Report\Figures\GW Trend Graphs

FIGURE 8
VOC CONCENTRATION TRENDS IN MB-3
Marathon Remediation Site
Cold Spring, New York

MONTROSE
Engineering & Geology, P.C.





LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
- IW-8 — Existing Injection Well Converted to Monitoring Well
- VP-1 — Vertical Profiling Location Converted to Piezometer
- VP-8 — Existing Piezometer
- ASMP-1 — Air Sparge Monitoring Probe
- — 4 — Groundwater Contour Line (ft msl)

Notes:
1) ALL GROUNDWATER ELEVATIONS PRESENTED AS FEET MEAN SEA LEVEL
2) WELLS NOT USED FOR THE POTENTIOMETRIC MAP ARE NOT SHOWN

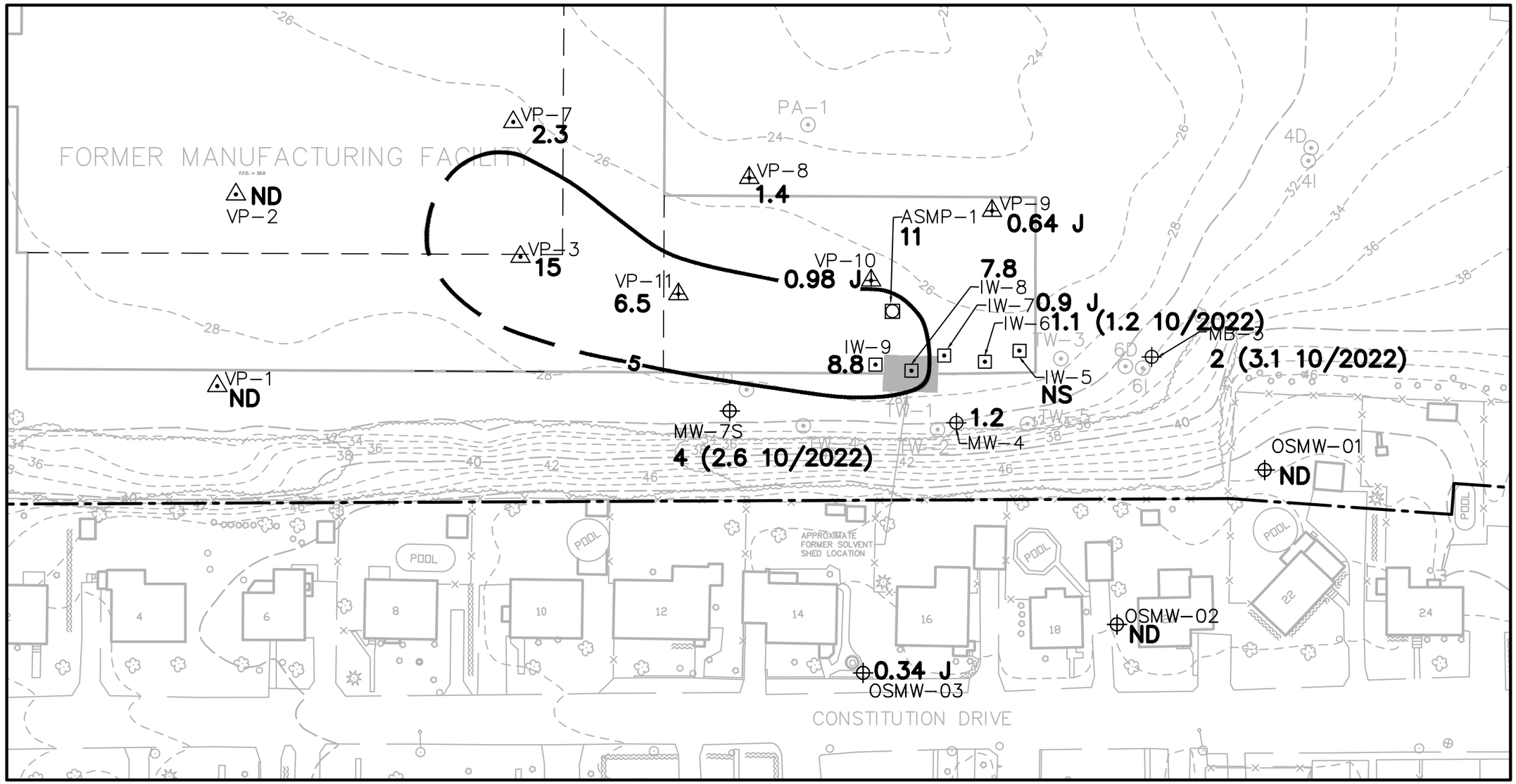
60 0 60 120
SCALE IN FEET

MONTROSE Engineering & Geology, P.C.
1140 VALLEY FORGE ROAD, PHOENIXVILLE, PA 19460
tel 610.840.9100 fax 610.840.9199 www.montrose-env.com

GROUNDWATER POTENTIOMETRIC MAP SEPTEMBER 20, 2021
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

9



LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
- IW-8 — Existing Injection Well Converted to Monitoring Well
- VP-1 — Vertical Profiling Location Converted to Piezometer
- 20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred
- VP-8 — Existing Piezometer
- PA-1 — Abandoned Historic Groundwater Monitoring Well
- **NS** Not Sampled
- **ND** Not Detected

NOTE: Contour lines are drawn based on the September 2021 results.

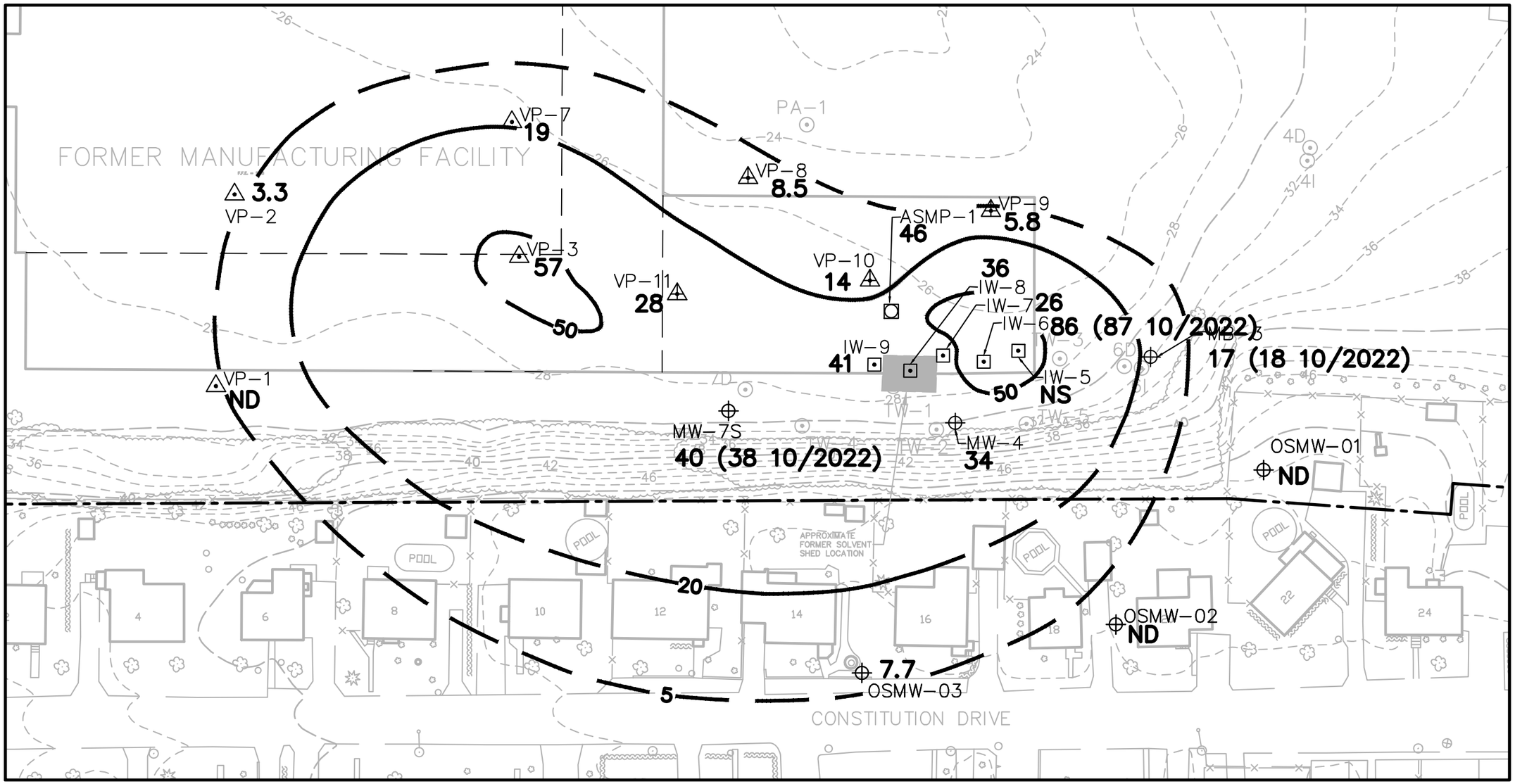
60 0 60 120
SCALE IN FEET

MONTROSE Engineering & Geology, P.C.
1140 VALLEY FORGE ROAD, PHOENIXVILLE, PA 19460
tel 610.840.9100 fax 610.840.9199 www.montrose-env.com

GROUNDWATER PCE ISOCONCENTRATION SEPTEMBER 2021
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

10



LEGEND

- Existing Contour
- Existing Building
- Existing Edge of Paving
- Existing Right of Way
- Existing Tree Line
- Existing Lot Line
- Approximate Property Line
- OSMW-03 — Existing Monitoring Well
- IW-8 — Existing Injection Well Converted to Monitoring Well
- VP-1 — Vertical Profiling Location Converted to Piezometer
- 20 — Groundwater Isoconcentration Line (µg/L) – Dashed Where Inferred
- VP-8 — Existing Piezometer
- PA-1 — Abandoned Historic Groundwater Monitoring Well
- **NS** Not Sampled
- **ND** Not Detected

NOTE: Contour lines are drawn based on the September 2021 results.

60 0 60 120
SCALE IN FEET

MONTROSE Engineering & Geology, P.C.
1140 VALLEY FORGE ROAD, PHOENIXVILLE, PA 19460
tel 610.840.9100 fax 610.840.9199 www.montrose-env.com

GROUNDWATER TCE ISOCONCENTRATION SEPTEMBER 2021
MARATHON REMEDIATION SITE
Cold Spring, New York

SCALE:	1" = 60'
PROJECT NUMBER:	NY95-219
DATE:	

11

Appendix A

DATA VALIDATION REPORT

OF

SEDIMENT SAMPLES

COLLECTED ON OCTOBER 20, 2022

FOR

INORGANIC AND CONVENTIONAL ANALYSES

Laboratory Case Number 460-268053

PREPARED FOR:

GOULD ELECTRONICS INC.
MARATHON SITE
COLD SPRING, NEW YORK

PREPARED BY:

MONTROSE ENVIRONMENTAL SOLUTIONS, INC
PHONIEXVILLE, PENNSYLVANIA

January 20, 2023
Project Number NY 95-219-03

DATA VALIDATION REPORT
INORGANIC COMPOUNDS

INTRODUCTION

This data validation report addresses the inorganic results from the sediment samples collected from the Marathon Site on October 20, 2022, in Cold Spring, New York. Samples were analyzed by Test America in Edison, NJ (TA-Edison) by USEPA SW-846 methods. The data were reported by TA-Edison under sample delivery group (SDG) 460-268053.

The qualified analytical results are presented on the data summary table. The data summary table lists both non-detected and detected results. Support documentation summarizing the specifics of this review is presented at the end of this report.

INORGANIC COMPOUNDS

Five sediment samples, one field duplicate sample and one equipment blank sample were collected and analyzed for cadmium by USEPA SW-846 Method 6010D.

This review has been performed with guidance from the USEPA's *National Functional Guidelines for Inorganic Superfund Methods Data Review* January 2017 and November 2020. The findings presented in this report are based upon a review of all data supplied by the laboratory. The information examined consists of sample results, analytical holding times, initial and continuing calibrations, blank analysis results, ICP interference check sample recoveries, duplicate results, matrix spike/matrix spike duplicate (MS/MSD) recoveries and relative percent differences (RPDs), serial dilution, laboratory control samples results, and field duplicates.

Holding times were met for all samples. All analytes and system monitoring compounds were within the method-required limits for the initial and continuing calibrations (90-110%). No equipment blank contamination was present. Sample EFC-4SD was the field duplicate of EFC-4S. The field duplicate results were precise. The percent recoveries for the MS and MSD, and LCS were acceptable. Laboratory duplicates and serial dilutions were acceptable.

QUALIFIERS

No Data Qualifiers were applied.

SUMMARY

All the data is useable as qualified.

DATA VALIDATION REPORT
CONVENTIONALS

INTRODUCTION

This data validation report addresses the conventional analysis results from the sediment samples collected from the Marathon Site on October 20, 2022, in Cold Spring, New York. All samples were analyzed by Test America in Edison, NJ (TA-Edison). Sediment samples were analyzed for total organic carbon (TOC) by the Lloyd Kahn Method. The sample results were reported under TA-Edison sample delivery group (SDG) 460-268053.

The qualified analytical results are presented on the data summary table. The data summary table lists both non-detected and detected results. Support documentation summarizing the specifics of this review is presented at the end of this report.

CONVENTIONAL PARAMETERS

Five sediment samples and a field duplicate were collected and analyzed for TOC by the Lloyd Kahn Method. The equipment blank was collected and analyzed for TOC by USEPA SW-846 Method 9060A.

This conventional data review has been performed with guidance from the USEPA's *National Functional Guidelines for Inorganic Superfund Methods Data Review*, January 2017 and November 2020. The findings presented in this report are based upon a review of all data supplied by the laboratory. The information examined consists of sample results, analytical holding times, initial and continuing calibration standard recoveries, calibration curves, blank analysis results, matrix spike (MS) recoveries, matrix spike duplicate (MSD) recoveries, laboratory and field duplicate relative percent differences (RPD), and laboratory control sample results.

Holding times were met for all parameters. Initial and continuing calibration standard sample results were accurate. Calibration curves had correlation coefficients greater than 0.99. No equipment blank contamination was present. The TOC laboratory control sample percent recoveries were acceptable. Sample EFC-4SD was the field duplicate of EFC-4S. The field duplicates were precise. The TOC laboratory control sample percent recoveries were acceptable.

QUALIFIERS

No qualification was required.

SUMMARY

The results are acceptable as reported.

QUALIFIER CODES

U - Denotes the compound or analyte was not detected at or above the associated detection limit.

J - Denotes an estimated value or the result is below the quantitation limit.

UJ - Denotes an estimated detection or quantitation limit.

R - Denotes a rejected result. The analyte may or may not be present.

Data review was performed by an experienced quality assurance scientist independent of the analytical laboratory.

This is to certify that I have examined the analytical data and based on the information provided to me by the laboratory, in my professional judgment the data are acceptable for use except where qualified with qualifiers that modify the usefulness of those individual values.

Quality Assurance Scientist — Date: 1/20/2023

Quality Assurance Manager — Date: 1/20/2023

TABLES

MARATHON
Annual Sediment Sampling 2022, 10/20/22
Test America# 460-268053, Project# NY95-219

Sample Location		EFC-1S			EFC-2S			EFC-5S			EFC-4S			EFC-4SD			EFC-3S				EB-01-102022		
Lab ID		460-268053-01			460-268053-02			460-268053-03			460-268053-04			460-268053-05			460-268053-06				460-268053-07		
Sample Date		10/20/2022			10/20/2022			10/20/2022			10/20/2022			10/20/2022			10/20/2022				10/20/2022		
Matrix		Sediment			Sediment			Sediment			Sediment			Sediment			Sediment				Aqueous		
Remarks														FD of EFC-4S							Equipment Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Units**	**Result**	**Q**	**RL**
Total Metals																							
Cadmium	mg/Kg	10.1		1.7	20.7		2.3	40.3		2	0.48	J	1.5	0.34	J	1.5		U	1.5	ug/L		U	4
Conventionals																							
Percent Moisture	%	55.8		1	65		1	62.9		1	52.3		1	49.8		1	47.4		1	NA		NA	
Percent Solids	%	44.2		1	35		1	37.1		1	47.7		1	50.2		1	52.6		1	NA		NA	
Total Organic Carbon	mg/Kg	19500		226	31300		285	33700		269	23300		210	26800		199	15700		190	mg/L		U	1

QA Scientist Amy Graham

Date 01/20/2023

SUPPORT DOCUMENTATION
INORGANICS

METALS DATA VALIDATION SUMMARY

Site Name: Marathon
Project Number: NY95-219
Sampling Date(s): 10/20/2022

Laboratory: Test America - Edison
Case/Order No.: 460-268053

Compound List: Cadmium

Method: 6010D

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	Accept	FYI	Qualify	Comments
Holding Times	X			
ICP/MS Tuning				NA
Initial Calibrations	X			
Continuing Calibrations	X			
Blank Analysis	X			
Field Duplicate Analysis	X			EFC-4SD & EFC-4S
Matrix Spike Analysis (MS/MSD)	X			EFC-2S
Laboratory Control Sample Analysis (LCS)	X			
Laboratory Duplicate Analysis	X			EFC-2S
ICP Internal Standard	X			
CRDL Standard				NA
Serial Dilution	X			
Interference Check Sample Recoveries	X			
Overall Assessment of Data	X			
Other:				

General Comments: Cooler Temp: 2.4°C

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased.
NR - Not Reviewed
NA - Not Applicable

QA Scientist 

Date 1/13/2023

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: EFC-1S
Lab Sample ID: 460-268053-1
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 08:00
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 44.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	10.1	1.7	0.33	mg/Kg			2	6010D

AKG 01/13/2023

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: EFC-2S
Lab Sample ID: 460-268053-2
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 08:20
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 35.0

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	20.7	2.3	0.44	mg/Kg			2	6010D

AKG 01/13/2023

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: EFC-5S
Lab Sample ID: 460-268053-3
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 08:36
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 37.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	40.3	2.0	0.38	mg/Kg			2	6010D

AKG 01/13/2023

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: EFC-4S
Lab Sample ID: 460-268053-4
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 08:57
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 47.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	0.48	1.5	0.30	mg/Kg	J		2	6010D

01/13/2023

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: EFC-4SD
Lab Sample ID: 460-268053-5
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 09:07
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 50.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	0.34	1.5	0.29	mg/Kg	J		2	6010D

AKG 01/13/2023

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: EFC-3S
Lab Sample ID: 460-268053-6
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 09:15
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 52.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	0.29	1.5	0.29	mg/Kg	U		2	6010D

01/13/2023

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: EB-01-102022 Lab Sample ID: 460-268053-7

Lab Name: Eurofins Edison Job No.: 460-268053-1

SDG ID.:

Matrix: Water Date Sampled: 10/20/2022 10:05

Reporting Basis: WET Date Received: 10/21/2022 19:00

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	0.36	4.0	0.36	ug/L	U		1	6010D

01/13/2023

Site Name: **Marathon** **Metals**

Lab ID	Sample ID	Matrix	Analyte	Sample Date	Analyzed Date	Analysis Hold Time (days)	Days to Analysis	Qualify
460-268053-01	EFC-1S	Sediment	Cadmium	10/20/2022	10/28/2022	180	8.0	
460-268053-02	EFC-2S	Sediment	Cadmium	10/20/2022	10/28/2022	180	8.0	
460-268053-03	EFC-5S	Sediment	Cadmium	10/20/2022	10/28/2022	180	8.0	
460-268053-04	EFC-4S	Sediment	Cadmium	10/20/2022	10/28/2022	180	8.0	
460-268053-05	EFC-4SD	Sediment	Cadmium	10/20/2022	10/28/2022	180	8.0	
460-268053-06	EFC-3S	Sediment	Cadmium	10/20/2022	10/28/2022	180	8.0	
460-268053-07	EB-01-102022	Aqueous	Cadmium	10/20/2022	10/27/2022	180	7.0	

AKG 01/13/2023

460-268053_Field Duplicate
Total Metals

Site Name:	**Marathon**	**Laboratory:**	**Test America - Edison**
Project Number:	**NY95-219**	**Matrix:**	**Sediment**

Sample ID	Analyte	Units	Result	Q	RL	Difference	Qualify
EFC-4S	Cadmium	mg/Kg	0.48	J	1.5		
EFC-4SD	Cadmium	mg/Kg	0.34	J	1.5	0.14	no

Duplicate Criteria: Aqueous matrices <30 % RPD or < ± 1*RL, Soil/Solid matrices <40 %RPD or < ± 2*RL.

*** - Denotes %RPD or difference outside criteria.**

NA - Duplicate relative percent difference or difference cannot be calculated.

U / ND - Not detected.

AKG 01/13/2023

SUPPORT DOCUMENTATION
CONVENTIONALS

CONVENTIONALS DATA VALIDATION SUMMARY

Site Name: Marathon
Project Number: NY95-219
Sampling Date(s): 10/20/2022

Laboratory: Test America - Edison
Case/Order No.: 460-268053

Compound List: Total Organic Carbon, Total Solids

Method: Lloyd Kahn, 9060A

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	Accept	FYI	Qualify	Comments
Holding Times	X			
Calibration Curve	X			
Initial Calibrations	X			
Continuing Calibrations	X			
Blank Analysis	X			
Field Duplicate Analysis	X			EFC-4S & EFC-4SD
Matrix Spike Analysis (MS/MSD)	X			EFC-2S
Laboratory Control Sample Analysis (LCS)	X			
Laboratory Duplicate Analysis	X			EFC-2S
Overall Assessment of Data	X			
Other:				

General Comments: Cooler Temp: 2.4°C

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased.
NR - Not Reviewed
NA - Not Applicable

QA Scientist 

Date 1/20/2023

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: EFC-1S
Lab Sample ID: 460-268053-1
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 08:00
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 44.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	TOC Result 1	19500	226	184	mg/Kg			1	Lloyd Kahn

AKG 01/20/2023

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: EFC-2S
Lab Sample ID: 460-268053-2
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 08:20
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 35.0

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	TOC Result 1	31300	285	232	mg/Kg			1	Lloyd Kahn

AKG 01/20/2023

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: EFC-5S
Lab Sample ID: 460-268053-3
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 08:36
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 37.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	TOC Result 1	33700	269	219	mg/Kg			1	Lloyd Kahn

01/20/2023

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: EFC-4S
Lab Sample ID: 460-268053-4
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 08:57
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 47.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	TOC Result 1	23300	210	170	mg/Kg			1	Lloyd Kahn

AKG 01/20/2023

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: EFC-4SD
Lab Sample ID: 460-268053-5
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 09:07
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 50.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	TOC Result 1	26800	199	162	mg/Kg			1	Lloyd Kahn

AKG 01/20/2023

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: EFC-3S
Lab Sample ID: 460-268053-6
Lab Name: Eurofins Edison
Job No.: 460-268053-1
SDG ID.:
Matrix: Solid
Date Sampled: 10/20/2022 09:15
Reporting Basis: DRY
Date Received: 10/21/2022 19:00
% Solids: 52.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	TOC Result 1	15700	190	155	mg/Kg			1	Lloyd Kahn

01/20/2023

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: EB-01-102022 Lab Sample ID: 460-268053-7

Lab Name: Eurofins Edison Job No.: 460-268053-1

SDG ID.:

Matrix: Water Date Sampled: 10/20/2022 10:05

Reporting Basis: WET Date Received: 10/21/2022 19:00

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	TOC Result 1	0.53	1.0	0.53	mg/L	U		1	9060A
	TOC Result 2	0.53	1.0	0.53	mg/L	U		1	9060A
	TOC Result 3	0.53	1.0	0.53	mg/L	U		1	9060A
	TOC Result 4	0.53	1.0	0.53	mg/L	U		1	9060A
7440-44-0	Total Organic Carbon	0.53	1.0	0.53	mg/L	U		1	9060A

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HOLDING TIMES
WC

Site Name: **Marathon** **Wet Chemistry**

Lab ID	Sample ID	Matrix	Analyte	Sample Date	Date Analyzed	Analysis Hold Time (days)	Days to Analysis	Qualify
460-268053-01	EFC-1S	Sediment	Percent Solids	10/20/2022	10/24/2022	7	4	
460-268053-02	EFC-2S	Sediment	Percent Solids	10/20/2022	10/24/2022	7	4	
460-268053-03	EFC-5S	Sediment	Percent Solids	10/20/2022	10/24/2022	7	4	
460-268053-04	EFC-4S	Sediment	Percent Solids	10/20/2022	10/24/2022	7	4	
460-268053-05	EFC-4SD	Sediment	Percent Solids	10/20/2022	10/24/2022	7	4	
460-268053-06	EFC-3S	Sediment	Percent Solids	10/20/2022	10/24/2022	7	4	
460-268053-01	EFC-1S	Sediment	Total Organic Carbon	10/20/2022	11/3/2022	14	14	
460-268053-02	EFC-2S	Sediment	Total Organic Carbon	10/20/2022	11/3/2022	14	14	
460-268053-03	EFC-5S	Sediment	Total Organic Carbon	10/20/2022	11/3/2022	14	14	
460-268053-04	EFC-4S	Sediment	Total Organic Carbon	10/20/2022	11/3/2022	14	14	
460-268053-05	EFC-4SD	Sediment	Total Organic Carbon	10/20/2022	11/3/2022	14	14	
460-268053-06	EFC-3S	Sediment	Total Organic Carbon	10/20/2022	11/3/2022	14	14	
460-268053-07	EB-01-102022	Aqueous	Total Organic Carbon	10/20/2022	10/26/2022	28	6	

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460-268053_Field Duplicate
WC

Site Name:	**Marathon**	**Laboratory:**	**Test America - Edison**
Project Number:	**NY95-219**	**Matrix:**	**Sediment**

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify
EFC-4S	Percent Moisture	%	52.3		1		
EFC-4SD	Percent Moisture	%	49.8		1	4.90	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify
EFC-4S	Percent Solids	%	47.7		1		
EFC-4SD	Percent Solids	%	50.2		1	5.11	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify
EFC-4S	Total Organic Carbon	mg/Kg	23300		210		
EFC-4SD	Total Organic Carbon	mg/Kg	26800		199	13.97	no

Duplicate Criteria: Aqueous matrices <30 % RPD or < ± 1*RL, Soil/Solid matrices <40 %RPD or < ± 2*RL.

*** - Denotes %RPD or difference outside criteria.**

NA - Duplicate relative percent difference or difference cannot be calculated.

U / ND - Not detected.

AKG 01/20/2023

Appendix B

DATA VALIDATION REPORT

OF

GROUNDWATER SAMPLES

COLLECTED ON OCTOBER 20, 2022

FOR

ORGANIC ANALYSES

Laboratory Case Number 460-268052

PREPARED FOR:

GOULD ELECTRONICS INC.
MARATHON SITE
COLD SPRING, NEW YORK

PREPARED BY:

ADVANCED GEOSERVICES / MONTROSE ENVIRONMENTAL
PHOENIXVILLE, PENNSYLVANIA

January 10, 2023
Project Number NY 95-219-03

DATA VALIDATION REPORT
ORGANIC COMPOUNDS

INTRODUCTION

This data validation report addresses the organic results from the groundwater samples collected from the Marathon Site monitoring wells on October 20, 2022 in Cold Spring, New York. Samples were analyzed by TestAmerica in Edison, NJ. The samples were analyzed for volatile organic compounds (VOCs) by USEPA *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (SW-846) Method 8260D. The sample results were reported under TestAmerica Case Number 460-268052.

The qualified analytical results are presented on the data summary table. The data summary table lists both non-detected and detected results. Support documentation summarizing the specifics of this review is presented at the end of this report.

VOLATILE ORGANIC COMPOUNDS

Three (3) groundwater samples, one (1) field duplicate samples, one (1) equipment blank, and one (1) trip blank sample were collected and analyzed for VOCs by USEPA SW-846 Method 8260D.

This organic review has been performed with guidance from the USEPA "National Functional Guidelines for Organic Superfund Methods Data Review, January 2017 and November 2020. The findings presented in this report are based upon a review of all data supplied by the laboratory. The information examined consists of sample results, analytical holding times, initial and continuing calibrations, gas chromatographic/mass spectrometric (GC/MS) tunes, blank analysis results, matrix spike/matrix spike duplicate (MS/MSD) recoveries and relative percent differences (RPDs), laboratory control sample (LCS) recoveries and relative percent differences (RPDs), surrogate spike recoveries, standard areas and retention times and target compound identification.

The holding times were met for all samples. All GC/MS tunes for the target analytes were within method criteria. All analytes and system monitoring compounds relative response factors (RRF) and percent differences (%D) were within the National Functional Guidelines criteria for the initial and continuing calibrations, except those address in the "QUALIFIER" section. The trip blank, equipment blank and method blanks were free of contamination. All volatile system monitoring compound recoveries and internal standard areas were within acceptance criteria. All detected compounds met the relative retention time and mass spectral identification criteria. Samples MW-7S/MW-7SD were field duplicates. The field duplicate results were precise. The LCS and project specific MS/MSD recoveries were within acceptance criteria.

QUALIFIER

460-268052

- The recent updates to SW-846 8260D and the National Functional Guidelines (11/2020) removed the criteria that a BFB tune is required every 12 hours of sample analysis. The BFB tune per method

8260D is now only required to be analyzed and verified with the initial calibration.

- ICV 460-865764/17; Bromomethane (-31.7%) had a %D greater than 30%. The associated samples included MW-7S, MW-7SD, MB-3, IW-6, EB-01-102022, and TB-01-102022. The sample reporting limits were qualified as estimated (UJ).

- CCVIS 460-873912/2; Bromomethane (-65.7%) had a %D greater than 30%. The associated sample included EB-01-102022. The sample reporting limits were qualified as estimated (UJ).

SUMMARY

The results are acceptable as qualified.

QUALIFIER CODES

U - Denotes the compound or analyte was not detected at or above the associated detection limit.

J - Denotes an estimated value or the result is below the quantitation limit.

UJ - Denotes an estimated detection or quantitation limit.

R - Denotes a rejected result. The analyte may or may not be present.

Data review was performed by an experienced quality assurance scientist independent of the analytical laboratory.

This is to certify that I have examined the analytical data and based on the information provided to me by the laboratory, in my professional judgment the data are acceptable for use except where qualified with qualifiers that modify the usefulness of those individual values.

Quality Assurance Scientist	1/10/2023 Date
Quality Assurance Manager	1/10/2023 Date

TABLES

MARATHON
Annual Groundwater Sampling 2022, 10/20/22
TestAmerica# 460-268052, Project# NY95-219

Sample Location		MW-7S			MW-7SD			MB-3			IW-6			EB-01-102022			TB-01-102022		
Lab ID		460-268052-01			460-268052-02			460-268052-03			460-268052-04			460-268052-05			460-268052-06		
Sample Date		10/20/2022			10/20/2022			10/20/2022			10/20/2022			10/20/2022			10/20/2022		
Matrix		Groundwater			Groundwater			Groundwater			Groundwater			Aqueous			Aqueous		
Remarks					FD of MW-7S									Equipment Blank			Trip Blank		
Parameter	**Units**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**	**Result**	**Q**	**RL**
Volatiles																			
1,1,1-Trichloroethane	ug/L		U	1	0.27	J	1	0.61	J	1	2.1		1		U	1		U	1
1,1,2,2-Tetrachloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
1,1,2-Trichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
1,1-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
1,2-Dichloropropane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
2-Butanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5
2-Hexanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5
4-Methyl-2-pentanone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5
Acetone	ug/L		U	5		U	5		U	5		U	5		U	5		U	5
Benzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Bromodichloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Bromoform	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Bromomethane	ug/L		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1		UJ	1
Carbon disulfide	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Carbon tetrachloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Chlorobenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Chloroethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Chloroform	ug/L	2.9		1	3.3		1	0.34	J	1	0.41	J	1		U	1		U	1
Chloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
cis-1,2-Dichloroethene	ug/L		U	1	0.23	J	1		U	1		U	1		U	1		U	1
cis-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Dibromochloromethane	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Ethylbenzene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Methylene Chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Styrene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Tetrachloroethene	ug/L	2.6		1	2.5		1	3.1		1	1.2		1		U	1		U	1
Toluene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,2-Dichloroethene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
trans-1,3-Dichloropropene	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Trichloroethene	ug/L	38		1	38		1	18		1	87		1		U	1		U	1
Vinyl chloride	ug/L		U	1		U	1		U	1		U	1		U	1		U	1
Xylenes, Total	ug/L		U	2		U	2		U	2		U	2		U	2		U	2

QA Scientist Amy Graham

Date 1/9/2023

SUPPORT DOCUMENTATION
ORGANICS

VOLATILES DATA VALIDATION SUMMARY

Site Name: Marathon
Project Number: NY95-219
Sampling Date(s): 10/20/2022

Laboratory: TestAmerica - Edison
Case/Order No.: 460-268052

Compound List: Volatiles

Method: 8260D

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	Accept	FYI	Qualify	Comments
Holding Times	X			
GC/MS Tuning		X		The updated method 8260D and the National Functional Guidelines (11/2020) no longer requires the analysis and verification of a BFB tune every 12 hours. Per the updates the BFB tunes are only required to be analyzed and verified with the initial calibration.
Initial Calibrations/ICV			X	%D
Continuing Calibrations			X	%D
Blank Analysis	X			
System Monitoring/Surrogate	X			
Field Duplicate Analysis	X			MW-7S & MW-7SD
Matrix Spike Analysis (MS/MSD)	X			MB-3
Laboratory Control Sample Analysis (LCS)	X			
Internal Standard Areas/RT	X			
Target Compound Identification	X			
TIC Identification				NA
Overall Assessment of Data	X			
Other:				

General Comments: Cooler temp: 1.5°C

Accept - No qualification required.
FYI - For your information only, no qualification necessary.
Qualify - Qualify as rejected, estimated or biased.
NR - Not Reviewed
NA - Not Applicable

QA Scientist Amy Graham

Date 01/09/2023

Client Sample ID: MW-7S
Lab Sample ID: 460-268052-1

Date Collected: 10/20/22 12:25
Matrix: Water
Date Received: 10/21/22 19:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.24	U	1.0	0.24	ug/L			10/25/22 05:07	1
1,1,2,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			10/25/22 05:07	1
1,1,2-Trichloroethane	0.20	U	1.0	0.20	ug/L			10/25/22 05:07	1
1,1-Dichloroethane	0.26	U	1.0	0.26	ug/L			10/25/22 05:07	1
1,1-Dichloroethene	0.26	U	1.0	0.26	ug/L			10/25/22 05:07	1
1,2-Dichloroethane	0.43	U	1.0	0.43	ug/L			10/25/22 05:07	1
1,2-Dichloropropane	0.35	U	1.0	0.35	ug/L			10/25/22 05:07	1
2-Butanone	1.9	U	5.0	1.9	ug/L			10/25/22 05:07	1
2-Hexanone	1.1	U	5.0	1.1	ug/L			10/25/22 05:07	1
4-Methyl-2-pentanone	1.3	U	5.0	1.3	ug/L			10/25/22 05:07	1
Acetone	4.4	U	5.0	4.4	ug/L			10/25/22 05:07	1
Benzene	0.20	U	1.0	0.20	ug/L			10/25/22 05:07	1
Bromodichloromethane	0.34	U	1.0	0.34	ug/L			10/25/22 05:07	1
Bromoform	0.54	U	1.0	0.54	ug/L			10/25/22 05:07	1
Bromomethane	0.55	U J	1.0	0.55	ug/L			10/25/22 05:07	1
Carbon disulfide	0.82	U	1.0	0.82	ug/L			10/25/22 05:07	1
Carbon tetrachloride	0.21	U	1.0	0.21	ug/L			10/25/22 05:07	1
Chlorobenzene	0.38	U	1.0	0.38	ug/L			10/25/22 05:07	1
Chloroethane	0.32	U	1.0	0.32	ug/L			10/25/22 05:07	1
Chloroform	**2.9**		1.0	0.33	ug/L			10/25/22 05:07	1
Chloromethane	0.40	U	1.0	0.40	ug/L			10/25/22 05:07	1
cis-1,2-Dichloroethene	0.22	U	1.0	0.22	ug/L			10/25/22 05:07	1
cis-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 05:07	1
Dibromochloromethane	0.28	U	1.0	0.28	ug/L			10/25/22 05:07	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			10/25/22 05:07	1
Methylene Chloride	0.32	U	1.0	0.32	ug/L			10/25/22 05:07	1
Styrene	0.42	U	1.0	0.42	ug/L			10/25/22 05:07	1
Tetrachloroethene	**2.6**		1.0	0.25	ug/L			10/25/22 05:07	1
Toluene	0.38	U	1.0	0.38	ug/L			10/25/22 05:07	1
trans-1,2-Dichloroethene	0.24	U	1.0	0.24	ug/L			10/25/22 05:07	1
trans-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 05:07	1
Trichloroethene	**38**		1.0	0.31	ug/L			10/25/22 05:07	1
Vinyl chloride	0.17	U	1.0	0.17	ug/L			10/25/22 05:07	1
Xylenes, Total	0.65	U	2.0	0.65	ug/L			10/25/22 05:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*70 - 128*		*10/25/22 05:07*	*1*
Bromofluorobenzene	*96*		*76 - 120*		*10/25/22 05:07*	*1*
Dibromofluoromethane (Surr)	*100*		*77 - 124*		*10/25/22 05:07*	*1*
Toluene-d8 (Surr)	*113*		*80 - 120*		*10/25/22 05:07*	*1*

Client Sample ID: MW-7SD
Lab Sample ID: 460-268052-2

Date Collected: 10/20/22 12:35
Matrix: Water
Date Received: 10/21/22 19:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**0.27**	**J**	1.0	0.24	ug/L			10/25/22 05:32	1
1,1,2,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			10/25/22 05:32	1
1,1,2-Trichloroethane	0.20	U	1.0	0.20	ug/L			10/25/22 05:32	1

Client Sample ID: MW-7SD

Date Collected: 10/20/22 12:35
Date Received: 10/21/22 19:00

Lab Sample ID: 460-268052-2

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.26	U	1.0	0.26	ug/L			10/25/22 05:32	1
1,1-Dichloroethene	0.26	U	1.0	0.26	ug/L			10/25/22 05:32	1
1,2-Dichloroethane	0.43	U	1.0	0.43	ug/L			10/25/22 05:32	1
1,2-Dichloropropane	0.35	U	1.0	0.35	ug/L			10/25/22 05:32	1
2-Butanone	1.9	U	5.0	1.9	ug/L			10/25/22 05:32	1
2-Hexanone	1.1	U	5.0	1.1	ug/L			10/25/22 05:32	1
4-Methyl-2-pentanone	1.3	U	5.0	1.3	ug/L			10/25/22 05:32	1
Acetone	4.4	U	5.0	4.4	ug/L			10/25/22 05:32	1
Benzene	0.20	U	1.0	0.20	ug/L			10/25/22 05:32	1
Bromodichloromethane	0.34	U	1.0	0.34	ug/L			10/25/22 05:32	1
Bromoform	0.54	U	1.0	0.54	ug/L			10/25/22 05:32	1
Bromomethane	0.55	UJ	1.0	0.55	ug/L			10/25/22 05:32	1
Carbon disulfide	0.82	U	1.0	0.82	ug/L			10/25/22 05:32	1
Carbon tetrachloride	0.21	U	1.0	0.21	ug/L			10/25/22 05:32	1
Chlorobenzene	0.38	U	1.0	0.38	ug/L			10/25/22 05:32	1
Chloroethane	0.32	U	1.0	0.32	ug/L			10/25/22 05:32	1
Chloroform	**3.3**		1.0	0.33	ug/L			10/25/22 05:32	1
Chloromethane	0.40	U	1.0	0.40	ug/L			10/25/22 05:32	1
cis-1,2-Dichloroethene	**0.23**	**J**	1.0	0.22	ug/L			10/25/22 05:32	1
cis-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 05:32	1
Dibromochloromethane	0.28	U	1.0	0.28	ug/L			10/25/22 05:32	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			10/25/22 05:32	1
Methylene Chloride	0.32	U	1.0	0.32	ug/L			10/25/22 05:32	1
Styrene	0.42	U	1.0	0.42	ug/L			10/25/22 05:32	1
Tetrachloroethene	**2.5**		1.0	0.25	ug/L			10/25/22 05:32	1
Toluene	0.38	U	1.0	0.38	ug/L			10/25/22 05:32	1
trans-1,2-Dichloroethene	0.24	U	1.0	0.24	ug/L			10/25/22 05:32	1
trans-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 05:32	1
Trichloroethene	**38**		1.0	0.31	ug/L			10/25/22 05:32	1
Vinyl chloride	0.17	U	1.0	0.17	ug/L			10/25/22 05:32	1
Xylenes, Total	0.65	U	2.0	0.65	ug/L			10/25/22 05:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*70 - 128*		*10/25/22 05:32*	*1*
Bromofluorobenzene	*99*		*76 - 120*		*10/25/22 05:32*	*1*
Dibromofluoromethane (Surr)	*99*		*77 - 124*		*10/25/22 05:32*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*10/25/22 05:32*	*1*

Client Sample ID: MB-3

Date Collected: 10/20/22 13:12
Date Received: 10/21/22 19:00

Lab Sample ID: 460-268052-3

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**0.61**	**J**	1.0	0.24	ug/L			10/25/22 03:52	1
1,1,2,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			10/25/22 03:52	1
1,1,2-Trichloroethane	0.20	U	1.0	0.20	ug/L			10/25/22 03:52	1
1,1-Dichloroethane	0.26	U	1.0	0.26	ug/L			10/25/22 03:52	1
1,1-Dichloroethene	0.26	U	1.0	0.26	ug/L			10/25/22 03:52	1
1,2-Dichloroethane	0.43	U	1.0	0.43	ug/L			10/25/22 03:52	1

Client Sample ID: MB-3
Lab Sample ID: 460-268052-3

Date Collected: 10/20/22 13:12
Matrix: Water
Date Received: 10/21/22 19:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	0.35	U	1.0	0.35	ug/L			10/25/22 03:52	1
2-Butanone	1.9	U	5.0	1.9	ug/L			10/25/22 03:52	1
2-Hexanone	1.1	U	5.0	1.1	ug/L			10/25/22 03:52	1
4-Methyl-2-pentanone	1.3	U	5.0	1.3	ug/L			10/25/22 03:52	1
Acetone	4.4	U	5.0	4.4	ug/L			10/25/22 03:52	1
Benzene	0.20	U	1.0	0.20	ug/L			10/25/22 03:52	1
Bromodichloromethane	0.34	U	1.0	0.34	ug/L			10/25/22 03:52	1
Bromoform	0.54	U	1.0	0.54	ug/L			10/25/22 03:52	1
Bromomethane	0.55	U J	1.0	0.55	ug/L			10/25/22 03:52	1
Carbon disulfide	0.82	U	1.0	0.82	ug/L			10/25/22 03:52	1
Carbon tetrachloride	0.21	U	1.0	0.21	ug/L			10/25/22 03:52	1
Chlorobenzene	0.38	U	1.0	0.38	ug/L			10/25/22 03:52	1
Chloroethane	0.32	U	1.0	0.32	ug/L			10/25/22 03:52	1
Chloroform	**0.34**	**J**	1.0	0.33	ug/L			10/25/22 03:52	1
Chloromethane	0.40	U	1.0	0.40	ug/L			10/25/22 03:52	1
cis-1,2-Dichloroethene	0.22	U	1.0	0.22	ug/L			10/25/22 03:52	1
cis-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 03:52	1
Dibromochloromethane	0.28	U	1.0	0.28	ug/L			10/25/22 03:52	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			10/25/22 03:52	1
Methylene Chloride	0.32	U	1.0	0.32	ug/L			10/25/22 03:52	1
Styrene	0.42	U	1.0	0.42	ug/L			10/25/22 03:52	1
Tetrachloroethene	**3.1**		1.0	0.25	ug/L			10/25/22 03:52	1
Toluene	0.38	U	1.0	0.38	ug/L			10/25/22 03:52	1
trans-1,2-Dichloroethene	0.24	U	1.0	0.24	ug/L			10/25/22 03:52	1
trans-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 03:52	1
Trichloroethene	**18**		1.0	0.31	ug/L			10/25/22 03:52	1
Vinyl chloride	0.17	U	1.0	0.17	ug/L			10/25/22 03:52	1
Xylenes, Total	0.65	U	2.0	0.65	ug/L			10/25/22 03:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*70 - 128*		*10/25/22 03:52*	*1*
Bromofluorobenzene	*98*		*76 - 120*		*10/25/22 03:52*	*1*
Dibromofluoromethane (Surr)	*99*		*77 - 124*		*10/25/22 03:52*	*1*
Toluene-d8 (Surr)	*109*		*80 - 120*		*10/25/22 03:52*	*1*

Client Sample ID: IW-6
Lab Sample ID: 460-268052-4

Date Collected: 10/20/22 14:00
Matrix: Water
Date Received: 10/21/22 19:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**2.1**		1.0	0.24	ug/L			10/25/22 05:57	1
1,1,2,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			10/25/22 05:57	1
1,1,2-Trichloroethane	0.20	U	1.0	0.20	ug/L			10/25/22 05:57	1
1,1-Dichloroethane	0.26	U	1.0	0.26	ug/L			10/25/22 05:57	1
1,1-Dichloroethene	0.26	U	1.0	0.26	ug/L			10/25/22 05:57	1
1,2-Dichloroethane	0.43	U	1.0	0.43	ug/L			10/25/22 05:57	1
1,2-Dichloropropane	0.35	U	1.0	0.35	ug/L			10/25/22 05:57	1
2-Butanone	1.9	U	5.0	1.9	ug/L			10/25/22 05:57	1
2-Hexanone	1.1	U	5.0	1.1	ug/L			10/25/22 05:57	1

Client Sample ID: IW-6
Lab Sample ID: 460-268052-4

Date Collected: 10/20/22 14:00
Matrix: Water
Date Received: 10/21/22 19:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Methyl-2-pentanone	1.3	U	5.0	1.3	ug/L			10/25/22 05:57	1
Acetone	4.4	U	5.0	4.4	ug/L			10/25/22 05:57	1
Benzene	0.20	U	1.0	0.20	ug/L			10/25/22 05:57	1
Bromodichloromethane	0.34	U	1.0	0.34	ug/L			10/25/22 05:57	1
Bromoform	0.54	U	1.0	0.54	ug/L			10/25/22 05:57	1
Bromomethane	0.55	UJ	1.0	0.55	ug/L			10/25/22 05:57	1
Carbon disulfide	0.82	U	1.0	0.82	ug/L			10/25/22 05:57	1
Carbon tetrachloride	0.21	U	1.0	0.21	ug/L			10/25/22 05:57	1
Chlorobenzene	0.38	U	1.0	0.38	ug/L			10/25/22 05:57	1
Chloroethane	0.32	U	1.0	0.32	ug/L			10/25/22 05:57	1
Chloroform	**0.41**	**J**	1.0	0.33	ug/L			10/25/22 05:57	1
Chloromethane	0.40	U	1.0	0.40	ug/L			10/25/22 05:57	1
cis-1,2-Dichloroethene	0.22	U	1.0	0.22	ug/L			10/25/22 05:57	1
cis-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 05:57	1
Dibromochloromethane	0.28	U	1.0	0.28	ug/L			10/25/22 05:57	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			10/25/22 05:57	1
Methylene Chloride	0.32	U	1.0	0.32	ug/L			10/25/22 05:57	1
Styrene	0.42	U	1.0	0.42	ug/L			10/25/22 05:57	1
Tetrachloroethene	**1.2**		1.0	0.25	ug/L			10/25/22 05:57	1
Toluene	0.38	U	1.0	0.38	ug/L			10/25/22 05:57	1
trans-1,2-Dichloroethene	0.24	U	1.0	0.24	ug/L			10/25/22 05:57	1
trans-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 05:57	1
Trichloroethene	**87**		1.0	0.31	ug/L			10/25/22 05:57	1
Vinyl chloride	0.17	U	1.0	0.17	ug/L			10/25/22 05:57	1
Xylenes, Total	0.65	U	2.0	0.65	ug/L			10/25/22 05:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*70 - 128*		*10/25/22 05:57*	*1*
Bromofluorobenzene	*99*		*76 - 120*		*10/25/22 05:57*	*1*
Dibromofluoromethane (Surr)	*100*		*77 - 124*		*10/25/22 05:57*	*1*
Toluene-d8 (Surr)	*107*		*80 - 120*		*10/25/22 05:57*	*1*

Client Sample ID: EB-01-102022
Lab Sample ID: 460-268052-5

Date Collected: 10/20/22 13:52
Matrix: Water
Date Received: 10/21/22 19:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.24	U	1.0	0.24	ug/L			10/25/22 11:07	1
1,1,2,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			10/25/22 11:07	1
1,1,2-Trichloroethane	0.20	U	1.0	0.20	ug/L			10/25/22 11:07	1
1,1-Dichloroethane	0.26	U	1.0	0.26	ug/L			10/25/22 11:07	1
1,1-Dichloroethene	0.26	U	1.0	0.26	ug/L			10/25/22 11:07	1
1,2-Dichloroethane	0.43	U	1.0	0.43	ug/L			10/25/22 11:07	1
1,2-Dichloropropane	0.35	U	1.0	0.35	ug/L			10/25/22 11:07	1
2-Butanone	1.9	U	5.0	1.9	ug/L			10/25/22 11:07	1
2-Hexanone	1.1	U	5.0	1.1	ug/L			10/25/22 11:07	1
4-Methyl-2-pentanone	1.3	U	5.0	1.3	ug/L			10/25/22 11:07	1
Acetone	4.4	U	5.0	4.4	ug/L			10/25/22 11:07	1
Benzene	0.20	U	1.0	0.20	ug/L			10/25/22 11:07	1

Client Sample ID: EB-01-102022

Lab Sample ID: 460-268052-5

Date Collected: 10/20/22 13:52

Matrix: Water

Date Received: 10/21/22 19:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	0.34	U	1.0	0.34	ug/L			10/25/22 11:07	1
Bromoform	0.54	U	1.0	0.54	ug/L			10/25/22 11:07	1
Bromomethane	0.55	U J	1.0	0.55	ug/L			10/25/22 11:07	1
Carbon disulfide	0.82	U	1.0	0.82	ug/L			10/25/22 11:07	1
Carbon tetrachloride	0.21	U	1.0	0.21	ug/L			10/25/22 11:07	1
Chlorobenzene	0.38	U	1.0	0.38	ug/L			10/25/22 11:07	1
Chloroethane	0.32	U	1.0	0.32	ug/L			10/25/22 11:07	1
Chloroform	0.33	U	1.0	0.33	ug/L			10/25/22 11:07	1
Chloromethane	0.40	U	1.0	0.40	ug/L			10/25/22 11:07	1
cis-1,2-Dichloroethene	0.22	U	1.0	0.22	ug/L			10/25/22 11:07	1
cis-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 11:07	1
Dibromochloromethane	0.28	U	1.0	0.28	ug/L			10/25/22 11:07	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			10/25/22 11:07	1
Methylene Chloride	0.32	U	1.0	0.32	ug/L			10/25/22 11:07	1
Styrene	0.42	U	1.0	0.42	ug/L			10/25/22 11:07	1
Tetrachloroethene	0.25	U	1.0	0.25	ug/L			10/25/22 11:07	1
Toluene	0.38	U	1.0	0.38	ug/L			10/25/22 11:07	1
trans-1,2-Dichloroethene	0.24	U	1.0	0.24	ug/L			10/25/22 11:07	1
trans-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 11:07	1
Trichloroethene	0.31	U	1.0	0.31	ug/L			10/25/22 11:07	1
Vinyl chloride	0.17	U	1.0	0.17	ug/L			10/25/22 11:07	1
Xylenes, Total	0.65	U	2.0	0.65	ug/L			10/25/22 11:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*70 - 128*		*10/25/22 11:07*	*1*
Bromofluorobenzene	*95*		*76 - 120*		*10/25/22 11:07*	*1*
Dibromofluoromethane (Surr)	*97*		*77 - 124*		*10/25/22 11:07*	*1*
Toluene-d8 (Surr)	*108*		*80 - 120*		*10/25/22 11:07*	*1*

Client Sample ID: TB-01-102022

Lab Sample ID: 460-268052-6

Date Collected: 10/20/22 00:00

Matrix: Water

Date Received: 10/21/22 19:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.24	U	1.0	0.24	ug/L			10/25/22 06:48	1
1,1,2,2-Tetrachloroethane	0.37	U	1.0	0.37	ug/L			10/25/22 06:48	1
1,1,2-Trichloroethane	0.20	U	1.0	0.20	ug/L			10/25/22 06:48	1
1,1-Dichloroethane	0.26	U	1.0	0.26	ug/L			10/25/22 06:48	1
1,1-Dichloroethene	0.26	U	1.0	0.26	ug/L			10/25/22 06:48	1
1,2-Dichloroethane	0.43	U	1.0	0.43	ug/L			10/25/22 06:48	1
1,2-Dichloropropane	0.35	U	1.0	0.35	ug/L			10/25/22 06:48	1
2-Butanone	1.9	U	5.0	1.9	ug/L			10/25/22 06:48	1
2-Hexanone	1.1	U	5.0	1.1	ug/L			10/25/22 06:48	1
4-Methyl-2-pentanone	1.3	U	5.0	1.3	ug/L			10/25/22 06:48	1
Acetone	4.4	U	5.0	4.4	ug/L			10/25/22 06:48	1
Benzene	0.20	U	1.0	0.20	ug/L			10/25/22 06:48	1
Bromodichloromethane	0.34	U	1.0	0.34	ug/L			10/25/22 06:48	1
Bromoform	0.54	U	1.0	0.54	ug/L			10/25/22 06:48	1
Bromomethane	0.55	U J	1.0	0.55	ug/L			10/25/22 06:48	1

Client Sample ID: TB-01-102022

Date Collected: 10/20/22 00:00
Date Received: 10/21/22 19:00

Lab Sample ID: 460-268052-6

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon disulfide	0.82	U	1.0	0.82	ug/L			10/25/22 06:48	1
Carbon tetrachloride	0.21	U	1.0	0.21	ug/L			10/25/22 06:48	1
Chlorobenzene	0.38	U	1.0	0.38	ug/L			10/25/22 06:48	1
Chloroethane	0.32	U	1.0	0.32	ug/L			10/25/22 06:48	1
Chloroform	0.33	U	1.0	0.33	ug/L			10/25/22 06:48	1
Chloromethane	0.40	U	1.0	0.40	ug/L			10/25/22 06:48	1
cis-1,2-Dichloroethene	0.22	U	1.0	0.22	ug/L			10/25/22 06:48	1
cis-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 06:48	1
Dibromochloromethane	0.28	U	1.0	0.28	ug/L			10/25/22 06:48	1
Ethylbenzene	0.30	U	1.0	0.30	ug/L			10/25/22 06:48	1
Methylene Chloride	0.32	U	1.0	0.32	ug/L			10/25/22 06:48	1
Styrene	0.42	U	1.0	0.42	ug/L			10/25/22 06:48	1
Tetrachloroethene	0.25	U	1.0	0.25	ug/L			10/25/22 06:48	1
Toluene	0.38	U	1.0	0.38	ug/L			10/25/22 06:48	1
trans-1,2-Dichloroethene	0.24	U	1.0	0.24	ug/L			10/25/22 06:48	1
trans-1,3-Dichloropropene	0.22	U	1.0	0.22	ug/L			10/25/22 06:48	1
Trichloroethene	0.31	U	1.0	0.31	ug/L			10/25/22 06:48	1
Vinyl chloride	0.17	U	1.0	0.17	ug/L			10/25/22 06:48	1
Xylenes, Total	0.65	U	2.0	0.65	ug/L			10/25/22 06:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*70 - 128*		*10/25/22 06:48*	*1*
Bromofluorobenzene	*99*		*76 - 120*		*10/25/22 06:48*	*1*
Dibromofluoromethane (Surr)	*99*		*77 - 124*		*10/25/22 06:48*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*10/25/22 06:48*	*1*

HOLDING TIMES
Volatiles

Site Name: **Marathon** **Volatiles**

Lab ID	Sample ID	Matrix	Analyte	Sample Date	Date Analyzed	Analysis Hold Time (days)	Days to Analysis	Qualify
460-268052-01	MW-7S	Groundwater	Volatiles	10/20/2022	10/25/2022	14	5	
460-268052-02	MW-7SD	Groundwater	Volatiles	10/20/2022	10/25/2022	14	5	
460-268052-03	MB-3	Groundwater	Volatiles	10/20/2022	10/25/2022	14	5	
460-268052-04	IW-6	Groundwater	Volatiles	10/20/2022	10/25/2022	14	5	
460-268052-05	EB-01-102022	Aqueous	Volatiles	10/20/2022	10/25/2022	14	5	
460-268052-06	TB-01-102022	Aqueous	Volatiles	10/20/2022	10/25/2022	14	5	

AKG 01/09/2023

460-268052_Field Duplicate
All Water

Site Name:	**Marathon**	**Laboratory:**	**Test America - Edison**
Project Number:	**NY95-219**	**Matrix:**	**Groundwater**

Sample ID	Analyte	Units	Result	Q	RL	Difference	Qualify
MW-7S	1,1,1-Trichloroethane	ug/L		U	1		
MW-7SD	1,1,1-Trichloroethane	ug/L	0.27	J	1	0.27	no

Sample ID	Analyte	Units	Result	Q	RL	Difference	Qualify
MW-7S	Chloroform	ug/L	2.9		1		
MW-7SD	Chloroform	ug/L	3.3		1	0.40	no

Sample ID	Analyte	Units	Result	Q	RL	Difference	Qualify
MW-7SD	cis-1,2-Dichloroethene	ug/L	0.23	J	1		
MW-7S	cis-1,2-Dichloroethene	ug/L		U	1	0.23	no

Sample ID	Analyte	Units	Result	Q	RL	Difference	Qualify
MW-7S	Tetrachloroethene	ug/L	2.6		1		
MW-7SD	Tetrachloroethene	ug/L	2.5		1	0.10	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify
MW-7S	Trichloroethene	ug/L	38		1		
MW-7SD	Trichloroethene	ug/L	38		1	0.00	no

Duplicate Criteria: Aqueous matrices <30 % RPD or < ± 1*RL, Soil/Solid matrices <40 %RPD or < ± 2*RL.

*** - Denotes %RPD or difference outside criteria.**

NA - Duplicate relative percent difference or difference cannot be calculated.

U / ND - Not detected.

AKG 01/09/2023

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Edison Job No.: 460-268052-1

SDG No.:

Lab Sample ID: ICV 460-865764/17 Calibration Date: 09/12/2022 16:32

Instrument ID: CVOAMS13 Calib Start Date: 09/12/2022 10:38

GC Column: Rtx-624 ID: 0.25(mm) Calib End Date: 09/12/2022 13:10

Lab File ID: P05064.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorotrifluoroethene	Ave	0.0646	0.0525		16.3	20.0	-18.7	30.0
Dichlorodifluoromethane	Ave	0.3033	0.2704	0.1000	17.8	20.0	-10.8	30.0
Chlorodifluoromethane	Ave	0.3903	0.3831		19.6	20.0	-1.9	30.0
Vinyl chloride	Ave	0.2549	0.2795	0.1000	21.9	20.0	9.6	30.0
Butadiene	QuaF		0.2186		16.5	20.0	-17.7	30.0
Chloromethane	Ave	0.3619	0.3218	0.1000	17.8	20.0	-11.1	30.0
Bromomethane	QuaF		8.344	0.1000	13.7	20.0	-31.7*	30.0
Chloroethane	Ave	0.1559	0.1655	0.1000	21.2	20.0	6.1	30.0
Pentane	Lin2		4.293		43.7	40.0	9.3	30.0
Trichlorofluoromethane	Ave	0.3017	0.3219	0.1000	21.3	20.0	6.7	30.0
Dichlorofluoromethane	Ave	0.3819	0.3936		20.6	20.0	3.1	30.0
2-Methyl-1,3-butadiene	Ave	0.2925	0.3497		23.9	20.0	19.6	30.0
Ethyl ether	Ave	0.1476	0.1665		22.6	20.0	12.8	30.0
Ethanol	Ave	0.0752	0.0704		749	800	-6.4	30.0
1,2-Dichloro-1,1,2-trifluoro ethane	QuaF		0.0758		18.2	20.0	-9.0	30.0
1,1-Dichloroethene	Ave	0.1855	0.1982	0.1000	21.4	20.0	6.9	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.1862	0.2045	0.1000	22.0	20.0	9.8	30.0
Carbon disulfide	Ave	0.6394	0.7342	0.1000	23.0	20.0	14.8	30.0
1,1,1-Trifluoro-2,2-dichloro ethane	Ave	0.2621	0.2699		20.6	20.0	3.0	30.0
Iodomethane	QuaF		0.1185		12.2	20.0	-38.9*	30.0
Cyclopentene	Ave	0.4616	0.5117		22.2	20.0	10.9	30.0
Acrolein	Ave	2.055	1.890		36.8	40.1	-8.0	30.0
3-Chloro-1-propene	Ave	0.1105	0.1165		21.1	20.0	5.5	30.0
Isopropyl alcohol	Ave	0.6913	0.6543		189	200	-5.4	30.0
Methylene Chloride	Ave	0.2291	0.2367	0.1000	20.7	20.0	3.3	30.0
Acetone	Ave	0.5912	0.5642	0.0500	95.4	100	-4.6	30.0
trans-1,2-Dichloroethene	Ave	0.2074	0.2134	0.1000	20.6	20.0	2.9	30.0
Methyl acetate	QuaF		2.697	0.1000	40.7	40.0	1.8	30.0
Hexane	Ave	0.0441	0.0495		22.4	20.0	12.2	30.0
Methyl tert-butyl ether	Ave	0.4861	0.5148	0.1000	21.2	20.0	5.9	30.0
2-Methyl-2-propanol	Ave	0.9918	0.9202		186	200	-7.2	30.0
Acetonitrile	Ave	1.778	1.842		207	200	3.6	30.0
Isopropyl ether	Ave	0.5348	0.6054		22.6	20.0	13.2	30.0
2-Chloro-1,3-butadiene	Ave	0.1844	0.1936		21.0	20.0	5.0	30.0
1,1-Dichloroethane	Ave	0.3471	0.3716	0.2000	21.4	20.0	7.0	30.0
Acrylonitrile	Ave	0.0582	0.0581		200	200	-0.2	30.0
Tert-butyl ethyl ether	Ave	0.5450	0.6021		22.1	20.0	10.5	30.0
Vinyl acetate	Ave	0.2228	0.1930		34.7	40.0	-13.4	30.0
cis-1,2-Dichloroethene	Ave	0.2340	0.2379	0.1000	20.3	20.0	1.6	30.0

%D > 30%, associated samples include MW-7S, MW-7SD, MB-3, IW-6, EB-01-102022 and TB-01-102022. All sample results non-detect and reporting limits qualified as estimated (UJ).

AKG 01/09/2023

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Edison | Job No.: 460-268052-1

SDG No.:

Lab Sample ID: CCVIS 460-873912/2 | Calibration Date: 10/25/2022 07:46

Instrument ID: CVOAMS13 | Calib Start Date: 09/12/2022 10:38

GC Column: Rtx-624 ID: 0.25(mm) | Calib End Date: 09/12/2022 13:10

Lab File ID: P07085.D | Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorotrifluoroethene	Ave	0.0646	0.0554		17.1	20.0	-14.3	20.0
Dichlorodifluoromethane	Ave	0.3033	0.2566	0.1000	16.9	20.0	-15.4	20.0
Chlorodifluoromethane	Ave	0.3903	0.4597		23.6	20.0	17.8	20.0
Vinyl chloride	Ave	0.2549	0.2508	0.1000	19.7	20.0	-1.6	20.0
Butadiene	QuaF		0.2613		19.7	20.0	-1.7	20.0
Chloromethane	Ave	0.3619	0.3562	0.1000	19.7	20.0	-1.6	20.0
Bromomethane	QuaF		4.191	0.1000	6.87	20.0	-65.7*	50.0
Chloroethane	Ave	0.1559	0.1707	0.1000	21.9	20.0	9.5	50.0
Pentane	Lin2		3.333		34.1	40.0	-14.6	20.0
Trichlorofluoromethane	Ave	0.3017	0.2906	0.1000	19.3	20.0	-3.7	20.0
Dichlorofluoromethane	Ave	0.3819	0.3832		20.1	20.0	0.3	20.0
2-Methyl-1,3-butadiene	Ave	0.2925	0.3107		21.2	20.0	6.2	20.0
Ethyl ether	Ave	0.1476	0.1711		23.2	20.0	15.9	20.0
1,2-Dichloro-1,1,2-trifluoro ethane	QuaF		0.0734		17.6	20.0	-11.9	20.0
1,1-Dichloroethene	Ave	0.1855	0.1798	0.1000	19.4	20.0	-3.0	20.0
Ethanol	Ave	0.0752	0.0818		870	800	8.7	50.0
1,1,2-Trichloro-1,2,2-triflu oroethane	Ave	0.1862	0.1824	0.1000	19.6	20.0	-2.0	20.0
Carbon disulfide	Ave	0.6394	0.6917	0.1000	21.6	20.0	8.2	50.0
1,1,1-Trifluoro-2,2-dichloro ethane	Ave	0.2621	0.2875		21.9	20.0	9.7	20.0
Iodomethane	QuaF		0.0596		6.15	20.0	-69.2*	20.0
Cyclopentene	Ave	0.4616	0.5493		23.8	20.0	19.0	20.0
Acrolein	Ave	2.055	1.802		35.1	40.0	-12.3	50.0
3-Chloro-1-propene	Ave	0.1105	0.1199		21.7	20.0	8.6	20.0
Isopropyl alcohol	Ave	0.6913	0.6814		197	200	-1.4	50.0
Methylene Chloride	Ave	0.2291	0.2405	0.1000	21.0	20.0	5.0	20.0
Acetone	Ave	0.5912	0.5389	0.0500	91.2	100	-8.8	50.0
Methyl acetate	QuaF		2.495	0.1000	37.6	40.0	-5.9	20.0
trans-1,2-Dichloroethene	Ave	0.2074	0.2071	0.1000	20.0	20.0	-0.2	20.0
Hexane	Ave	0.0441	0.0494		22.4	20.0	11.9	20.0
Methyl tert-butyl ether	Ave	0.4861	0.5282	0.1000	21.7	20.0	8.7	20.0
2-Methyl-2-propanol	Ave	0.9918	0.9531		192	200	-3.9	50.0
Acetonitrile	Ave	1.778	2.142		241	200	20.5*	20.0
Isopropyl ether	Ave	0.5348	0.7234		27.1	20.0	35.3*	20.0
2-Chloro-1,3-butadiene	Ave	0.1844	0.1925		20.9	20.0	4.4	20.0
1,1-Dichloroethane	Ave	0.3471	0.4055	0.2000	23.4	20.0	16.8	20.0
Acrylonitrile	Ave	0.0582	0.0697		239	200	19.7	20.0
Tert-butyl ethyl ether	Ave	0.5450	0.6589		24.2	20.0	20.9*	20.0
Vinyl acetate	Ave	0.2228	0.3341		60.0	40.0	50.0*	20.0
cis-1,2-Dichloroethene	Ave	0.2340	0.2223	0.1000	19.0	20.0	-5.0	20.0

%D > 30%, associated samples include EB-01-102022. Sample results non-detect and reporting limits qualified as estimated (UJ).

Appendix C

MARATHON REMEDIATION PROJECT **NY95-219-04**

EAST FOUNDRY COVE MARSH

October 20, 2022

INSPECTION CONDITIONS

The 2022 annual Site visit and investigations in Marsh areas was performed by Montrose representatives, Mr. Robert Christy and Mr. Matthew Potter. This Site visit was also performed as part of the sixth Five Year Review. Participants in the Marsh area inspection included Pam Tames (USEPA), Michael Squire (NYDEC), David Decker (Audubon), Marisol Ortiz (Audubon Society), Pia Ruis-Besares (Scenic Hudson), Dean Hattula (Gould Electronics) and Barbara Forslund (Montrose). Work was performed within the East Foundry Cove Marsh (EFCM) in conjunction with sediment sampling activities as well as groundwater sampling activities at the former Plant Grounds. Weather conditions during the inspection were sunny and 38^{O}F. The timing of the work within the Marsh was generally as follows:

October 20

- Approximate morning Low Tide: 3:00 AM
- Approximate morning High Tide: 8:46 AM
- Group enters the Marsh work area: 2:30 PM
- Work areas inspected in the EFCM: 2:30 PM – 4:15 PM
  - Inspected Bub1, Bub2, Bub3, Bub3A, and Bub4
- Approximate afternoon Low Tide: 3:04 PM
- Group leaves the Marsh: 4:15 PM

NOTE: Tide predictor http://tide.arthroinfo.org/tideshow.cgi for West Point NY appears to provide the best prediction of tides within the Marsh. However, actual tides in Marsh appear to turn about 15 to 30 minutes prior to predictions at West Point. The low and high tide times noted above are from the tide predictor, but actual low and high tide times within the Marsh may have been slightly earlier than the times noted.

Key Features and Cover Soil Thickness

See Table 1 for the soil cover thickness measurements at key feature locations within the EFCM. In conjunction with evaluating soil cover thickness at bubble area, Figure 2 presents the current status of the Bub3/Bub3A area. The October 2022 Photo Log with additional information is also attached.

SUMMARY OF OBSERVATIONS

General Observations – The EFCM was found to be in overall good condition. There were no signs of disturbance, anthropogenic or otherwise. The low tide allowed for relatively easy access on foot to all portions of the EFCM. Several birds were observed during the inspection, including a Bald Eagle flying over nearby Constitution Marsh. A few small pieces of garbage were observed, collected and removed from the EFCM. The general conditions of the vegetation within EFCM remains satisfactory, with amounts of coverage in established areas remaining unchanged, and the vegetation acting to stabilize the soils within EFCM. Several stands of phragmites still exists in the EFCM in roughly the same areas historically identified. The boundaries of the phragmites continue to grow slowly, encroaching into areas previously dominated by cattails.

GCL Bubbles – During the EFCM inspection, Montrose representatives looked for new, previously unidentified GCL Bubble areas. In each visit, if any newly identified bubble areas are observed, they are photographed, horizontal dimensions are estimated, and soil cover thicknesses measured. No new bubble areas were observed in 2022. Cover soil thickness at each bubble area was measured in September 2020. Below are detailed notes from the October 2022 inspection on each GCL Bubble area located to date.

- Bub1 – See Photo 1 (taken September 2021). This location remained unchanged since the previous inspection in September 2021. The tide did not retreat enough to make visible the several small springs which had been observed during previous inspections parallel to shoreline along a 5 to 6-ft stretch of shore. The area where springs had previously been observed coming out from under an edge of the geosynthetic clay layer (GCL) (approx. 3-in deep) was still under several inches of water during the inspection. There was no soft feel to the ground surface along the exposed shoreline. This location is no longer considered to be an active GCL Bubble area.
- Bub2 – See Photo 2 (taken September 2021). This location remained unchanged from the previous inspection in September 2022. The tide did not retreat enough to make visible any drainage of water previously observed coming from the stone surface close to edge of shore. There was no soft feel to the ground surface, probably due to cuts having been made (during a previous site visit) through the GCL perpendicular to the shoreline. The cuts through the GCL provide a pathway for a spring to escape and drain from the stone to the surface water. This location is no longer considered to be an active GCL Bubble area.
- Bub3 – See Photo 3. This location continued to exhibit some sporadic soft areas underfoot, although there were generally few soft areas and appeared relatively small. The previous epicenter of the soft area continued to firm up compared to the previous visits, and there were just a few sporadic and small soft areas around the perimeter, mainly towards the vegetation side and the Bub3A side of the previous epicenter. Generally, soft areas had very little soil cover (< 1 – 3 inches). Linear cuts made through the GCL approximately 10 feet apart and perpendicular to the shoreline appeared to have relieved some of the water pressure that appears to contribute to the softness. However, some minor soft areas were still observed

very close to cuts in the GCL where soil thickness was closer to 6 inches thick. Stakes marking the cuts through the GCL were no longer in place. Figure 2 shows approximately where soft areas were observed during the October 2022 inspection.

- Bub3A – See Photo 4. This location remained unchanged since the previous inspection in September 2021. Some softness still exists around the central cut through the GCL, but overall, the area and degree of softness was reduced since making the cuts. Figure 2 shows approximately where soft areas were observed during the inspection.
- Bub4 – See Photos 5 and 6. This area has remained relatively unchanged since the previous inspection in September 2021. The area previously exhibited the bubble effect in two small and isolated locations, immediately northwest of the tributary leading the Marsh in this area. In September 2020, a 4-inch diameter perforated PVC pipe was installed several feet into the subgrade to test potential methods of alleviating water and air pressure from below the GCL. The soft area around the 4-inch diameter pipe has reduced since installation, but still exists and remained unchanged since the previous visit in September 2021. A larger contiguous area at the mouth of the tributary also continues to exhibit minor softness and a few air bubbles when walked upon. However, this larger contiguous area was where a large section of GCL was previously removed, and it is believed the continued relative softness is due to the thick peat subgrade.

Additional Photographs – Photographs 7 through 20 were taken during 2022 (unless otherwise noted) at the locations shown on Figure 2.

TABLE 1
EFCM Key Features - Soil Cover Thickness Measurements
Marathon, New York

Location	Soil Cover Depth (in)	Date Measured	Latitude	Longitude	Notes
Bub 1	3 to 13.5	6/25/2020	41.414447	-73.951117	3 inches at low tide shore line (spring) and 13.5 inches deep about 4.5' from spring
Bub 2	9	6/25/2020	41.414104	-73.949763	
Bub 3	1 to 8	6/25/2020	41.413983	-73.949046	soil cover at trenches/cuts gradually thicker away from center of Bub and towards water
Bub 3 - cut 1	6 to 8	9/23/2020	41.414000	-73.949114	7 foot long cut
Bub 3 - cut 2	2 to 6	9/23/2020	41.413984	-73.949093	10 foot long cut
Bub 3 - cut 3	3 to 4	9/23/2020	41.413983	-73.949046	9 foot long cut
Bub 3 - cut 4	4 to 8	9/23/2020	41.413971	-73.949015	7 foot long cut
Bub 3 - cut 5	1	3/23/2021			1 foot long cut - parrellel to shore (following shallowest cover and bubble effect zone)
Bub 3A	3 to 8	9/23/2020	41.413967	-73.948933	soil cover at trenches/cuts gradually thicker away from center of Bub and towards water
Bub 3A - cut 1	6 to 8	9/23/2020	41.413974	-73.948955	3 foot cut through 2 overlaping GCL layers, total depth to 2nd layer 10 to 12 inches
Bub 3A - cut 2	3 to 6	9/23/2020	41.413967	-73.948933	5 foot long cut
Bub 3A - cut 3	3 to 8	9/23/2020	41.413965	-73.948903	4 foot long cut
Bub 4	4	9/23/2020	41.413955	-73.948490	cover depth at pipe vent
H1	18	4/28/2020	41.41409	-73.949596	
H2	23	4/28/2020	41.414098	-73.949362	
H3	18	4/28/2020	41.41389	-73.948114	
H4	~18	4/28/2020	41.413863	-73.947845	unable to dig through gravel and stone, assumed similar to H3
H5	24	4/28/2020	41.413726	-73.948246	
H6A	6 to 14	6/26/2020	41.413376	-73.948217	6 inches at edge of vegetation, deeper further from channel to 14" at 6' into vegetation
H6B	>24	4/28/2020	41.413263	-73.948198	
H7	18	4/28/2020	41.413459	-73.94918	
H7A	18	4/28/2020	41.413717	-73.949096	
H7B	12	4/28/2020	41.413337	-73.949282	
H8	24	9/24/2020	41.413947	-73.950998	
H9	>24	9/24/2020	41.413481	-73.949907	
H10	23	11/13/2020	41.414062	-73.951195	
H11	15	9/24/2020	41.413938	-73.950533	
D1	>24	4/28/2020	41.413635	-73.950734	
D2	>18	6/26/2020	41.413412	-73.9476	
D3	>18	6/23/2021	41.413026	-73.948319	
D4	>18	6/23/2021	41.412915	-73.94863	
D5	>18	6/25/2020	41.412885	-73.949343	
D6	>18	6/23/2021	41.413369	-73.950152	
D7	>18	6/23/2021	41.413733	-73.951436	
D8	>18	6/25/2020	41.413897	-73.952379	
A5	>18	6/26/2020	41.413161	-73.948139	
TENS1	>18	6/26/2020	41.413228	-73.948173	
TENS2	>18	6/25/2020	41.413112	-73.949464	
EFC-1	NA	11/13/2020	41.413254	-73.955162	
EFC-2	NA	11/13/2020	41.411667	-73.952553	
EFC-3	NA	11/13/2020	41.413712	-73.952538	
EFC-4	NA	11/13/2020	41.412876	-73.949776	
EFC-5	NA	11/13/2020	41.412407	-73.948524	

">" means GCL not observed at that depth

PROJECT NORTH

Bub1
Bub2
H1
H2
Bub3
Bub3A
Bub4
BREACHED
H3
H4
H10
ISLAND 1
H11
H8
A4A
Channel #4
D8
A1
H7A
ISLAND 2
H5
A4B
D7
D1
H7
ISLAND 3
Channel #4
Channel #1
H9
A3
D2
H7B
H6A
H6B
Tens1
A5
D6
A2
Tens2
D3
Channel #3
D4
D5
Channel #2

NOTES

1. AERIAL PHOTOGRAPH - LOW TIDE, SUMMER 2019
2. STORM SEWER OUTFALL SHOWN AS BLACK BOX
3. ALL LOCATIONS APPROXIMATE.

LEGEND

- APPROXIMATE LAND AREA, LOW TIDE - SUMMER 1998
- LIMITS OF EXCAVATION AND GCL (INSIDE DIKE) 1993-1995 REMEDIATION
- DIKE ALIGNMENT DURING 1993-1995 REMEDIATION
- LIMIT OF EXCAVATION (NO GCL) OUTSIDE DIKE 1993-1995 REMEDIATION
- GCL BUBBLE LOCATION (APPROX.)
- TEST PIT LOCATION
- PHOTO-ONLY LOCATION
- GEOGRID OBSERVED

TRUE NORTH

50 0 25 50 100 200

1 INCH = 50 FT

Number:	Date:	Revision:

MARATHON REMEDIATION PROJECT

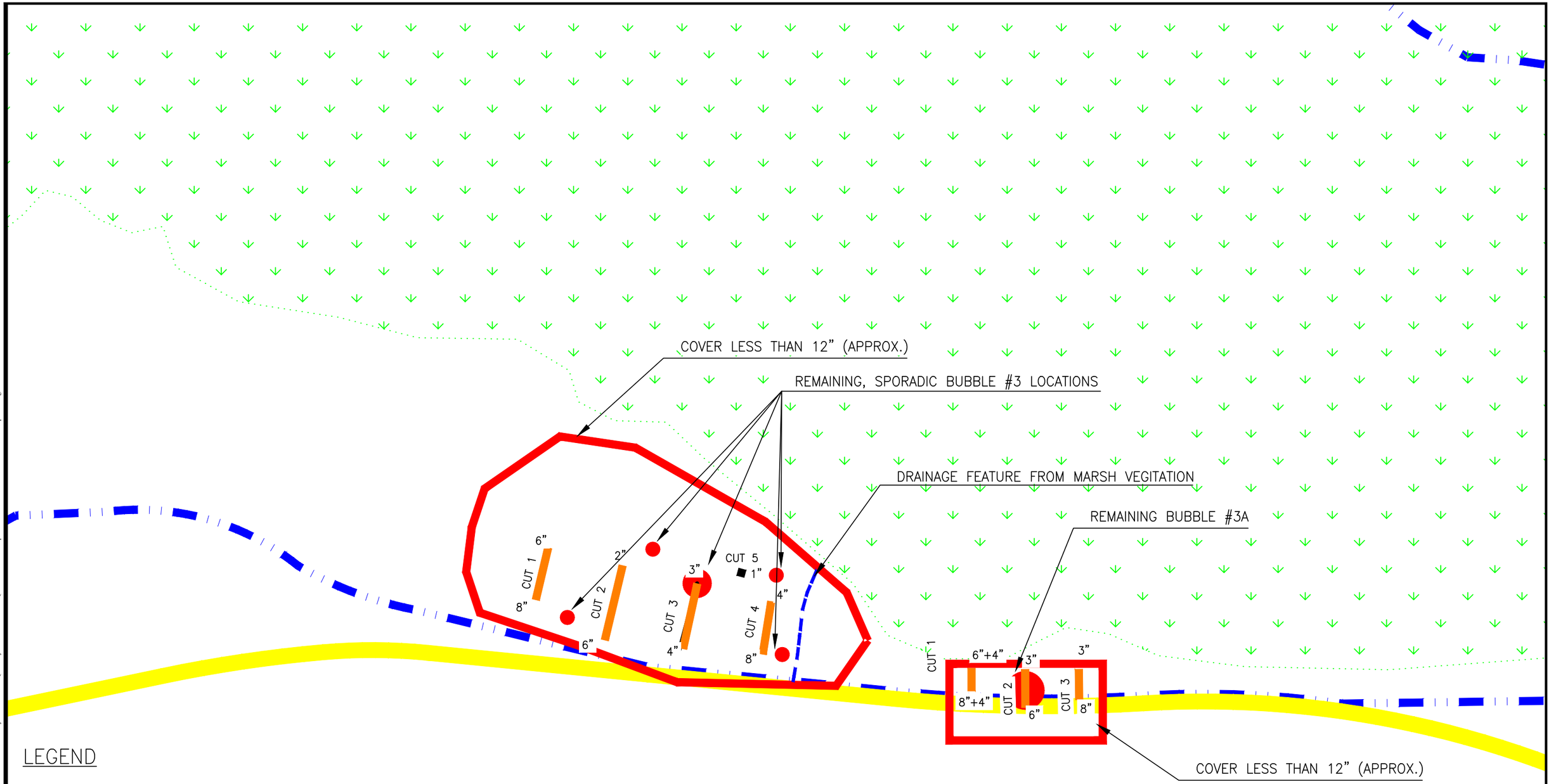
EAST FOUNDRY COVE MARSH

INSPECTION LOCATIONS

MONTROSE Engineering & Geology, P.C.
1055 ANDREW DRIVE, SUITE A
WEST CHESTER, PENNSYLVANIA 19380
Tel: 610.840.9100 Fax: 610.840.9199 Web: www.advancedgeoservices.com

Scale:	1" = 50'
Drawn By:	KHF
Checked By:	PFM
Project Mgr.:	PFM
Originated By:	KHF
Project No.:	NY95219-03
Drawing Date:	12/04/2019
Sheet No.:	1 OF 1
Revision Number:	0

FIGURE 1



LEGEND

WATER EDGE/STREAMS 2020

LOW TIME 1998

APPROXIMATE AREA OF SOIL COVER < 12"

CUTS MADE THROUGH GCL AND COVER THICKNESS (MEASURED IN SEPTEMBER 2020)

8" 6"

It is a violation of the New York Education Article 145 – Engineering and Land Surveying, Section 7209 (2) law for any person, unless he is acting under the direction of a licensed professional engineer or land surveyor, to alter an item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

MONTROSE
Engineering & Geology, P.C.

1055 ANDREW DRIVE, SUITE A
WEST CHESTER, PENNSYLVANIA 19380
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MARATHON REMEDIATION SITE
BUB3/3A GCL SLITS INSPECTION
EAST FOUNDRY COVE MARSH
COLD SPRINGS, NEW YORK

SCALE:	1" = 20'
PROJECT NUMBER:	NY95-219
DATE:	03-08-2022

FIGURE 2

G:\Projects\1995\NY95219-Marathon Long Term Mont\Work Documents\EFCM - ORR Hydraulics Items\Quarterly Site Visits\2021 - Q3 Visit\Location Update BUB3-3A GCL Slits-2022-03-08 Update.dwg

PHOTO LOG
EAST FOUNDRY COVE MARSH INSPECTION
OCTOBER 20, 2022

Photo 1 – Bub 1 – (photo taken September 20, 2021) No change since last visit. Several small springs parallel to shore, still underwater at low tide. Springs coming from edge of GCL close to surface. No soft feel to ground anywhere in this area.

Photo 2 – Bub 2 – (photo taken September 20, 2021) No change since last visit. Small amount of water draining from stone, indicated by shovel head. No soft feel to ground anywhere in this area.

Photo 3 – Bub 3 – Looking south. Historic epicenter of Bub3 area shown in background. Some soft areas around edge of Bub 3, but very small and isolated.

Photo 4 – Bub 3A – Looking southeast. Located on the left side of photo. Small soft area remains at central cut through GCL.

Photo 5 – Bub 4 – 4” diameter perforated pipe just above the water line with stone protection around pipe.

Photo 6 – Bub 4 – Located in background, in front of grass is 4” diameter perforated pipe slightly above water line with stone protection around pipe.

Photo 7 – photo location D8 – Looking northwest.

Photo 8 – photo location D8 – Looking southeast.

Photo 9 – photo location A1 – Looking east.

Photo 10 – photo location D7 – Looking southeast.

Photo 11 – photo location D6 – Looking north.

Photo 12 (taken September 2021) – photo location D6 – Looking southeast.

Photo 13 – photo location A2 – Looking southeast.

Photo 14 – photo location D5 – Looking west.

Photo 15 – photo location D4 – Looking southwest.

Photo 16 – photo location D3 – Looking east.

Photo 17 (taken September 2021) – photo location D3 – Looking west.

Photo 18 – photo location A3 – Looking north.

Photo 19 – photo location A4B – Looking west.

Photo 20 – photo location A4B – Looking north.