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May 10, 2023

Ms. Greta White
Project Manager, Remedial Bureau C
Division of Environmental Remediation
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, NY 12233-7014

Re: NYSDEC Site No. 360174; BCP C361074
April – May 2023 Monthly Progress Report
Westchester County Airport
240 Airport Road
Harrison, New York 10604

Dear Ms. White:

Actions Taken/Accomplishments (April 2023 – May 2023)

A schedule of completed and projected activities is included as Appendix A.

1. Environmental Conservation (NYSDEC) comments regarding the Remedial Investigation Workplan (RIWP) on February 7, 2023. First Environment provided a response letter to the NYSDEC on March 27, 2023, requesting further clarification. To facilitate a review of the comments, a teleconference was held on May 2 to discuss NYSDEC comments and First Environment's responses. Based on the outcome of the call, First Environment and the NYSDEC are exchanging additional information such that the revised RIWP can be resubmitted.
2. Initiated the update of Electronic Data Deliverables (EDDs) sample locations.
3. On April 18, 2023, the following actions/tasks were completed:
    - Water flow leaving Outfall 7 (OF-7) was measured at 8 gallons per minute (gpm). On the same day, the flow downgradient of OF-7 at the New York City Department of Environment Projection (NYCDEP) gauging station E-10, water flow was measured at 37 gpm. An accounting of 2022-2023 water flow measurements is included in Table 1.
    - First Environment measured and increased water flow rate of 1.75 gpm from headwall 7021.1 drainage area that is contributing to the total water flow of 8 gpm leaving OF-7. The remaining 6.25 gpm of contributing flow to OF-7 is from the upgradient former NYANG Burn Pit area. Under non-rain events, water leaving OF-7 ranges from 1 to 17 gpm. The average flow is 6.4 gpm. The flow is attributed to groundwater entering the storm

sewer through minor leaks and groundwater daylighting to the surface into storm drains as shown in Figure 1.

- Groundwater levels were measured at monitoring wells and piezometer locations, as shown in Figure 2, for purposes of assessing the depth-to-water where the proposed New King Street waterline construction activities will take place and construction dewatering will be necessary. Hydrographs are provided in Appendix B illustrating the groundwater levels measured between March 2022 to April 2023.
- The stormwater sewer replacement quarterly performance sampling was completed. Figure 3 identifies the sample locations and Table 2 provides a summary of the laboratory analytical results for PFAS.
- Quarterly groundwater sampling was conducted at monitoring wells MW-13R series to evaluate the performance of the Pilot Test . The initial results indicate a reduction of PFAS concentration as groundwater passes through the permeable reactive barrier. The groundwater flow direction and total PFAS, PFOS and PFOA concentrations before and after the injection are illustrated in Figures 4 and 5, respectively. A comparison of the baseline analytical results and April 18th post-injection analytical results is presented in Table 3.

May & June Planned Activities

1. First Environment will resubmit the revised RIWP.
2. First Environment is working with the County, Airport, and Triumph with respect to the installation of the water system improvements. Triumph was awarded Contract 22-522 WCA Domestic Water System Improvements to install the system improvements. It is anticipated that mobilization to the site will occur on May 22, 2023, with construction to begin shortly thereafter. The estimated time to complete the improvements is approximately 12 to 18 months.
3. First Environment will submit the Groundwater Remediation Permit to the Westchester County Department of Environmental Facilities (WCDEF) for the treatment of construction dewatering before discharging to the sanitary sewer.
4. First Environment will provide Continuous Air Monitoring during waterline intrusive construction activities as described in First Environment's Community Air Monitoring Program (CAMP) submittal to the NYSDEC/NYSDOH.
5. The 2021 constructed stormwater system has reduced the flow of PFAS impacted water leaving the Airport at OF-7 by as much as approximately 50 times. The water flow leaving OF-7 during dry conditions is approximately one gpm, and during the wet season flow leaving OF-7 is generally between 5 to 10 gpm (non-rain event conditions). The water leaving OF-7 under these conditions is attributed to groundwater entering the storm sewer

system through leaks and daylighting to storm drains. The mass of PFAS leaving OF-7 has been reduced, but PFAS levels remain elevated in water leaving at OF-7 as well as at the downgradient NYCDEP E-10 measuring station.

6. First Environment will initiate a three-month pilot test at OF-7 to treat water and reduce PFAS levels discharging to OF-7. The system is scheduled for installation in June/July. During the treatment system operation, First Environment intends to monitor biweekly PFAS concentrations as well as other water quality parameters in surface water at OF-7 and E-10. A detailed description of the treatment system is described in Appendix C.
7. The County will retain an independent third-party contractor in the second quarter of 2023 who specializes in stormwater systems to evaluate the presence of groundwater leaks and provide solutions to eliminate PFAS impacted groundwater from entering the stormwater system leading to OF-7.
8. Continue to evaluate the larger application of the Fluoro-Sorb mat and permeable reactive barrier for use at OF-4 to reduce PFAS in surface water.
9. Revisions of the EDDs will continue for submittal to the NYSDEC.

If you have any questions, please do not hesitate to call.

Regards,

FIRST ENVIRONMENT, INC.

Scott R. Green, P.G.
Director, Insurance Consulting Service Group

David Luer
Project Manager/Field Team Leader

Att.

c: B. Tod Delaney, Ph.D., P.E., BCEE - First Environment, Inc.
Arthur Clarke, J.D. - First Environment, Inc.
Hugh Greechan, Jr. P.E. - Westchester County Public Works & Transportation
John Nonna - Westchester County Attorney
April Gasparri – Westchester County Airport Manager
John Inserra - Westchester County Airport Environmental
John Benvegna - WSP
M.Hubicki, NYSDEC
K.Thompson, NYSDEC
M. Murphy, NYSDEC
K.Maloney, NYSDEC
D.Bendell/D.Pollock, NYSDEC

M. Doroski – NYSDOH
K. Kulow – NYSDOH

TABLES

TABLE 1
Surface Water Flow

Date/Location	OF-7	E-10	Trib 1	Trib 2
6/17/2022	5	20	2	0.5
6/27/2022	5	17	2	0.5
7/5/2022	1	10	1	0
7/27/2022	2	10	1	0
8/15/2022	3	3	0.1	0
8/30/2022	2	2	0	0
9/28/2022	3	9	1	0
10/26/2022	10	43	5	1
11/18/2022	12	56	4	5
11/22/2022	7	33	5	1
11/29/2022	8	42	5	5
12/28/2022	17	87	15	10
4/18/2023	8	38	5	8
Average	**6.4**	**28.5**	**3.5**	**2.4**

Note - Flow is in gallons per minute

Table 2
Storm Sewer Replacement Performance Monitoring
Westchester County Airport

Sample ID York ID Sampling Date Client Matrix		NYDEC Part 375 PFAS Remedial Program Water Oct 2020	HW 7021.1 23D1067-06 4/18/2023 12:20:00 PM Water		MH 7019 23D1067-07 4/18/2023 1:15:00 PM Water		MH 7006 23D1067-08 4/18/2023 1:20:00 PM Water		MH 7004 23D1067-09 4/18/2023 12:35:00 PM Water		OF-7 23D1067-10 4/18/2023 12:30:00 PM Water		OF-7 Grate 23D1067-11 4/18/2023 12:40:00 PM Water		E-10 23D1067-12 4/18/2023 1:40:00 PM Water		FB 4-18-23 23D1067-13 4/18/2023 1:02:00 PM Water	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PFAS, EPA 1633 Target List		ng/L	ng/L		ng/L		ng/L		ng/L		ng/L		ng/L		ng/L		ng/L	
Dilution Factor			10.00		10		10		10		10		10		1		1	
11CL-PF3OUdS	763051-92-9	100	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U	1.38	U
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	39108-34-4	100	24.90		44.90		69.10		86.50		105.00		27.30		2.05	U	2.05	U
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	757124-72-4	~	1.79	U	1.79	U	2.61	J	1.79	U	1.79	U	1.79	U	1.79	U	1.79	U
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	27619-97-2	100	286.00		255.00		276.00		316.00		247.00		275.00	D	41.50		1.06	U
3-Perfluoroheptyl propanoic acid (FHpPA)	812-70-4	~	9.47	U	9.47	U	9.47	U	9.47	U	9.47	U	9.47	U	9.47	U	9.47	U
3-Perfluoropentyl propanoic acid (FPePA)	914637-49-3	~	12.10	J	7.33	U	7.33	U	7.33	U	7.33	U	7.33	U	7.33	U	7.33	U
3-Perfluoropropyl propanoic acid (FPrPA)	356-02-5	~	2.03	U	2.03	U	2.03	U	2.03	U	2.03	U	2.03	U	2.03	U	2.03	U
9CL-PF3ONS	756426-58-1	100	0.70	U	0.70	U	0.70	U	0.70	U	0.70	U	0.70	U	0.70	U	0.70	U
ADONA	919005-14-4	100	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
HFPO-DA (Gen-X)	13252-13-6	100	3.23	U	3.23	U	3.23	U	3.23	U	3.23	U	3.55	J	3.23	U	3.23	U
N-EtFOSA	4151-50-2	~	1.80	U	1.80	U	1.80	U	1.80	U	1.80	U	1.80	U	1.80	U	1.80	U
N-EtFOSAA	2991-50-6	100	1.03	U	1.03	U	1.03	U	1.03	U	1.03	U	1.03	U	1.03	U	1.03	U
N-EtFOSE	1691-99-2	~	3.99	U	3.99	U	3.99	U	3.99	U	3.99	U	3.99	U	3.99	U	3.99	U
N-MeFOSA	31506-32-8	~	1.66	J	1.58	U	1.58	U	1.58	U	1.58	U	1.58	U	1.58	U	1.58	U
N-MeFOSAA	2355-31-9	100	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U	0.79	U
N-MeFOSE	24448-09-7	~	3.99	U	3.99	U	3.99	U	3.99	U	3.99	U	3.99	U	3.99	U	3.99	U
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	113507-82-7	~	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	100	1.32	U	1.88	J	1.32	U	1.32	U	1.32	U	1.32	U	1.32	U	1.32	U
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	100	199.00		79.00		205.00		179.00		177.00		108.00		20.90		0.91	U
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	~	27.90		16.40		28.70		37.40		32.40		10.60		2.20		0.86	U
Perfluoro-1-octanesulfonamide (FOSA)	754-91-6	100	0.88	U	1.18	J	19.50		10.20		9.17		5.03		0.88	U	0.88	U
Perfluoro-1-pentanesulfonate (PFPeS)	2706-91-4	~	413.00		129.00		169.00		165.00		166.00		137.00		35.10		0.76	U
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	151772-58-6	~	2.14	U	2.14	U	2.14	U	2.14	U	2.14	U	2.14	U	2.14	U	2.14	U
Perfluoro-4-oxapentanoic acid (PFMPA)	377-73-1	~	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
Perfluoro-5-oxahexanoic acid (PFMBA)	863090-89-5	~	0.37	U	0.37	U	0.67	J	0.68	J	0.37	U	0.37	U	1.08	J	0.37	U
Perfluorobutanesulfonic acid (PFBS)	375-73-5	100	176.00		73.60		90.30		79.10		76.40		86.60		21.30		0.47	U
Perfluorodecanoic acid (PFDA)	335-76-2	100	24.90		19.10		13.10		21.60		19.60		5.62		2.59		0.75	U
Perfluorododecanesulfonic acid (PFDoS)	79780-39-5	~	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
Perfluorododecanoic acid (PFDoA)	307-55-1	100	0.91	J	0.88	U	0.88	U	0.88	U	0.88	U	0.88	U	0.88	U	0.88	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	100	790.00	D	415.00		216.00		311.00		275.00		303.00		56.00		0.71	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	100	2470.00	D	1,060.00	D	1,170.00	D	1,040.00	D	1,270.00	D	1,220.00	D	307.00		0.68	U
Perfluorohexanoic acid (PFHxA)	307-24-4	100	695.00	D	473.00		404.00		425.00		427.00		442.00		108.00		0.35	U
Perfluoro-n-butanoic acid (PFBA)	375-22-4	100	339.00		194.00		74.30		85.40		95.00		112.00		10.70		0.33	U
Perfluorononanoic acid (PFNA)	375-95-1	100	289.00		256.00		1,460.00	D	355.00		323.00		192.00		44.20		0.52	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	10	1950.00	D	839.00	D	2,360.00	D	2,750.00	D	4,690.00	D	1,120.00	D	532.00		2.83	
Perfluorooctanoic acid (PFOA)	335-67-1	10	490.00		308.00		1,060.00	D	939.00	D	1,270.00	D	689.00	D	135.00		0.44	J
Perfluoropentanoic acid (PFPeA)	2706-90-3	100	1370.00	D	792.00		445.00		580.00		550.00		567.00		130.00		0.62	J
Perfluorotetradecanoic acid (PFTA)	376-06-7	100	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	100	0.80	J	3.04		1.73	J	1.01	J	0.74	U	0.74	U	0.74	U	0.74	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	100	30.20		104.00		106.00		101.00		82.30		22.90		5.39		1.13	U
PFOA + PFOS			2,440.000		1,147.00		3,420.00		3,689.00		5,960.00		1,809.00		667.00		3.27	
Total PFAS			9,628.181		5,109.50		8,215.57		7,529.24		9,862.33		5,370.83		1,502.98		62.81	

NOTES:

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

Table 3
Pre and Post Pilot Test PFAS and TOC
Groundwater Comparison
Westchester County Airport

Sample ID		FMW-13R	FMW-13R	FMW-13R-A	FMW-13R-A	FMW-13R-B	FMW-13R-B	FMW-13R-C	FMW-13R-C	FMW-13R-D	FMW-13R-D
York ID		23A0033-01	23D1067-01	23A0033-02	23D1067-02	23A0033-03	23D1067-03	23A0033-04	23D1067-04	23A0033-05	23D1067-05
Sampling Date		1/3/2023 10:19:00 AM	4/18/2023 11:25:00 AM	1/3/2023 10:25:00 AM	4/18/2023 11:00:00 AM	1/3/2023 10:32:00 AM	4/18/2023 11:10:00 AM	1/3/2023 10:45:00 AM	4/18/2023 11:40:00 AM	1/3/2023 11:00:00 AM	4/18/2023 11:55:00 AM
Client Matrix		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Compound		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Total Organic Carbon		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor		1	1	1	1	1	1	1	1	1	1
Total Organic Carbon (TOC)		1,000	4,400	1,180			1,190		1,840		
PFAS, EPA 1633 Target List		ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
Dilution Factor		5	1	1	1	1	1	1	1	5	1
11CL-PF3OUdS	763051-92-9										
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	39108-34-4	2.52	2.97	2.88		2.39	87.2			2.69	
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	757124-72-4										
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	27619-97-2	217	19.4	246	48.4	346	11.1	139	2.07	295	1.56
3-Perfluoroheptyl propanoic acid (FHpPA)	812-70-4										
3-Perfluoropentyl propanoic acid (FPePA)	914637-49-3										
3-Perfluoropropyl propanoic acid (FPrPA)	356-02-5	2.00									
9CL-PF3ONS	756426-58-1										
ADONA	919005-14-4										
HFPO-DA (Gen-X)	13252-13-6						4.49				
N-EtFOSA	4151-50-2	2.33	5.66				2.52	3.20		3.32	
N-EtFOSAA	2991-50-6										
N-EtFOSE	1691-99-2		21.0	100			70.1				
N-MeFOSA	31506-32-8	1.67								1.67	
N-MeFOSAA	2355-31-9										
N-MeFOSE	24448-09-7		10.5				13.5				
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	113507-82-7										
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3		1.49								
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	28.3		19.0	0.917	23.1	1.25	20.4		29.5	
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	2.08				1.12		0.959			
Perfluoro-1-octanesulfonamide (FOSA)	754-91-6			1.64		1.36					
Perfluoro-1-pentanesulfonate (PFPeS)	2706-91-4	85.5	6.50	71.6	8.69	74.0	3.34	66.5		111	
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	151772-58-6										
Perfluoro-4-oxapentanoic acid (PFMPA)	377-73-1										
Perfluoro-5-oxahexanoic acid (PFMBA)	863090-89-5										
Perfluorobutanesulfonic acid (PFBS)	375-73-5	36.2	2.84	32.4	5.22	29.5	3.74	27.9		39.0	
Perfluorodecanoic acid (PFDA)	335-76-2	3.07				1.08		1.17		1.54	
Perfluorododecanesulfonic acid (PFDoS)	79780-39-5			0.833							
Perfluorododecanoic acid (PFDoA)	307-55-1			1.31							
Perfluoroheptanoic acid (PFHpA)	375-85-9	230	14.9	253	42.8	254	15.4	217	1.39	301	1.87
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	994	66.0	675	70.0	820	32.6	775	2.32	1,080	2.81
Perfluorohexanoic acid (PFHxA)	307-24-4	453	23.5	531	131	531	46.8	409	3.32	555	5.77
Perfluoro-n-butanoic acid (PFBA)	375-22-4	246	17.8	288	221	294	37.8	245	5.81	328	20.4
Perfluorononanoic acid (PFNA)	375-95-1	81.8	5.35	44.1	3.8	55.6	6.12	46.9	1.65	58.3	0.773
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1130	140	502	36.9	624	71.8	619	17.4	860	11.0
Perfluorooctanoic acid (PFOA)	335-67-1	135	9.93	107	17.3	137	13.1	112	0.969	142	0.862
Perfluoropentanoic acid (PFPeA)	2706-90-3	950	35.4	1,150	423	1,120	109	862	4.72	1,220	23.6
Perfluorotetradecanoic acid (PFTA)	376-06-7			5.27							
Perfluorotridecanoic acid (PFTrDA)	72629-94-8			7.75			1.06				
Perfluoroundecanoic acid (PFUnA)	2058-94-8			1.05							
PFOS + PFOA		1,265	150	609	54.2	761	84.9	731	18.4	1,002	11.9
Total PFAS		4,600	383	4,040	1,009	4,314	531	3,545	39.6	5,028	68.6

NOTES:

Blank space - No detectable levels.

Q is the Qualifier Column with definitions as follows:

D=result is from an analysis that required a dilution

J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated

U=analyte not detected at or above the level indicated

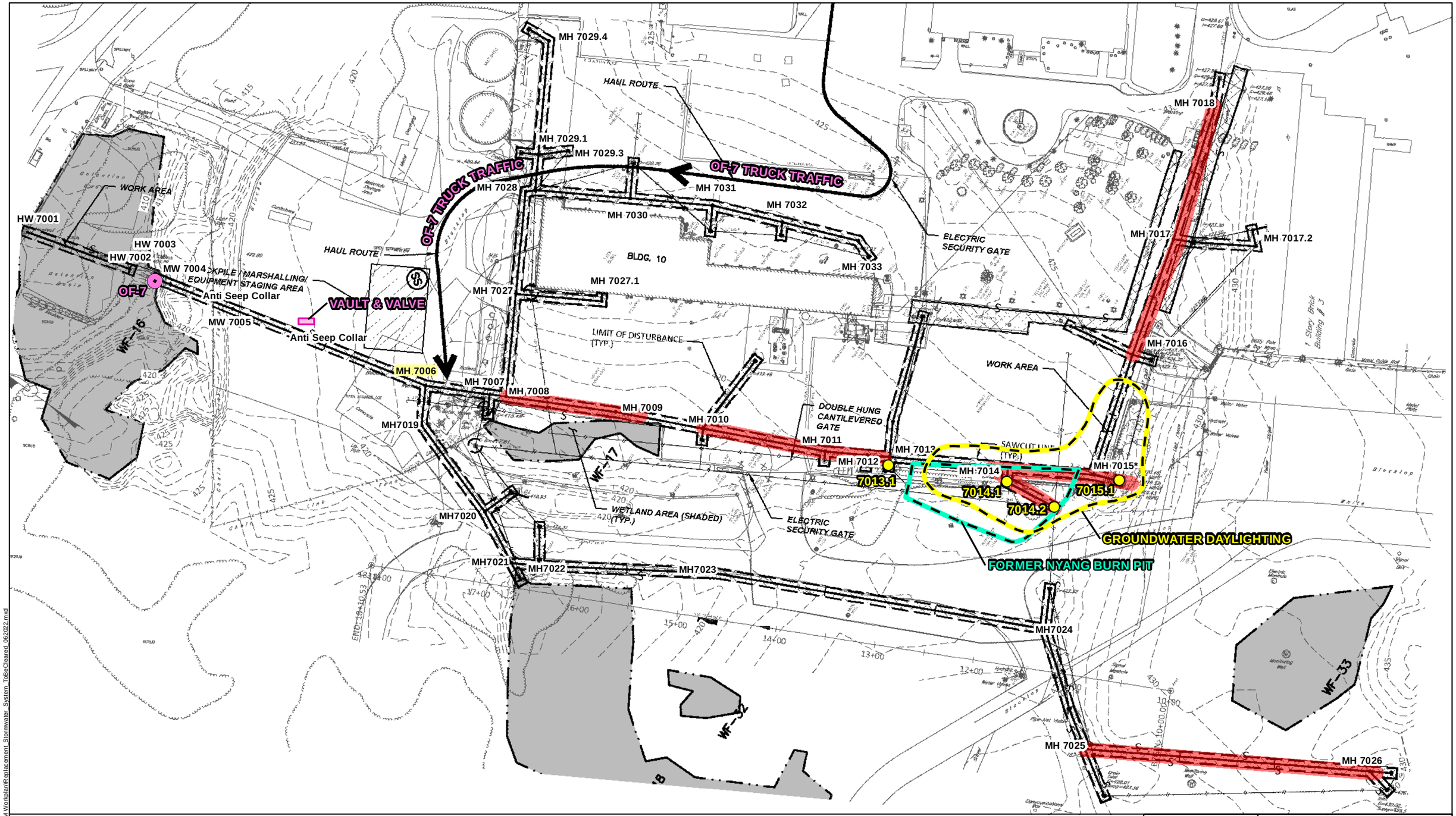
B=analyte found in the analysis batch blank

E=result is estimated and cannot be accurately reported due to levels encountered or interferences

NT=this indicates the analyte was not a target for this sample

~=this indicates that no regulatory limit has been established for this analyte

FIGURES



Legend

- Cleaned of sediment
- Wetland

0 22.5 45 90 Feet

1 inch = 90 feet

N

Source: Provident Design Engineering PLLC, 2020 100% OF-7 Storm Sewer Design

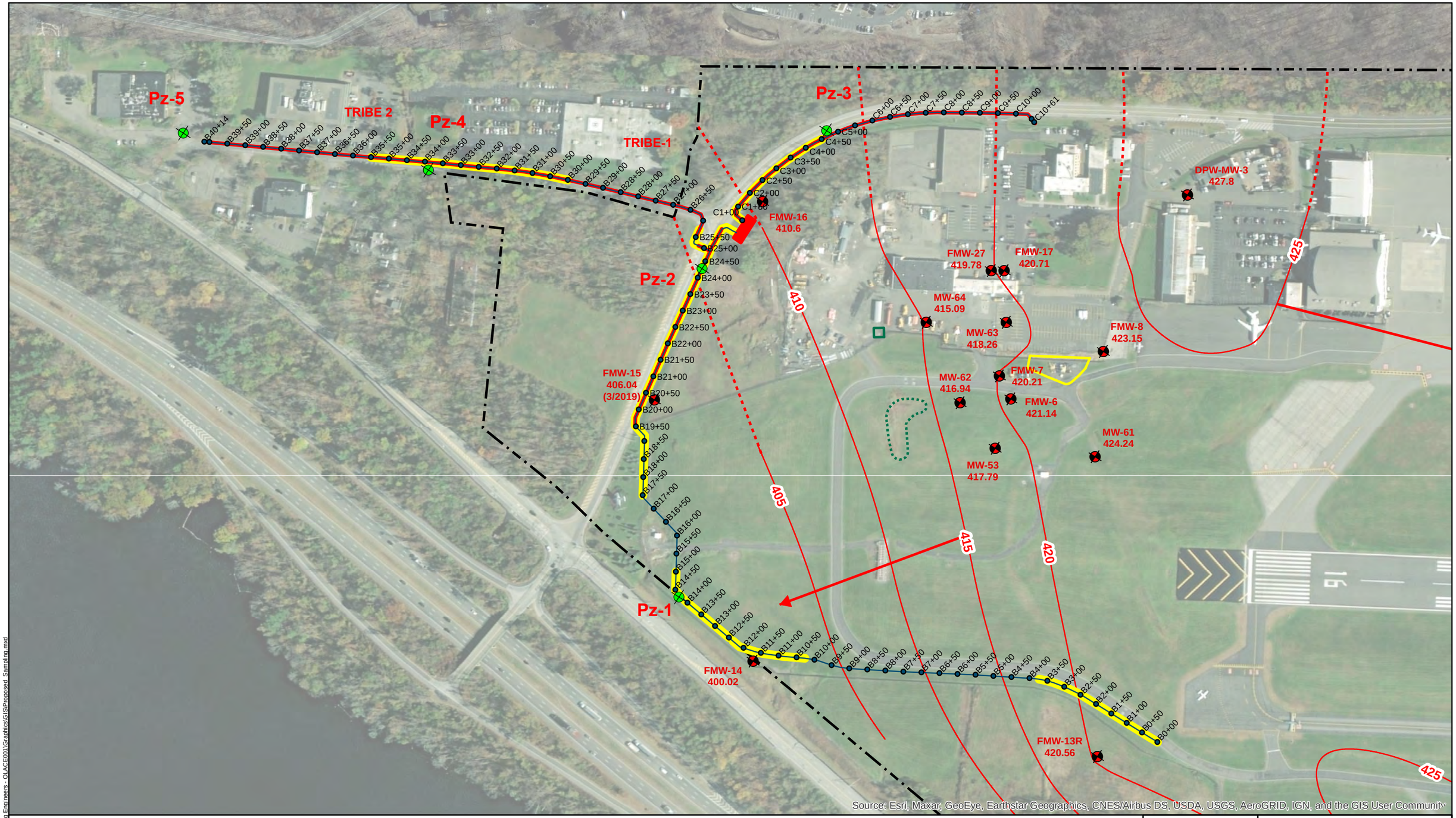
FIRST ENVIRONMENT

10 Park Place, Bldg 1A, Suite 504
Butler, NJ 07405

NYSDEC SITE NO. 360174
WESTCHESTER COUNTY AIRPORT
White Plains, Westchester County, New York
FIGURE 1
OF-7 STORM SEWER

Revised	Drawn	Checked	Approved	Date
	ES	DL	SG	6/15/2022

I:\WESCHESTER AIRPORT\IRM\Workplan\Replacement_Stormwater_System_ToBeCleared_062022.mxd



G:\DATA\Project\OLA Consulting Engineers - OLACE001\Graphics\GIS\Proposed_Sampling.mxd

Legend

- Unconsolidated Groundwater Flow Direction
- Unconsolidated Groundwater Elevation Contour (feet) as of 5/20/2020
- Inferred Unconsolidated Groundwater Elevation Contour (feet)
- Unconsolidated Monitoring Well
- 411.82 Unconsolidated Groundwater Elevation (feet) as of 5/20/2020
- Proposed Temp Well
- Station
- Water Line
- Excavation Requiring Removal
- Area Requiring Dewatering & Treatment of Water
- Former AFFF Burn Pit
- Subsurface Catch Basin
- Open Catch Area
- Property Boundary

0 62.5 125 250 Feet

1 inch = 250 feet

N

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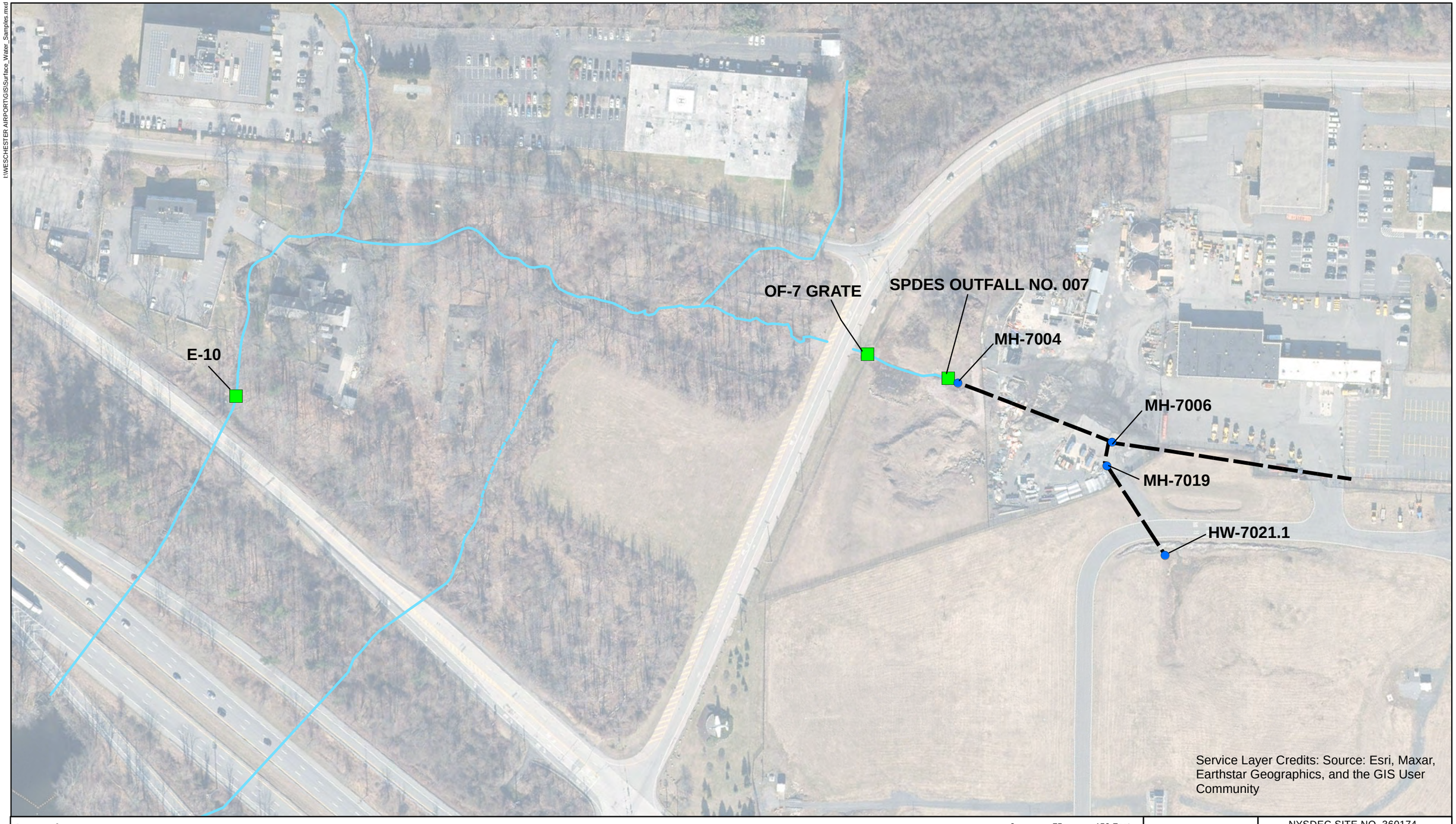
Butler, NJ 07405

NYSDEC SITE NO. 360174
WESTCHESTER COUNTY AIRPORT!
White Plains, Westchester County, New York
FIGURE 2
GROUNDWATER WELL LOCATIONS

Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	1/28/2022

I:\WESCHESTER AIRPORT\GIS\Surface_Water_Samples.mxd



Legend

- Manhole (H) Surface Water Sample Location
- Airport Property Boundary
- Storm Sewer
- Stream
- Ephemeral Stream

0 75 150 Feet

1 inch = 150 feet

N

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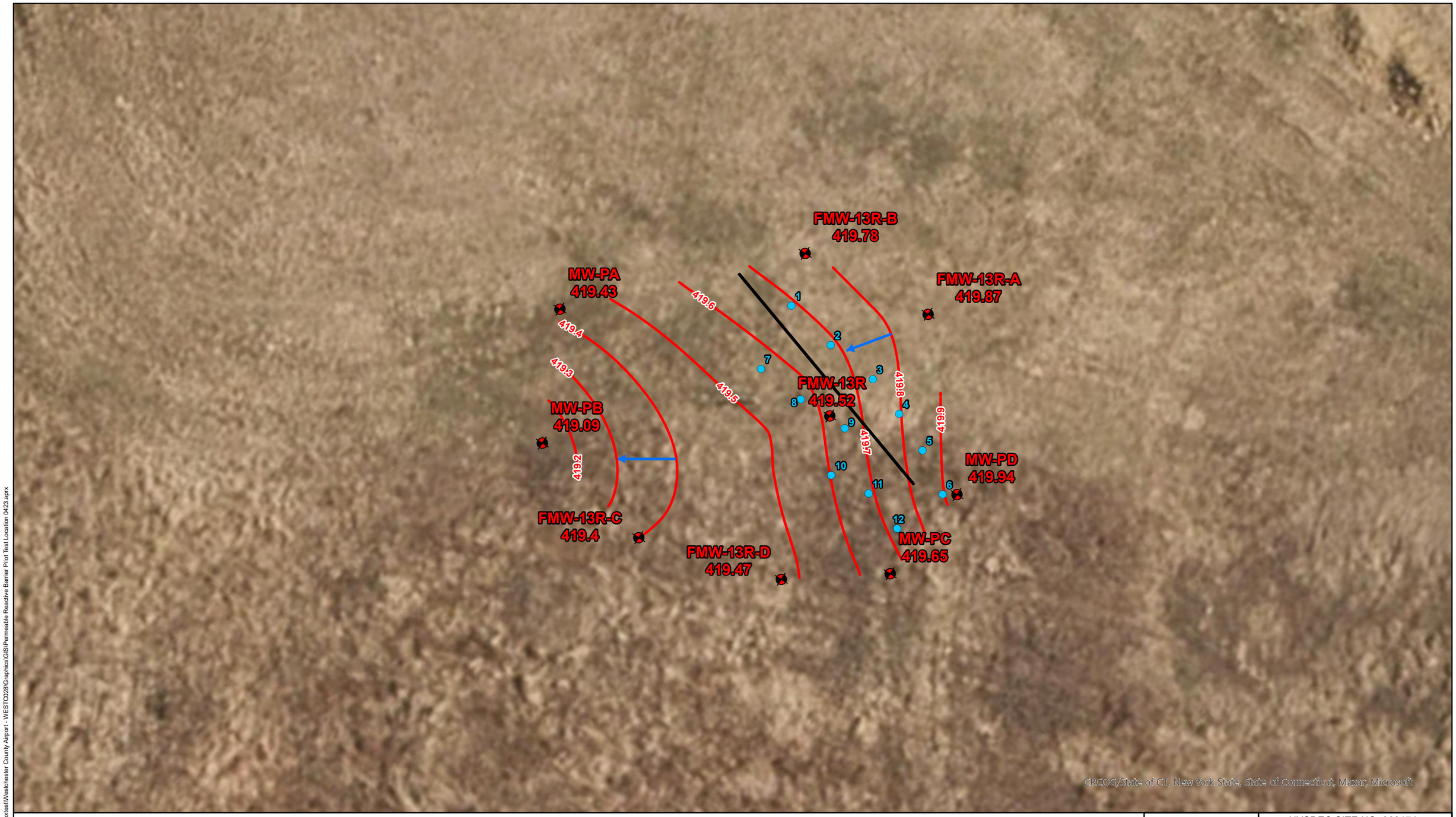
WESTCHESTER COUNTY AIRPORT
White Plains, Westchester County, New York
FIGURE 3
SURFACE WATER SAMPLE LOCATION MAP

Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	5/9/2023



Legend

- Injection Points
- Pilot Test Wells
- Groundwater Flow Direction
- Injection Permeable Reactive Barrier
- Groundwater Elevation Contours Nov 22, 2022

Note:

- Sample date was 1/3/23
- PFOS & PFOA concentrations are measured in ppt

0 5 10 20 Feet

1:120

N

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Butler, NJ 07405

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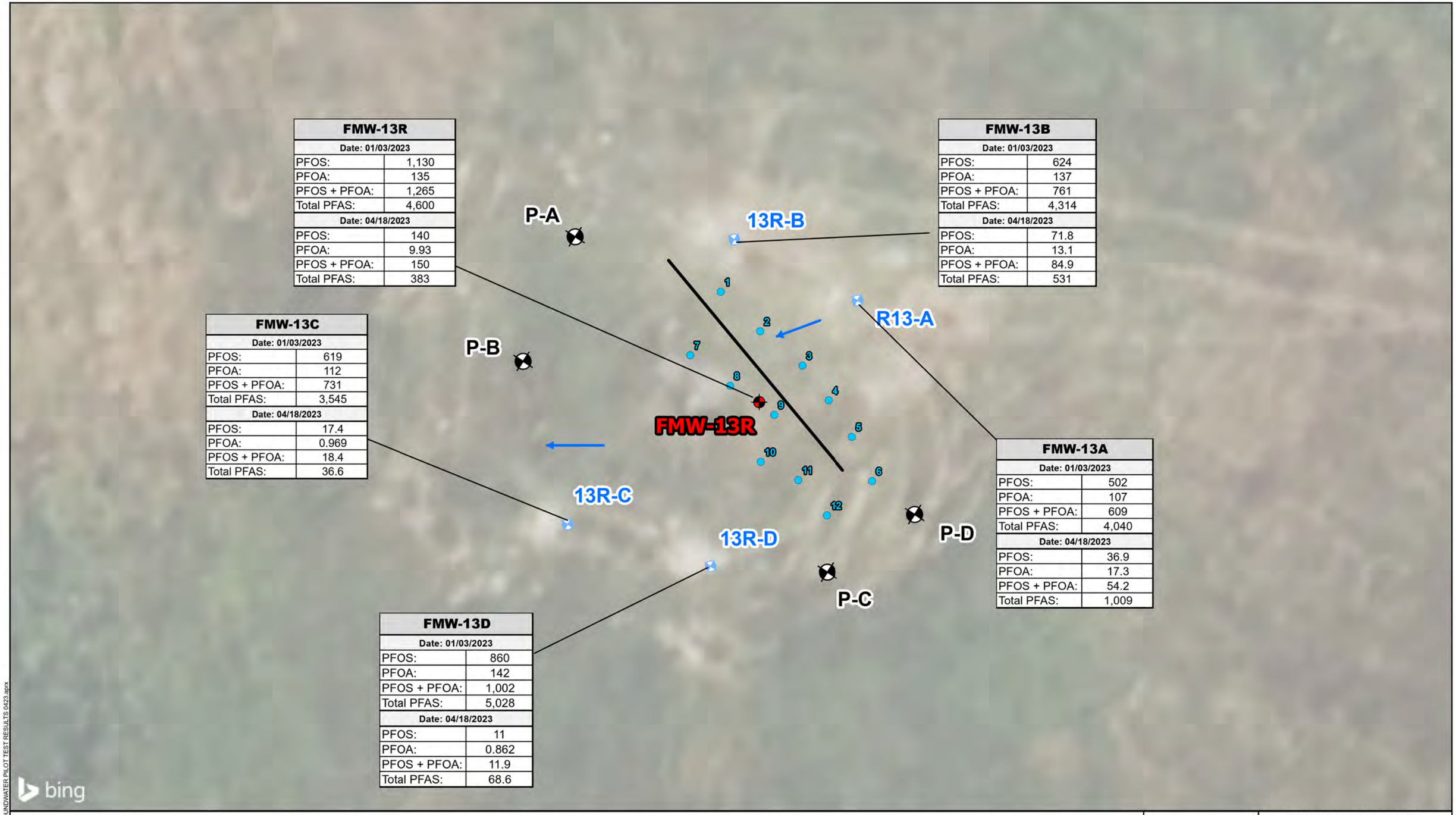
WESTCHESTER COUNTY AIRPORT
White Plains, Westchester County, New York
FIGURE 4
PERMEABLE REACTIVE BARRIER
PILOT TEST LOCATIONS

Revised	Drawn	Checked	Approved	Date
CS	LS	DL	SG	4/18/2023

\\fedc01.fedom.com\VOL2\extest\Westchester County Airport - WESTC028\Graphics\GIS\Permeable Reactive Barrier Pilot Test Location 0423.aprx



C:\Project\WESTCO028\GROUNDWATER PILOT TEST RESULTS 0423.aprx

Legend

- Injection Points
- Piezometer Locations
- Monitoring Well Location
- Pilot Test Wells
- Groundwater Flow Direction
- Injection Permeable Reactive Barrier

Note:
- Sample date was 1/3/23
- PFOS & PFOA concentrations are measured in ppt

0 10 20 Feet
1:120

N

ENVIRONMENT

10 Park Place, Bldg 1A, Suite 504
Butler, NJ 07405

NYSDEC SITE NO. 360174
WESTCHESTER COUNTY AIRPORT
White Plains, Westchester County, New York
FIGURE 5
GROUNDWATER PILOT TEST RESULTS

Revised	Drawn	Checked	Approved	Date
CS	LS	DL	SG	4/18/2023

APPENDIX A

APPENDIX A
Work Activity Schedule
2022-2024

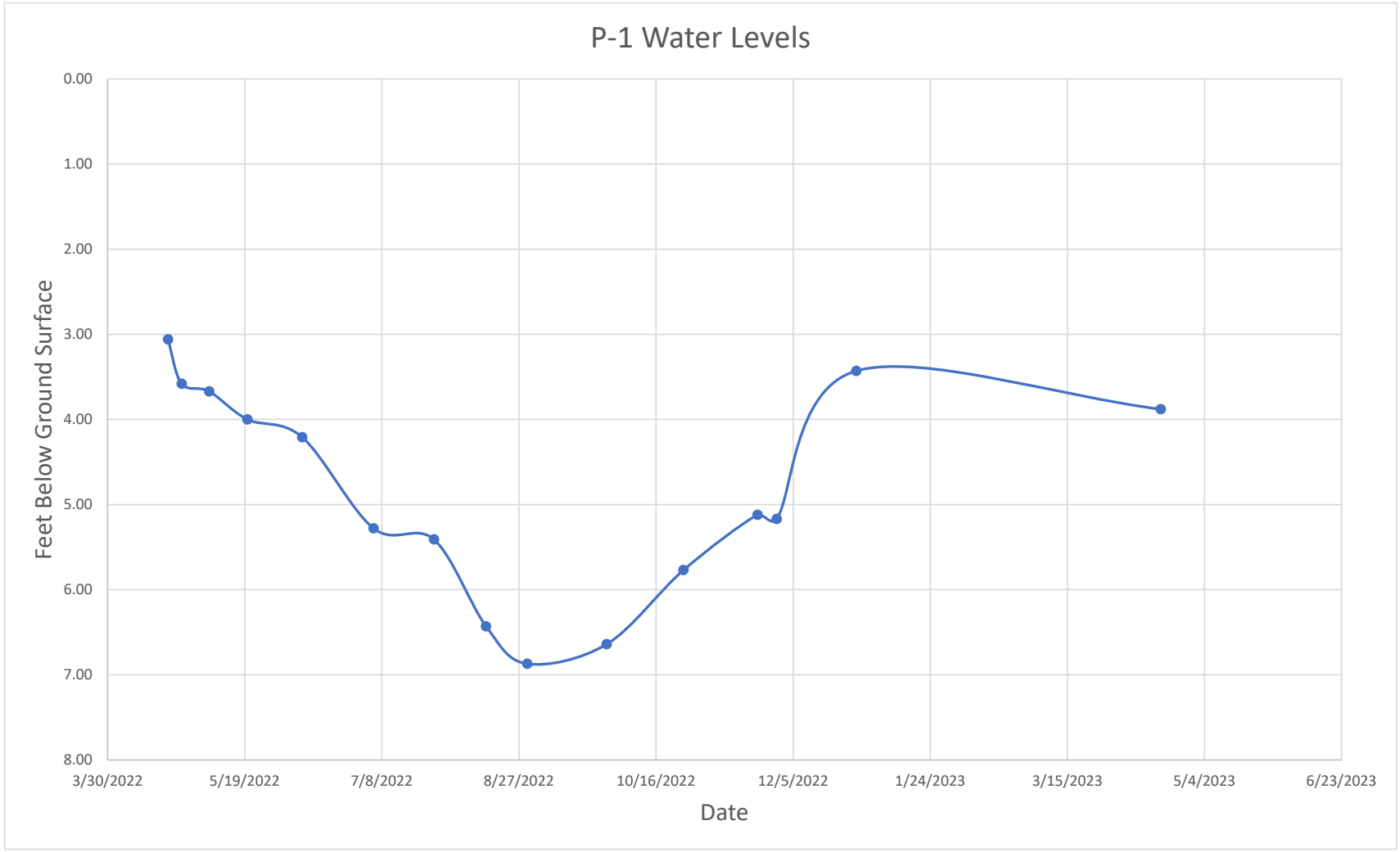
Milestone	Estimated Completion Date	Estimated Completion Percentage
OF-7 Storm Sewer Installation	May 13, 2022	100%
OF-7 Performance Monitoring	3rd Quarter 2023	90%
OF-7 Pilot Test Treatment System	September 2023	5%
New King Street Workplan – Phase 1	January 24	100%
New King Street Workplan – Phase 2	April 2022	100%
Waterline Workplan	April 2022	100%
Waterline Completion	October 2024	0%
OF-4 IRM Pilot Test[1]	Summer 2023	55%
Remedial Investigation Workplan Submittal	July 2022	100%
GW Pilot Test Scope of Work[2]	Summer 2022	100%
GW Pilot Test	Winter 2022	100%
GW Pilot Test Performance Monitoring	Winter 2024	25%
Execution of RI workplan[3]	Summer 2023	0%
Remedial Action Alternatives Evaluation	2023-2024	0%
Remedial Action Selection Report	TBD	0%
Certificate of Completion	TBD	0%

Estimated task durations and completions are tentative and are subject to modification based on site work, progress, weather delays, and other considerations such as contractor availability or Airport access.

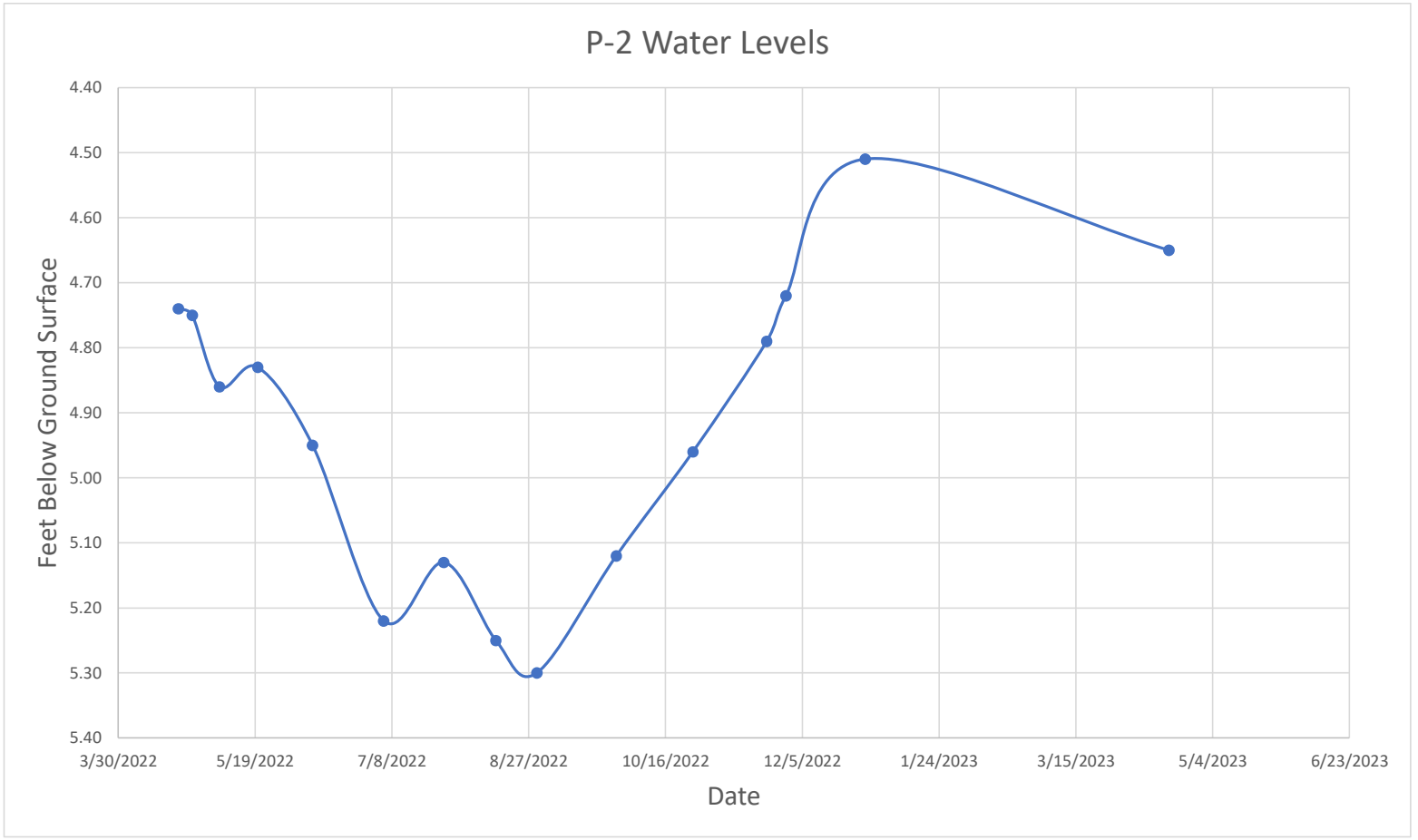
[1] Pilot test CETCO Fluor sorb at OF-7 – Evaluate the effectiveness of Flour sorb reducing PFOS and PFOA in surface water. Pilot test CETCO Fluor sorb at OF-7 before testing at OF-4.
[2] Scope-of-work submitted to the County approved September 2022.
[3] Start date dependent upon workplan approval.

APPENDIX B

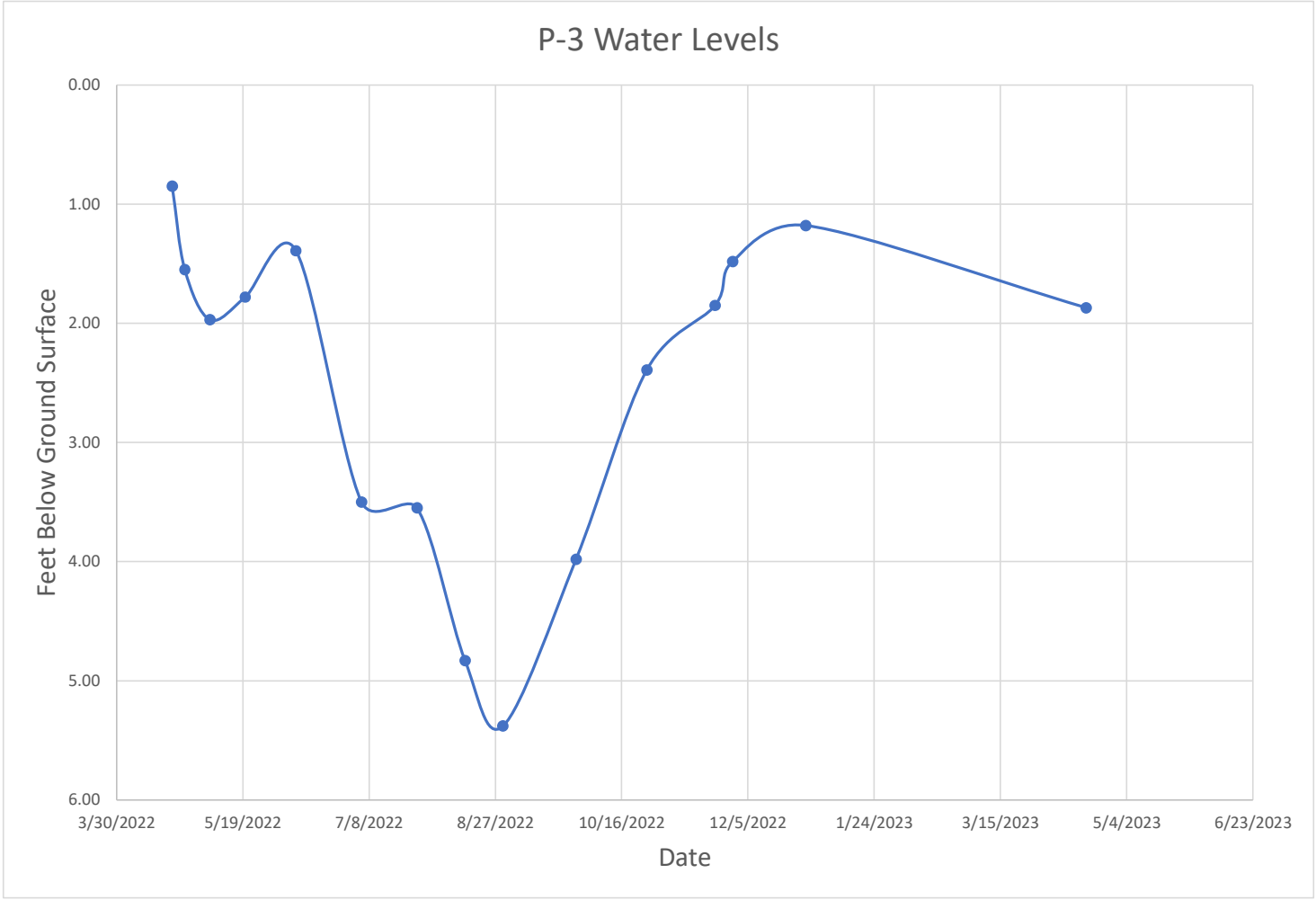
APPENDIX B


P-1 Water Levels
Feet Below Ground Surface
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

APPENDIX B


P-2 Water Levels
Feet Below Ground Surface
4.40
4.50
4.60
4.70
4.80
4.90
5.00
5.10
5.20
5.30
5.40
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

APPENDIX B


P-3 Water Levels
Feet Below Ground Surface
0.00
1.00
2.00
3.00
4.00
5.00
6.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

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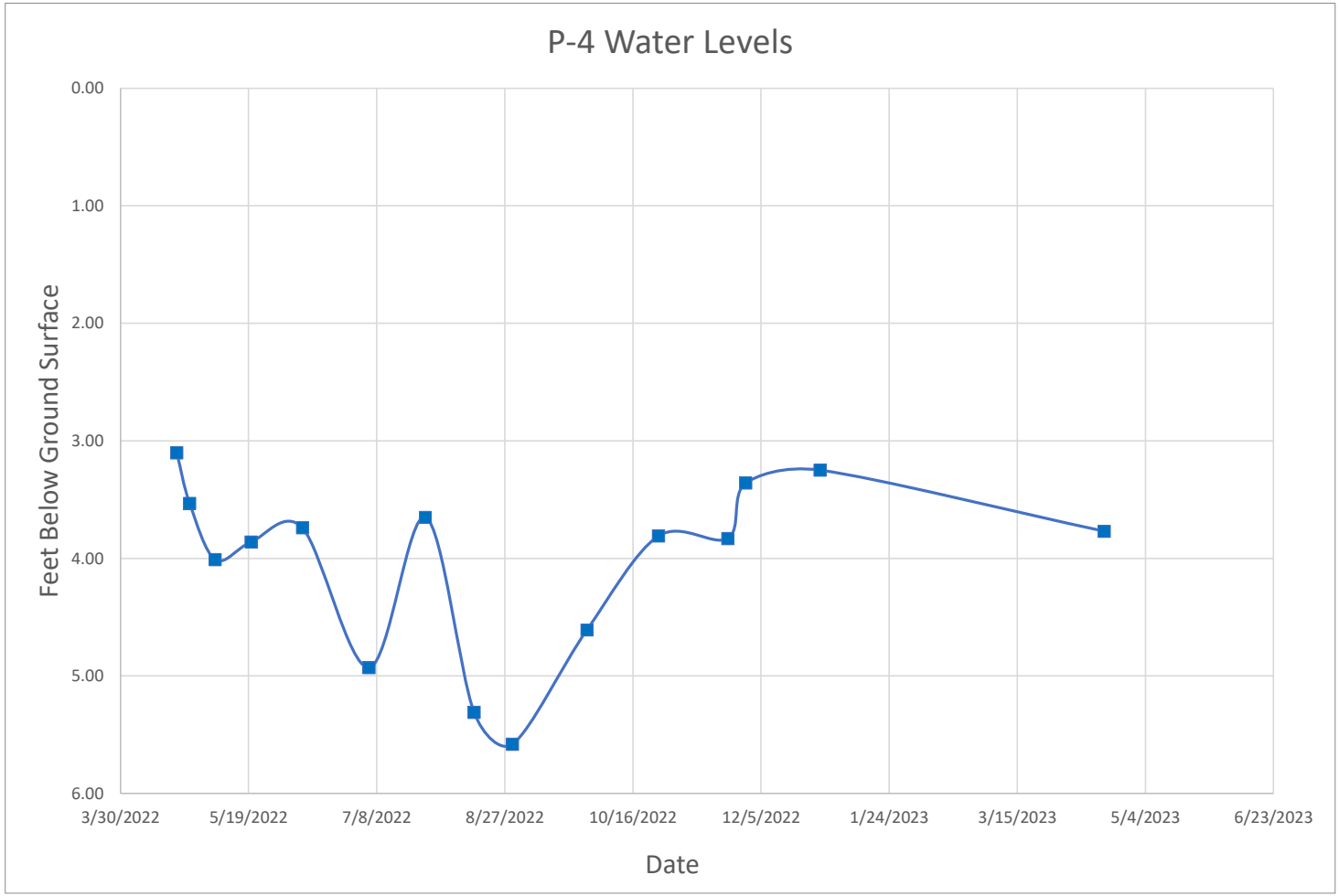
P-4 Water Levels
Feet Below Ground Surface
0.00
1.00
2.00
3.00
4.00
5.00
6.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

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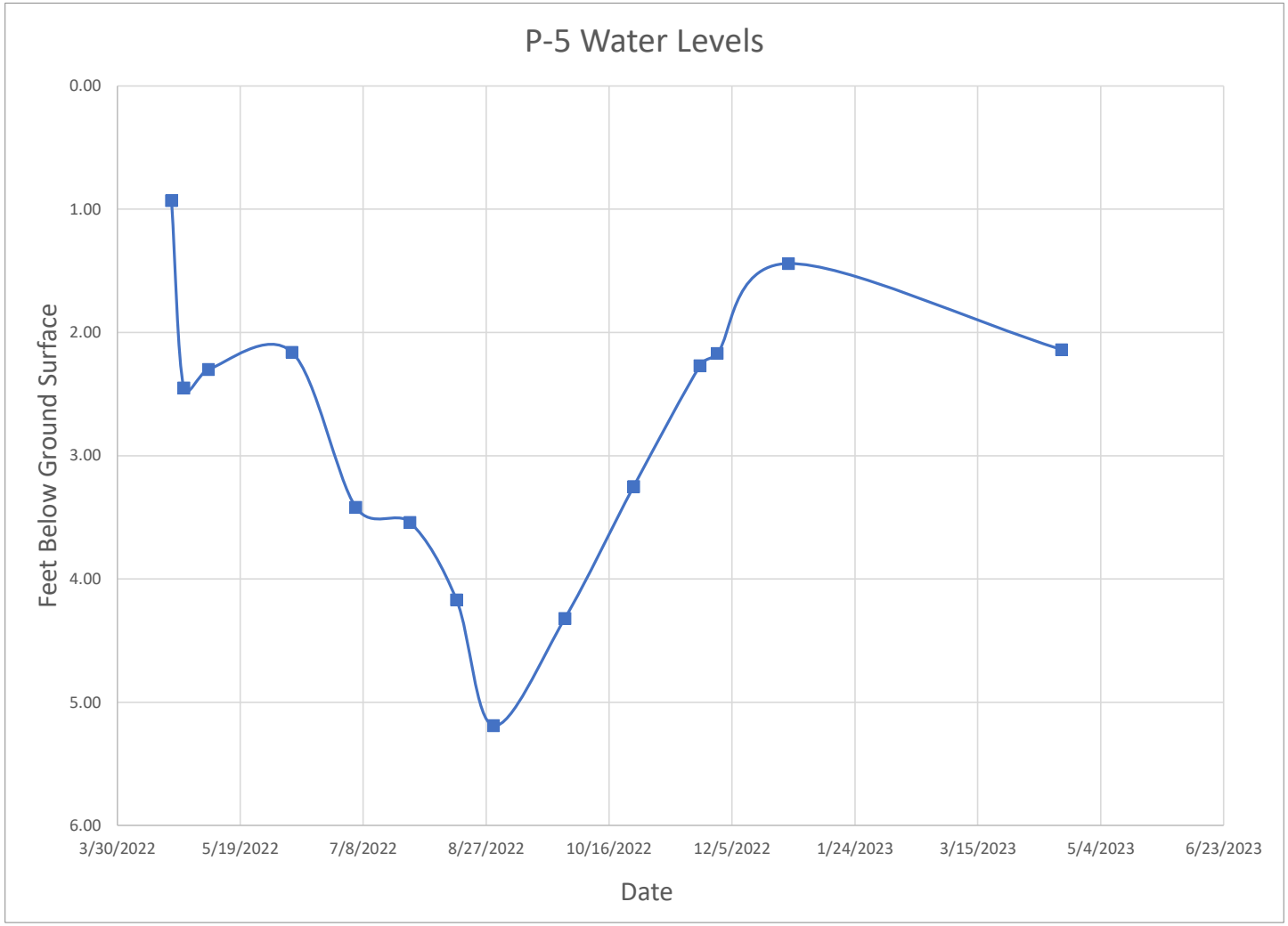
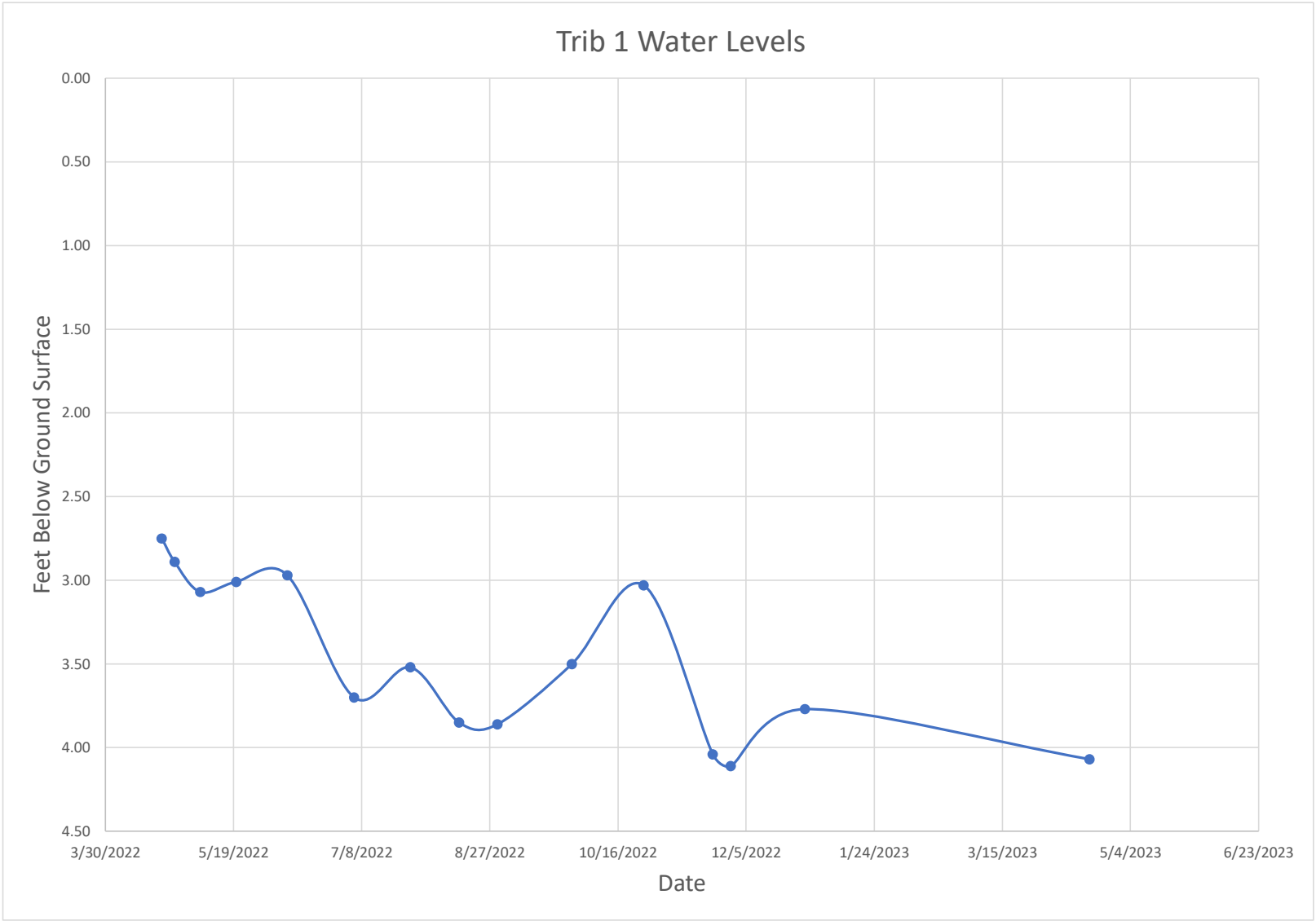

P-5 Water Levels
Feet Below Ground Surface
0.00
1.00
2.00
3.00
4.00
5.00
6.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

APPENDIX B


Trib 1 Water Levels
Feet Below Ground Surface
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

APPENDIX B


Trib 2 Water Levels
Feet Belo Ground Surface
0.00
1.00
2.00
3.00
4.00
5.00
6.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

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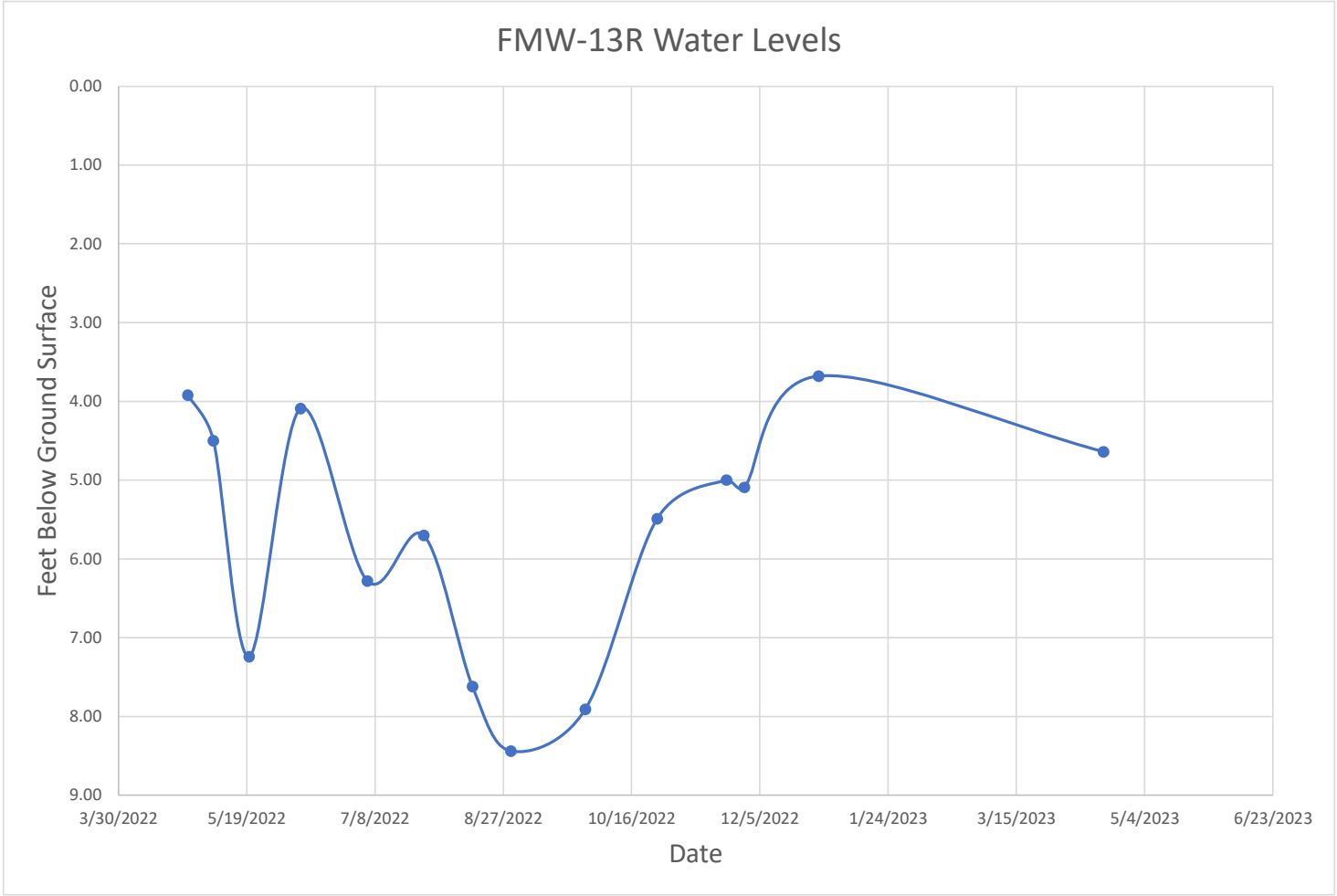
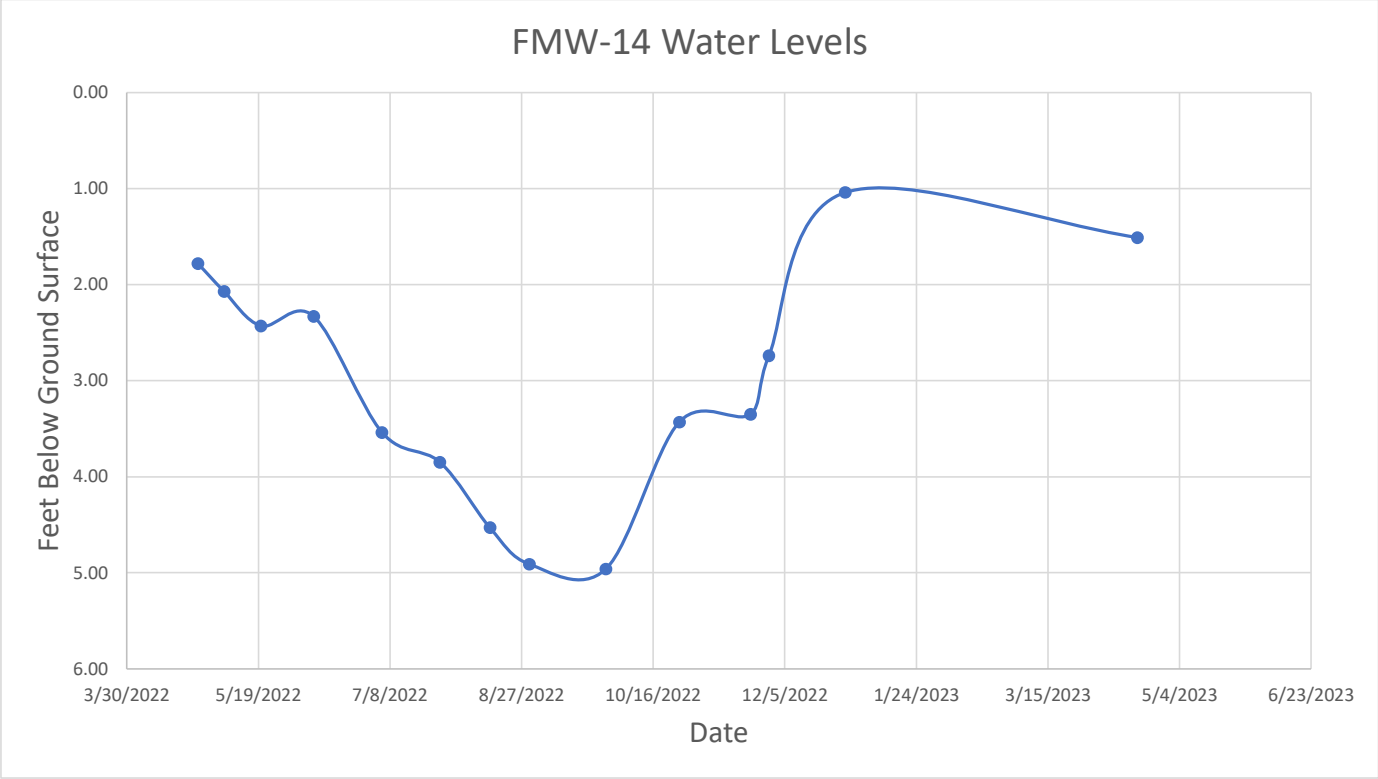

FMW-13R Water Levels
Feet Below Ground Surface
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

APPENDIX B


FMW-14 Water Levels
Feet Below Ground Surface
0.00
1.00
2.00
3.00
4.00
5.00
6.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

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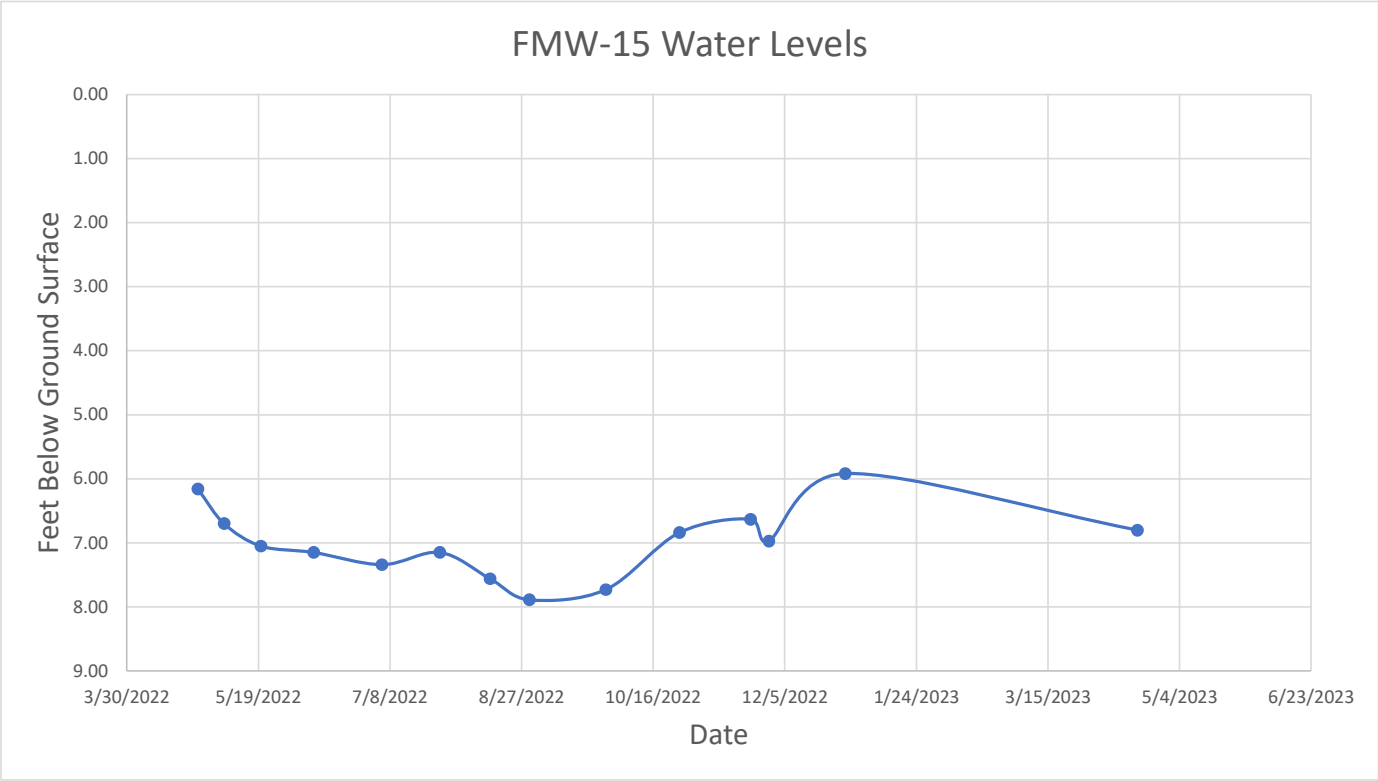
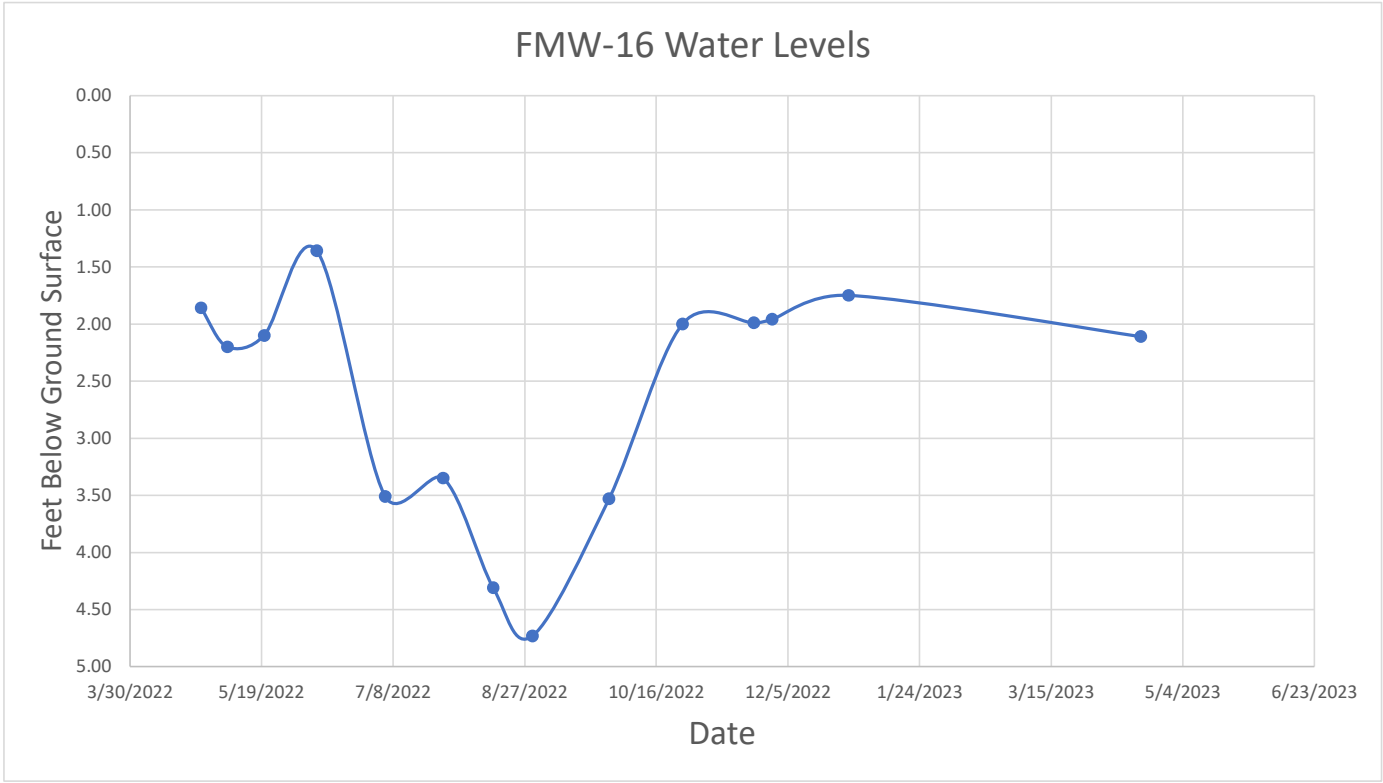

FMW-15 Water Levels
Feet Below Ground Surface
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

APPENDIX B


FMW-16 Water Levels
Feet Below Ground Surface
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
3/30/2022
5/19/2022
7/8/2022
8/27/2022
10/16/2022
12/5/2022
1/24/2023
3/15/2023
5/4/2023
6/23/2023
Date

APPENDIX C

Montrose Environmental Group

First Environment, Inc.

Media Pilot Test – Westchester, NY

Submission Date: May 4, 2023

Montrose Environmental Group

5/4/2023

Scott Green
First Environment, Inc.
10 Park Place, Building 1A, Suite 504
Butler, NJ 07405

Sergio Honl
First Environment, Inc.
10 Park Place, Building 1A, Suite 504
Butler, NJ 07405

Dear Mr. Green and Mr. Honl,

Emerging Compounds Treatment Technologies (ECT2) is pleased to submit this proposal to First Environment, Inc. (Client) for pilot scale treatability testing of the Client's water. This proposal outlines our approach on-site media pilot testing of Per- and Polyfluorinated Substances (PFAS) impacted water from the Westchester County Airport stormwater system in White Plains, NY.

Summary of our Solution

ECT2 will complete on-site pilot testing of the most cutting edge and reliable PFAS treatment technologies available on the market today. This testing will include conventional media such as Granular Activated Carbon (GAC) and Ion Exchange Resin (IX).

Pilot testing will determine the treatment media breakthrough capacities for the specific PFAS compounds of interest in the impacted water. Testing will also help us to evaluate the long-term applicability of deploying this solution for PFAS removal and confirm the expected full-scale treatment performance of that best performing media.

Why Choose ECT2?

1

Leading Water Treatment Solution-Provider

We are a solution-driven water treatment services provider focused on treating emerging contaminants in groundwater, surface water, wastewater and leachate.

2

Unparalleled Expertise

ECT2 consists of a team of experts with a well-documented history of treating a variety of emerging, recalcitrant and conventional contaminants. Our goal is to deliver effective and economical solutions that meet our client's project needs, 100% of the time.

3

Experience

Our focus on water treatment combined with our in-house team of engineers across multiple disciplines ensures that we deliver our clients efficient, effective and economical solutions that meet project objectives.

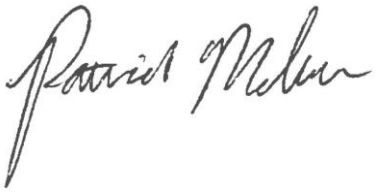
4

Value for Money

We have an extensive tool belt of solutions for the broad array of water treatment challenges that arise on complex projects, and we work in a collaborative partnership with our clients to ensure the right solution for each circumstance is implemented.

We are excited to work with you on this important project and welcome any questions you might have.

Respectfully submitted,



Patrick McKeown
Business Development Manager
Emerging Compounds Treatment Technologies
125 Industrial Way
Portland, ME 04103
Phone: (207) 318-7817
Email: pmckeown@ect2.com

Table of Contents

Figures

Tables

Attachments

1. Introduction to ECT2

Emerging Compounds Treatment Technologies (ECT2) is a solution-driven water treatment equipment and services provider focused on treating emerging and complex contaminants in groundwater, surface water, wastewater and leachate. Our team has decades of experience in removing conventional, biological and emerging compounds from surface, ground, waste and drinking water with unparalleled proven experience gained from successfully executing projects around the globe.

ECT2 has treated over 3 billion gallons of PFAS impacted water worldwide. ECT2 has operating plants at industrial facilities, government locations, and remediation sites from Europe, Australia to the US. ECT2 systems range in size from 5 gallons per minute (gpm) to 6,000 gpm, with larger systems currently under contract for design.

ECT2 brings extensive experience with bench and pilot testing services. We have performed numerous pilot projects and subsequently implemented successful full-scale projects. ECT2 brings your team the most experience in PFAS pilot design, implementation and interpretation in the industry.

2. Project Understanding and Objectives

ECT2 understands there are PFAS impacted soils and groundwater at the Westchester County Airport near the former aqueous film-forming foam (AFFF) burn pit. The Client has identified two potential PFAS treatment system needs: the airport's stormwater system and shallow groundwater at the site. The Client has requested this proposal to focus on the treatment for the stormwater system. ECT2 has provided the primary stormwater system reference figure from the Client's site information in Figure 1 for ease of reference.

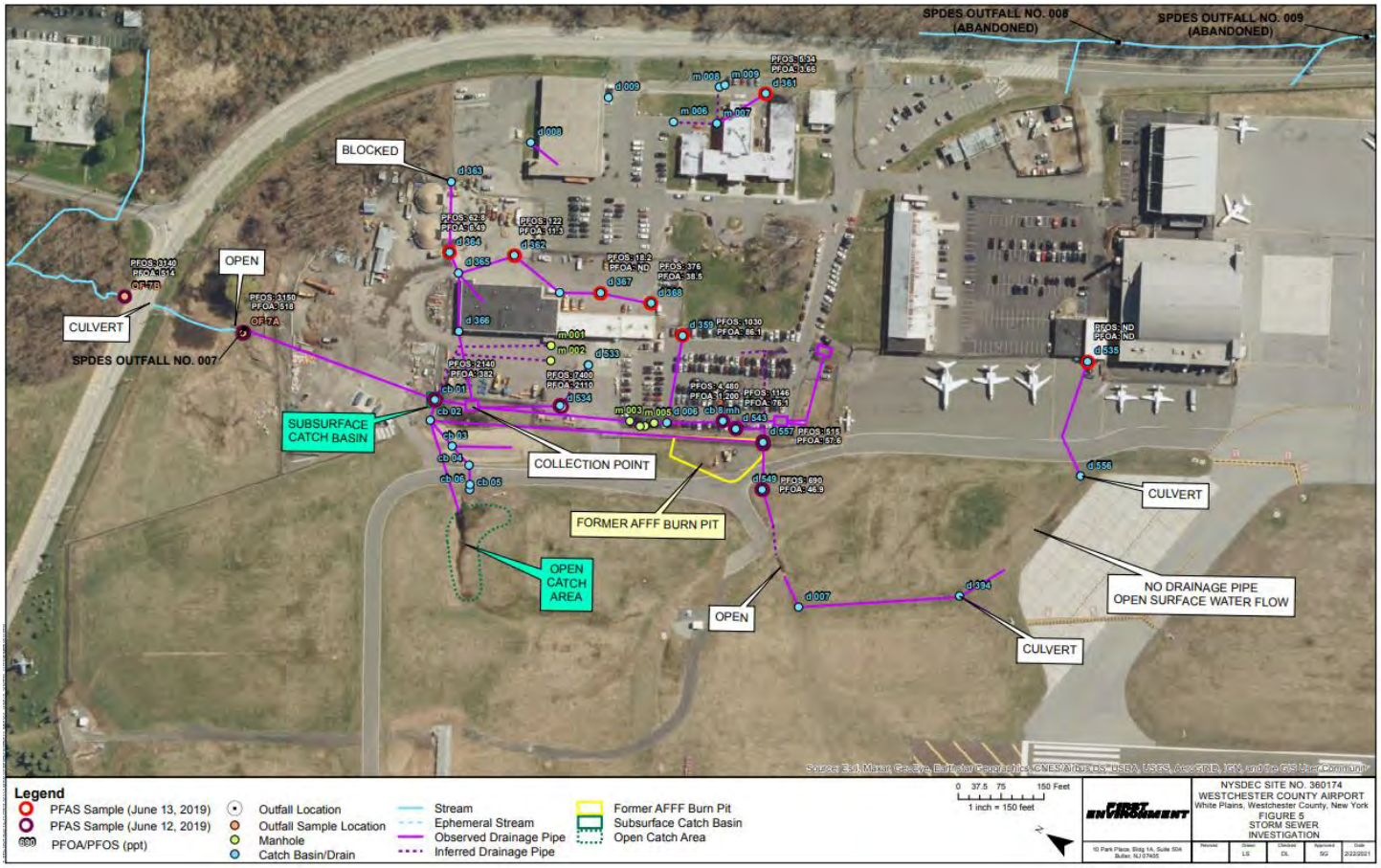


Figure 1 - Westchester County Airport Stormwater System PFAS Data

ECT2 understands the following key facts about the Client's intent for these proposed tests:

- Generally, PFAS concentrations in the stormwater system range up to approximately 10 µg/L total PFAS, with PFOS as the primary compounds up to approximately 4 µg/L.
- The Client's PFAS treatment objectives are the New York State maximum contaminant levels of 10 ng/L each for PFOS and PFOA.
- There is a catch basin at SPDES Outfall No. 007, which will provide the water for pilot testing.
- The Client wants the pilot test system sized to treat the minimum dry-weather stormwater flow of 12 gpm.
- The Client plans to setup the pilot test as a containerized system inside the airport fence approximately 100 ft. southeast of SPDES Outfall No. 007.
- The proposed pilot test location has 120V power available nearby.
- The Client expects that bag or cartridge filtration will be sufficient to pretreat potential solids or media foulants from the stormwater and requests that ECT2 provide this equipment in addition to the PFAS treatment media.

Pilot Test Objectives and Deliverables

Objectives

- Compare the ability of selected test media to remove PFAS to below treatment objectives.
- Confirm system sizing and design parameters to be used in the preparation of a full-scale treatment system design.
- Confirm projected operation and maintenance (O&M) costs associated with meeting the treatment objectives.
- Identify the need for additional pretreatment options to support effective system operation for a full-scale treatment system design.

Project Deliverables

- Draft report will be generated including collected data, a description of the pilot test results as they relate to above objectives, media performance results and recommendations for next steps in developing a full-scale solution.
- A final report, following client-review and approval.
- Public presentation and/or publication of client data will be done (if applicable) in cooperation with ECT2.

3. On-site Pilot Study Description

ECT2 will provide the PFAS treatment equipment needed to perform on-site pilot testing at the site. ECT2 has assumed that two media will be tested on-site: one GAC product and one IX resin product. ECT2 has excluded consideration of regenerable media testing for this proposal given the relatively small flows requiring treatment on site at full-scale.

Overview

Figure 2 shows the block flow diagram shown of the proposed treatment train. Figure 3 shows an elevation view of a typical PFAS treatment system that ECT2 will provide for the GAC and IX resin treatment trains. Figure 4 shows the photo of similar pilot test installation that is representative of generally what ECT2 expects the installed pilot test setup will look like.

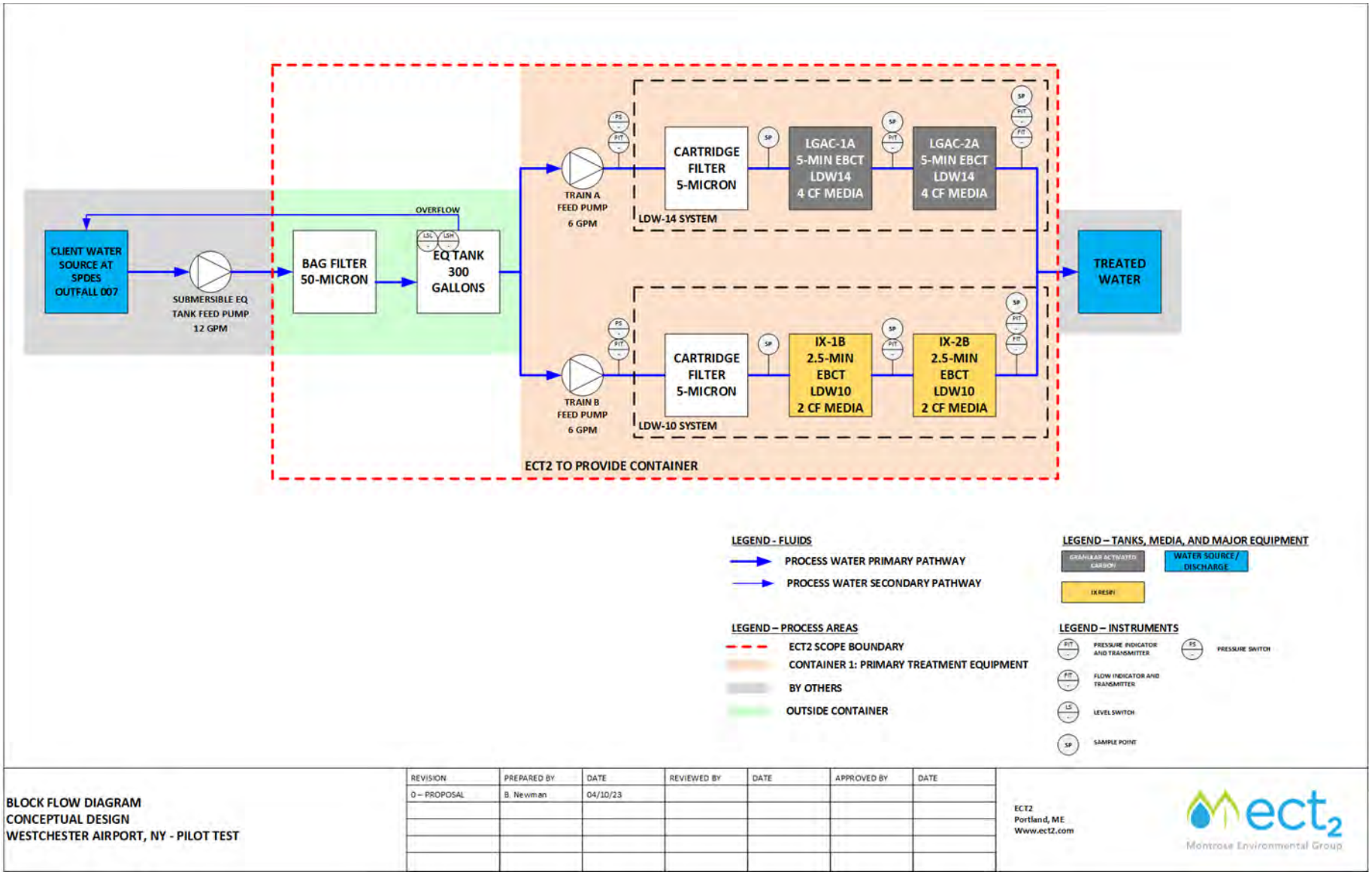


Figure 2 – Proposed Pilot Study Block Flow Diagram

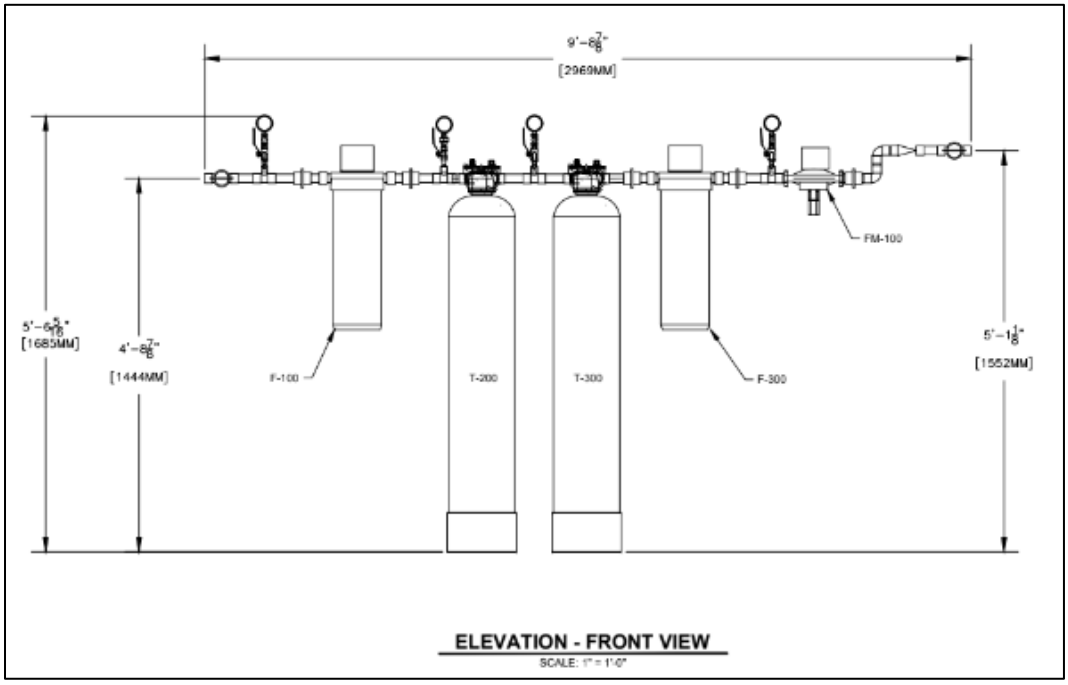


Figure 3 - Typical LDW Series Treatment System Proposed for Pilot Testing

Figure 4 - Example of Similar Containerized FRP Vessel System

The Client will provide and install a continuous-duty submersible pump to feed ECT2's exterior bag filter and flow equalization tank from the stormwater catch basin at SPDES Outfall No. 007. Client will maintain 12 gpm flow minimum to the flow equalization (EQ) tank continuously.

ECT2 will provide an overflow line from the EQ tank back to the same stormwater catch basin. ECT2 will locate the EQ and bag filter outside the ECT2-provided container.

Dedicated feeds pumps will provide 6 gpm of flow to each media treatment train. Pressure and flow instruments will log treatment system pressures and flows for each train continuously. Level switches will control system operations on high- and low-level conditions. Pressure switches on each train will control system operations on overpressure conditions.

ECT2 will manifold the treated water discharge to a common discharge point. The Client will convey treated water to a designated discharge location; ECT2 assumes this location will be downstream of the water intake location at SPDES Outfall No. 007.

ECT2's proposed container will provide a containerized, pre-wired, insulated, and air-conditioned test space. ECT2 assumes the Client will designate the pilot installation location and coordinate with ECT2 on locations of tie points for influent water feed, treated water discharge, and electrical utility connections. Electrical power supply and connections to ECT2's container are assumed to be performed by the Client. ECT2 estimates power requirements of approximately 60 amps of 120V power to run ECT2's pilot feed pumps, instruments, lights, and HVAC; ECT2 will coordinate with the Client on the most convenient way to provide this power feed during the planning and pre-mobilization phase of work.

ECT2's provided piping will include sample ports. ECT2 assumes the Client will provide analytical services for the pilot test and collect routine samples. Samples should be shipped once per week arriving during Monday-Friday. ECT2 has developed a preliminary Sampling and Analysis Plan (SAP) for budgetary purposes summarizing the analytical sampling plan. Analytical costs associated with pilot testing are based on the preliminary SAP; actual costs will be as-executed.

Upon completion of the pilot study and receipt of analytical data, ECT2 will prepare a final test report. The report will include a description of treatment and sampling methodologies, laboratory analytical results, PFAS breakthrough curves, a discussion of treatment effectiveness, and recommendations for the full-scale treatment train.

Pilot Study Assumptions, Clarifications, and Exclusions

- ECT2 understands that the Client expects bag filtration to be sufficient pretreatment for the water and has not requested evaluation of additional pretreatment processes at this time. ECT2 therefore assumes that after passing through the bag filter, the water to be treated will comply with ECT2's standard feedwater quality specification, which has been attached to this proposal.
- Mobilization includes two (2) field engineers who will be on-site for four days. Additional on-site time would require a change in price or change order.
- Client to provide utilities as required, including electrical power to the container.
- Client to provide controls for submersible feed pump if required.
- Client to provide waste disposal of pilot test consumables, including tested media.
- Secondary containment for the pilot container by others if required.

- Water conveyance to ECT2's EQ tank by Client.
- Client to perform day to day operations; including but not limited to sampling, field recording sheets and pilot oversight.
- Client to pay for analytical costs directly; ECT2 has provided an estimate based on a preliminary SAP. Final analytical costs will be determined based on actual sample quantities collected and analyzed during pilot test execution.
- Client to identify treated water discharge location and provide connections to that location from ECT2's container.

Analytical Testing

PFAS testing will be completed using EPA Method 1633, in accordance with ECT2's understanding of New York State's request to contractors in the state. ECT2 has assumed that select samples during testing, i.e. at start-up and periodically throughout, will be analyzed for the full 40 PFAS standard to EPA Method 1633, while samples in between these periodic events will be analyzed for only PFOS and PFOA, as the Client's compounds of interest.

For cost estimation purposes, ECT2 has assumed analytical costs for PFAS analysis as above. Actual analytical costs will depend upon the final SAP agreed upon between ECT2 and the Client, with analytical costs assumed to be owned directly by the Client.

However, note that in lieu of analysis via Method 1633, many labs offer a less expensive, "commercial" PFAS method that uses solid phase extraction and isotope dilution for analysis of aqueous matrices. These two procedural steps are also required in Method 1633 and ensure that matrix effects will be minimized and accurately quantified, respectively, while still achieving low level detection limits (i.e., < 2 ng/l). If the Client's project goals and requirements can be met using a less expensive alternative method, analytical costs for the project may be reduced.

Analytical samples will be collected as shown in the preliminary SAP. The test is currently project to run to 50,000 BVs of water treated in the lead IX resin vessel, with sampling performed at regular intervals for each media vessel.

- (4) influent PFAS samples
- (36) vessel effluent samples in total
- (70) PFAS samples collected and held for potential analysis depending on results of samples analyzed
- (4) BC samples on the water to be treated
- (6) BC samples from the end of each treatment train in total. BC samples to include:
    - Alkalinity
    - Calcium
    - Chemical Oxygen Demand (COD)
    - Chloride
    - Iron, Total
    - Magnesium

- Manganese
- Nitrate
- pH
- Silica
- Sulfate
- Surfactants (MBAS)
- Total Dissolved Solids (TDS)
- Total Organic Carbon (TOC)
- Total Suspended Solids (TSS)

Samples not submitted for analytical testing will be held for 90 days or at acceptance of final report, whichever is shorter.

4. Project Schedule

Upon acceptance of purchase order, we anticipate the on-site pilot schedule to proceed as follows.

Table 1 – Estimated Pilot Test Schedule from PO Issuance

Duration (Weeks)	Description of Activity
1-2	Preparation of pilot equipment and delivery to site
1	ECT2 assists onsite for system mobilization and setup
12	Pilot operation (3 months)
1	Demobilize pilot equipment
2-4	Issue pilot study report following receipt of final analytical results

5. Pricing

ECT2 will complete the pilot study described herein:

Table 2 – Project Firm Pricing

Item Number	Item	Description	Unit Price	Quantity	Extended Price
1	Pilot Test Mobilization, Consumable Equipment, and Ongoing Pilot Support,	(2) ECT2 Field Engineers for four (4) days, Pilot setup and operation		Lot	
2	Pilot Monthly Rental	Monthly rental of on-site pilot equipment		3	
3	Demobilization and Final Pilot Report	(2) ECT2 Field Engineer for (4) days, Pilot demobilization and reporting		Lot	
4	Analytical	Estimate based on attached preliminary SAP; Client costs to be based on actual sample quantities in the field in coordination with ECT2's recommendations.		Lot	
				Total	

Milestone Payment Schedule

All milestones are Net 30 days.

The pilot test bid payment schedule follows:

- 100% of Mobilization at readiness to ship
- Monthly Rental and Analytical invoiced on a monthly basis as costs incurred; invoice at the first of the month.
- 100% of Demobilization at completion of demobilization

No retainage shall be held by the customer for any of these payments. All prices/payments shall be in US Dollars.

6. Bid Validity

This offer shall be valid for a period of 15 days. Acceptance after that period shall require the mutual agreement of the parties.

7. Shipping Terms

Freight is included in the provided pricing.

8. Terms and Conditions

The performance of the services under this proposal shall be performed in accordance with ECT2's Standard Terms and Conditions of Sale, which are attached herein.

9. Confidentiality Statement

This document and all information contained herein are the property of ECT2.

The design concepts and information contained herein are proprietary to ECT2 and are submitted in confidence. They are not transferable and must be used only for the purpose for which the document is expressly loaned. They must not be disclosed, reproduced, loaned or used in any other manner without the express written consent of ECT2.

In no event shall they be used in any manner detrimental to the interest of ECT2. All patent rights are reserved. Upon the demand of ECT2 this document, along with all copies or extracts, and all related notes and analyses, must be returned to ECT2 or destroyed, as instructed by ECT2. Acceptance of the delivery of this document constitutes agreement to these terms and conditions.

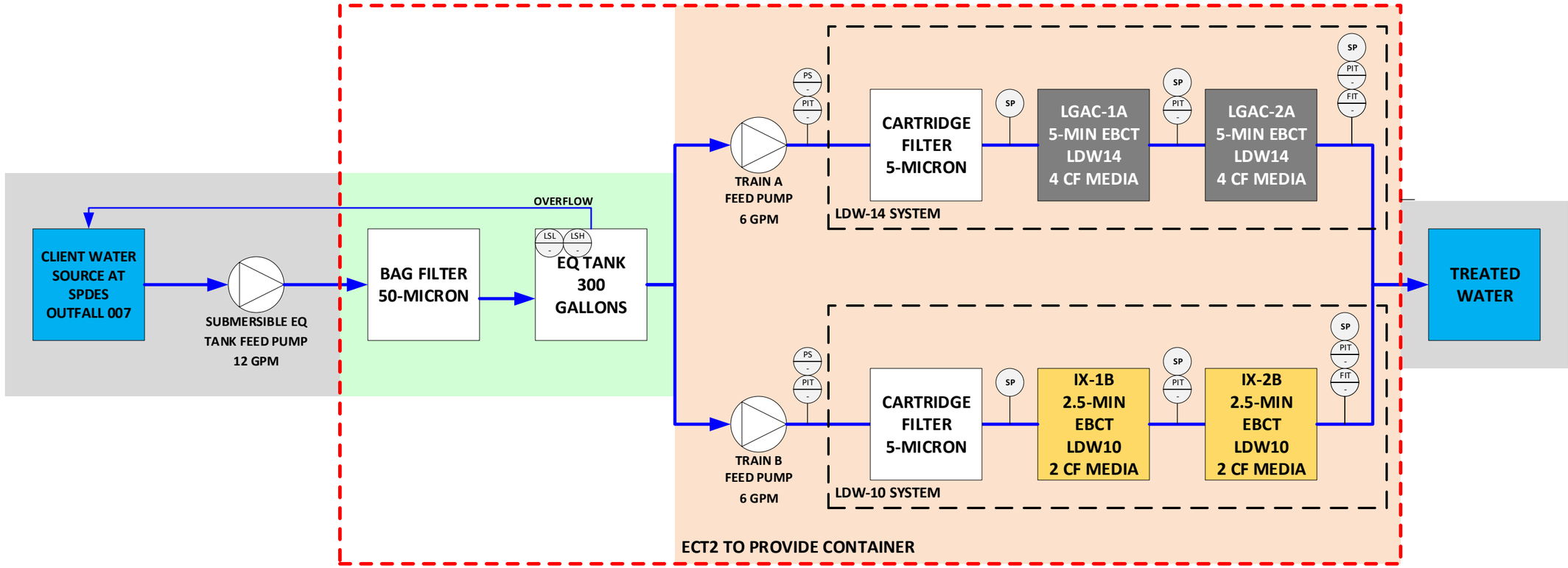
10. Closing

ECT2 appreciates the opportunity to submit this Proposal and look forward to our continued association with you on this project. Please do not hesitate to contact me if you have any questions.

Respectfully submitted,

Emerging Compounds Treatment Technologies, Inc.

ATTACHMENT 1
PILOT TEST BLOCK FLOW DIAGRAM



LEGEND - FLUIDS

- PROCESS WATER PRIMARY PATHWAY
- PROCESS WATER SECONDARY PATHWAY

LEGEND – PROCESS AREAS

- ECT2 SCOPE BOUNDARY
- CONTAINER 1: PRIMARY TREATMENT EQUIPMENT
- BY OTHERS
- OUTSIDE CONTAINER

LEGEND – TANKS, MEDIA, AND MAJOR EQUIPMENT

- GRANULAR ACTIVATED CARBON
- WATER SOURCE/ DISCHARGE
- IX RESIN

LEGEND – INSTRUMENTS

- PIT – PRESSURE INDICATOR AND TRANSMITTER
- PS – PRESSURE SWITCH
- FIT – FLOW INDICATOR AND TRANSMITTER
- LS – LEVEL SWITCH
- SP – SAMPLE POINT

BLOCK FLOW DIAGRAM
CONCEPTUAL DESIGN
WESTCHESTER AIRPORT, NY - PILOT TEST

REVISION	PREPARED BY	DATE	REVIEWED BY	DATE	APPROVED BY	DATE
0 – PROPOSAL	B. Newman	04/10/23				

ECT2
Portland, ME
Www.ect2.com

Montrose Environmental Group

ATTACHMENT 2
PRELIMINARY SAMPLING AND ANALYSIS PLAN

Dates and Loading Cycles			Train A (Assumed GAC - Calgon F400)										Train B (Assumed IX Resin - SORBIX HC5)						
			Volume Treated	BVS Treated		VESSEL POSITION / STATUS		GAC Samples					Volume Treated	BVS Treated		VESSEL POSITION / STATUS				
Date	Day	Loading Cycle Day	Gallons	GAC-1A	GAC-2A	GAC-1A	GAC-2A	System INF	System INF	IX-1B	IX-2B	IX-2B	Gallons	IX-1B	IX-2B	IX-1B	IX-2B	IX-1B	IX-2B	IX-2B
Day 1	MON	1	8,640	288	144	LEAD-1	LAG	PFAS-1	BC	PFAS-1	PFAS (H)		8,640	576	288	LEAD-1	LAG	PFAS-1	PFAS (H)	
Day 2	TUE	2	17,280	576	288	LEAD-2	LAG						17,280	1,152	576	LEAD-2	LAG			
Day 3	WED	3	25,920	864	432	LEAD-3	LAG			PFAS (H)	PFAS (H)		25,920	1,728	864	LEAD-3	LAG	PFAS (H)	PFAS (H)	
Day 4	THU	4	34,560	1,152	576	LEAD-4	LAG						34,560	2,304	1,152	LEAD-4	LAG			
Day 5	FRI	5	43,200	1,440	720	LEAD-5	LAG			PFAS (H)	PFAS (H)		43,200	2,880	1,440	LEAD-5	LAG	PFAS (H)	PFAS (H)	
Day 6	SAT	6	51,840	1,728	864	LEAD-6	LAG						51,840	3,456	1,728	LEAD-6	LAG			
Day 7	SUN	7	60,480	2,016	1,008	LEAD-7	LAG			PFAS (H)	PFAS (H)		60,480	4,032	2,016	LEAD-7	LAG	PFAS (H)	PFAS (H)	
Day 8	MON	8	69,120	2,304	1,152	LEAD-8	LAG						69,120	4,608	2,304	LEAD-8	LAG			
Day 9	TUE	9	77,760	2,592	1,296	LEAD-9	LAG			PFAS-2	PFAS-2		77,760	5,184	2,592	LEAD-9	LAG	PFAS-2	PFAS-2	
Day 10	WED	10	86,400	2,880	1,440	LEAD-10	LAG						86,400	5,760	2,880	LEAD-10	LAG			
Day 11	THU	11	95,040	3,168	1,584	LEAD-11	LAG			PFAS (H)	PFAS (H)		95,040	6,336	3,168	LEAD-11	LAG	PFAS (H)	PFAS (H)	
Day 12	FRI	12	103,680	3,456	1,728	LEAD-12	LAG						103,680	6,912	3,456	LEAD-12	LAG			
Day 13	SAT	13	112,320	3,744	1,872	LEAD-13	LAG			PFAS (H)	PFAS (H)		112,320	7,488	3,744	LEAD-13	LAG	PFAS (H)	PFAS (H)	
Day 14	SUN	14	120,960	4,032	2,016	LEAD-14	LAG						120,960	8,064	4,032	LEAD-14	LAG			
Day 15	MON	15	129,600	4,320	2,160	LEAD-15	LAG			PFAS (H)	PFAS (H)		129,600	8,640	4,320	LEAD-15	LAG	PFAS (H)	PFAS (H)	
Day 16	TUE	16	138,240	4,608	2,304	LEAD-16	LAG						138,240	9,216	4,608	LEAD-16	LAG			
Day 17	WED	17	146,880	4,896	2,448	LEAD-17	LAG						146,880	9,792	4,896	LEAD-17	LAG			
Day 18	THU	18	155,520	5,184	2,592	LEAD-18	LAG	PFAS-1	BC	PFAS-1	PFAS (H)	BC	155,520	10,368	5,184	LEAD-18	LAG	PFAS-1	PFAS (H)	BC
Day 19	FRI	19	164,160	5,472	2,736	LEAD-19	LAG						164,160	10,944	5,472	LEAD-19	LAG			
Day 20	SAT	20	172,800	5,760	2,880	LEAD-20	LAG						172,800	11,520	5,760	LEAD-20	LAG			
Day 21	SUN	21	181,440	6,048	3,024	LEAD-21	LAG						181,440	12,096	6,048	LEAD-21	LAG			
Day 22	MON	22	190,080	6,336	3,168	LEAD-22	LAG			PFAS (H)	PFAS (H)		190,080	12,672	6,336	LEAD-22	LAG	PFAS (H)	PFAS (H)	
Day 23	TUE	23	198,720	6,624	3,312	LEAD-23	LAG						198,720	13,248	6,624	LEAD-23	LAG			
Day 24	WED	24	207,360	6,912	3,456	LEAD-24	LAG						207,360	13,824	6,912	LEAD-24	LAG			
Day 25	THU	25	216,000	7,200	3,600	LEAD-25	LAG						216,000	14,400	7,200	LEAD-25	LAG			
Day 26	FRI	26	224,640	7,488	3,744	LEAD-26	LAG			PFAS (H)	PFAS (H)		224,640	14,976	7,488	LEAD-26	LAG	PFAS (H)	PFAS (H)	
Day 27	SAT	27	233,280	7,776	3,888	LEAD-27	LAG						233,280	15,552	7,776	LEAD-27	LAG			
Day 28	SUN	28	241,920	8,064	4,032	LEAD-28	LAG						241,920	16,128	8,064	LEAD-28	LAG			
Day 29	MON	29	250,560	8,352	4,176	LEAD-29	LAG						250,560	16,704	8,352	LEAD-29	LAG			
Day 30	TUE	30	259,200	8,640	4,320	LEAD-30	LAG						259,200	17,280	8,640	LEAD-30	LAG			
Day 31	WED	31	267,840	8,928	4,464	LEAD-31	LAG			PFAS (H)	PFAS (H)		267,840	17,856	8,928	LEAD-31	LAG	PFAS (H)	PFAS (H)	
Day 32	THU	32	276,480	9,216	4,608	LEAD-32	LAG						276,480	18,432	9,216	LEAD-32	LAG			
Day 33	FRI	33	285,120	9,504	4,752	LEAD-33	LAG						285,120	19,008	9,504	LEAD-33	LAG			
Day 34	SAT	34	293,760	9,792	4,896	LEAD-34	LAG						293,760	19,584	9,792	LEAD-34	LAG			
Day 35	SUN	35	302,400	10,080	5,040	LEAD-35	LAG						302,400	20,160	10,080	LEAD-35	LAG			
Day 36	MON	36	311,040	10,368	5,184	LEAD-36	LAG	PFAS (H)		PFAS-1	PFAS-1		311,040	20,736	10,368	LEAD-36	LAG	PFAS-1	PFAS-1	
Day 37	TUE	37	319,680	10,656	5,328	LEAD-37	LAG						319,680	21,312	10,656	LEAD-37	LAG			
Day 38	WED	38	328,320	10,944	5,472	LEAD-38	LAG						328,320	21,888	10,944	LEAD-38	LAG			
Day 39	THU	39	336,960	11,232	5,616	LEAD-39	LAG						336,960	22,464	11,232	LEAD-39	LAG			
Day 40	FRI	40	345,600	11,520	5,760	LEAD-40	LAG			PFAS (H)	PFAS (H)		345,600	23,040	11,520	LEAD-40	LAG	PFAS (H)	PFAS (H)	
Day 41	SAT	41	354,240	11,808	5,904	LEAD-41	LAG						354,240	23,616	11,808	LEAD-41	LAG			
Day 42	SUN	42	362,880	12,096	6,048	LEAD-42	LAG						362,880	24,192	12,096	LEAD-42	LAG			
Day 43	MON	43	371,520	12,384	6,192	LEAD-43	LAG						371,520	24,768	12,384	LEAD-43	LAG			
Day 44	TUE	44	380,160	12,672	6,336	LEAD-44	LAG						380,160	25,344	12,672	LEAD-44	LAG			
Day 45	WED	45	388,800	12,960	6,480	LEAD-45	LAG			PFAS (H)	PFAS (H)		388,800	25,920	12,960	LEAD-45	LAG	PFAS (H)	PFAS (H)	
Day 46	THU	46	397,440	13,248	6,624	LEAD-46	LAG						397,440	26,496	13,248	LEAD-46	LAG			
Day 47	FRI	47	406,080	13,536	6,768	LEAD-47	LAG						406,080	27,072	13,536	LEAD-47	LAG			

Dates and Loading Cycles			Train A (Assumed GAC - Calgon F400)										Train B (Assumed IX Resin - SORBIX HC5)						
			Volume Treated	BVS Treated		VESSEL POSITION / STATUS		GAC Samples					Volume Treated	BVS Treated		VESSEL POSITION / STATUS				
Date	Day	Loading Cycle Day	Gallons	GAC-1A	GAC-2A	GAC-1A	GAC-2A	System INF	System INF	IX-1B	IX-2B	IX-2B	Gallons	IX-1B	IX-2B	IX-1B	IX-2B	IX-1B	IX-2B	IX-2B
Day 48	SAT	48	414,720	13,824	6,912	LEAD-48	LAG						414,720	27,648	13,824	LEAD-48	LAG			
Day 49	SUN	49	423,360	14,112	7,056	LEAD-49	LAG			PFAS (H)	PFAS (H)		423,360	28,224	14,112	LEAD-49	LAG	PFAS (H)	PFAS (H)	
Day 50	MON	50	432,000	14,400	7,200	LEAD-50	LAG						432,000	28,800	14,400	LEAD-50	LAG			
Day 51	TUE	51	440,640	14,688	7,344	LEAD-51	LAG						440,640	29,376	14,688	LEAD-51	LAG			
Day 52	WED	52	449,280	14,976	7,488	LEAD-52	LAG						449,280	29,952	14,976	LEAD-52	LAG			
Day 53	THU	53	457,920	15,264	7,632	LEAD-53	LAG	PFAS-1	BC	PFAS-1	PFAS-1	BC	457,920	30,528	15,264	LEAD-53	LAG	PFAS-1	PFAS-1	BC
Day 54	FRI	54	466,560	15,552	7,776	LEAD-54	LAG						466,560	31,104	15,552	LEAD-54	LAG			
Day 55	SAT	55	475,200	15,840	7,920	LEAD-55	LAG						475,200	31,680	15,840	LEAD-55	LAG			
Day 56	SUN	56	483,840	16,128	8,064	LEAD-56	LAG						483,840	32,256	16,128	LEAD-56	LAG			
Day 57	MON	57	492,480	16,416	8,208	LEAD-57	LAG			PFAS (H)	PFAS (H)		492,480	32,832	16,416	LEAD-57	LAG	PFAS (H)	PFAS (H)	
Day 58	TUE	58	501,120	16,704	8,352	LEAD-58	LAG						501,120	33,408	16,704	LEAD-58	LAG			
Day 59	WED	59	509,760	16,992	8,496	LEAD-59	LAG						509,760	33,984	16,992	LEAD-59	LAG			
Day 60	THU	60	518,400	17,280	8,640	LEAD-60	LAG						518,400	34,560	17,280	LEAD-60	LAG			
Day 61	FRI	61	527,040	17,568	8,784	LEAD-61	LAG			PFAS-2	PFAS-2		527,040	35,136	17,568	LEAD-61	LAG	PFAS-2	PFAS-2	
Day 62	SAT	62	535,680	17,856	8,928	LEAD-62	LAG						535,680	35,712	17,856	LEAD-62	LAG			
Day 63	SUN	63	544,320	18,144	9,072	LEAD-63	LAG						544,320	36,288	18,144	LEAD-63	LAG			
Day 64	MON	64	552,960	18,432	9,216	LEAD-64	LAG						552,960	36,864	18,432	LEAD-64	LAG			
Day 65	TUE	65	561,600	18,720	9,360	LEAD-65	LAG						561,600	37,440	18,720	LEAD-65	LAG			
Day 66	WED	66	570,240	19,008	9,504	LEAD-66	LAG			PFAS (H)	PFAS (H)		570,240	38,016	19,008	LEAD-66	LAG	PFAS (H)	PFAS (H)	
Day 67	THU	67	578,880	19,296	9,648	LEAD-67	LAG						578,880	38,592	19,296	LEAD-67	LAG			
Day 68	FRI	68	587,520	19,584	9,792	LEAD-68	LAG						587,520	39,168	19,584	LEAD-68	LAG			
Day 69	SAT	69	596,160	19,872	9,936	LEAD-69	LAG						596,160	39,744	19,872	LEAD-69	LAG			
Day 70	SUN	70	604,800	20,160	10,080	LEAD-70	LAG						604,800	40,320	20,160	LEAD-70	LAG			
Day 71	MON	71	613,440	20,448	10,224	LEAD-71	LAG	PFAS (H)		PFAS-1	PFAS-1		613,440	40,896	20,448	LEAD-71	LAG	PFAS-1	PFAS-1	
Day 72	TUE	72	622,080	20,736	10,368	LEAD-72	LAG						622,080	41,472	20,736	LEAD-72	LAG			
Day 73	WED	73	630,720	21,024	10,512	LEAD-73	LAG						630,720	42,048	21,024	LEAD-73	LAG			
Day 74	THU	74	639,360	21,312	10,656	LEAD-74	LAG						639,360	42,624	21,312	LEAD-74	LAG			
Day 75	FRI	75	648,000	21,600	10,800	LEAD-75	LAG			PFAS (H)	PFAS (H)		648,000	43,200	21,600	LEAD-75	LAG	PFAS (H)	PFAS (H)	
Day 76	SAT	76	656,640	21,888	10,944	LEAD-76	LAG						656,640	43,776	21,888	LEAD-76	LAG			
Day 77	SUN	77	665,280	22,176	11,088	LEAD-77	LAG						665,280	44,352	22,176	LEAD-77	LAG			
Day 78	MON	78	673,920	22,464	11,232	LEAD-78	LAG						673,920	44,928	22,464	LEAD-78	LAG			
Day 79	TUE	79	682,560	22,752	11,376	LEAD-79	LAG			PFAS-2	PFAS-2		682,560	45,504	22,752	LEAD-79	LAG	PFAS-2	PFAS-2	
Day 80	WED	80	691,200	23,040	11,520	LEAD-80	LAG						691,200	46,080	23,040	LEAD-80	LAG			
Day 81	THU	81	699,840	23,328	11,664	LEAD-81	LAG						699,840	46,656	23,328	LEAD-81	LAG			
Day 82	FRI	82	708,480	23,616	11,808	LEAD-82	LAG						708,480	47,232	23,616	LEAD-82	LAG			
Day 83	SAT	83	717,120	23,904	11,952	LEAD-83	LAG			PFAS (H)	PFAS (H)		717,120	47,808	23,904	LEAD-83	LAG	PFAS (H)	PFAS (H)	
Day 84	SUN	84	725,760	24,192	12,096	LEAD-84	LAG						725,760	48,384	24,192	LEAD-84	LAG			
Day 85	MON	85	734,400	24,480	12,240	LEAD-85	LAG						734,400	48,960	24,480	LEAD-85	LAG			
Day 86	TUE	86	743,040	24,768	12,384	LEAD-86	LAG						743,040	49,536	24,768	LEAD-86	LAG			
Day 87	WED	87	751,680	25,056	12,528	LEAD-87	LAG	PFAS-1	BC	PFAS-1	PFAS-1	BC	751,680	50,112	25,056	LEAD-87	LAG	PFAS-1	PFAS-1	BC

ATTACHMENT 3
ECT2 STANDARD TERMS AND CONDITIONS OF SALE

ECT2 TERMS & CONDITIONS OF SALE

1. **Introduction**. These Standard Terms and Conditions govern your use of Emerging Compounds Treatment Technologies, Inc. and its affiliates (hereinafter, "ECT2") Services and Goods identified in the accompanying proposal ("Proposal") provided to you by ECT2. Your use of the Services and Goods constitutes your acceptance of these Standard Terms and Conditions, and together with the Proposal, constitutes a legal and binding agreement between you and ECT2 ("Agreement").

2. **Entire Agreement.** This Agreement constitutes the entire, complete and exclusive agreement between you and ECT2 for the Services and Goods to be provided by ECT2 set forth in the Proposal and supersedes and cancels all prior proposals, agreements and understandings, written or oral, relating to the subject matter of this Agreement. Nothing contained in this Agreement shall be construed to give any rights or benefits to anyone other than you and ECT2. This Agreement shall not be modified, rescinded or assigned (including any rights or obligations hereunder) except by the express written consent of you and ECT2.

3. **Independent Contractor**. ECT2 shall perform Services and provide Goods as an independent contractor with exclusive control of the manner and means of performing Services and providing Goods in accordance with the requirements of this Agreement and in accordance with the standard of care generally accepted when providing similar services at the same time, in the same locale, and under like circumstances. ECT2 has no authority to act or make any agreements or representations on behalf of you.

4. **Payment.** Payment of invoices is due within thirty (30) days of the invoice date. ECT2 shall maintain title in all Goods provided under this Agreement until such time as all Services are paid in full. You agree to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event ECT2 employs an attorney for collection of any account, you agree to pay ECT2's reasonable and necessary attorney fees, plus all collection and court costs. All prices are exclusive of any federal, state, local, sales, use, excise or similar taxes imposed on the sale or use of the services, equipment, goods, product or material listed. You are responsible for payment of all taxes. Payment(s) shall be remitted with a copy of the invoice, attention: ECT2, Accounts Payable, PO Box 843044, Boston, MA 02284-3044; E- mail: acctpay@ect2.com.

5. **Acceptance**. All orders from you are subject to final acceptance by ECT2 and to the conditions set out herein. Terms and conditions set forth in your order shall be null and void unless specifically accepted by ECT2 in writing. Performance by ECT2 pursuant to your order shall not constitute acceptance by ECT2 of your terms and conditions. Orders cannot be canceled, nor Goods, equipment, products or materials returned, by you under any circumstances without ECT2's written consent and upon terms which shall compensate and indemnify ECT2 against all loss.

6. **Equipment/Goods delivery**. Unless otherwise stated in the Proposal, not less than ten (10) business days in advance of the date ECT2 intends to deliver the Goods and/or equipment to your site, ECT2 shall deliver written notice to you of the Goods and/or equipment availability and intended date of delivery ("Notification of Delivery"). You shall pay for all storage and handling costs for any Goods and/or equipment caused by any shipping delay or otherwise. Unless otherwise specified in the Proposal, the Goods and/or equipment shall be shipped to your site F.O.B. shipping point. All risk and liability for loss or damage to the Goods and/or equipment, for the injury or death of any person, for the loss of property and for all other risks and liabilities arising from the possession, use, transportation, or storage of the Goods and/or equipment shall pass to you upon placement of the Goods and/or equipment for shipment at the shipping point. All delivery charges, including freight, transit insurance, duties, and applicable taxes will be the responsibility of you. The failure to obtain insurance or the insufficiency of insurance limits shall not relive you of any obligations herein. ECT2 shall not be liable for any delay in manufacture or delivery due to fires, strikes, delays in transportation, shortage of cars, shortage of fuel or other material, shortage of labor, demands or requirements of any Government or due to any other causes beyond the reasonable control of ECT2 or the manufacturer. You shall pay for all storage and handling costs for any Goods and/or equipment caused by any shipping delay or otherwise.

7. **Inspection.** Inspection of the Goods and/or equipment by you is to be made at the time of delivery and at your expense. You shall immediately inspect all equipment to identify any evidence of damage associated with shipment to you. You shall immediately notify ECT2 and the carrier of any evidence of damage. Barring the occurrence of any significant damage to the G oods and/ or equipment while in transit, you shall, in accordance with the implementation schedule contained in the Proposal, proceed with the proper installation and connection of the Goodsand/orequipment to all required utilities and tie points as specified by ECT2.

8. **Equipment Start-up**. All analytical testing, if required, shall be arranged for and executed or paid for by you. Analysis of samples shall be conducted by a qualified analytical laboratory so that results can be promptly obtained and evaluated. All analytical test results shall be shared by you with ECT2.

9. **Confidentiality**. All plans, specifications and like material, provided to you under this Agreement, are now and shall remain the exclusive property of ECT2. You hereby agree to receive such materials with the understanding that the features and all aspects of all designs, drawings, engineering data and other technical or proprietary information remains the exclusive property of ECT2 and will be kept confidential. No part of said plans, specifications, blueprints or other like material, shall be used or reproduced, without the express written consent of ECT2, signed by one of its officers. Where disclosure of such material is required by federal, state or local laws, regulations, rules, orders or to be used as evidence in court involving the services, goods, equipment, products or material provided, you agree to notify ECT2 of the same and object to its production until ECT2 may reasonably respond in the proper forum.

10. **Ownership of Work Product.** All inventions, designs, drawings, sketches, surveys, designs, computer software, programs, manuals, data specifications, notebooks, technical and scientific data, and all photographs, negatives, reports, findings, recommendations, data and memoranda of every description relating thereto, as well as all copies of the foregoing, and any all instruments of service or products (including all software) prepared or obtained by ECT2 pursuant to the Services and/or the provision of Goods under this Agreement, that are or may be patentable, shall be the exclusive property of ECT2. Further, the ownership of all copyrights for all works made for hire prepared or obtained by ECT2 pursuant to the Services and/or provision of Goods under this Agreement shall remain with ECT2.

11. **Mechanical Warranty.** ECT2 hereby warrants to you the following as applicable based upon the scope of work identified in the Proposal:

    (a) The treatment system shall be free from defects in materials and workmanship, under normal and proper use, for a period of twelve (12) months from the date of delivery of the treatment system to the project site or fifteen (15) months from the date of Notification of Delivery, whichever occurs first. This warranty shall only be effective if the treatment system installation is conducted in accordance with guidelines and requirements contained in drawings or other engineering documents provided by ECT2, and the start-up of the treatment system is supervised or conducted by ECT2.

    (b) Any repairs or replacements that are required as a result of Your failure to store, operate and maintain the treatment system in accordance with the treatment system operations and maintenance manual or the result of misuse or neglect of the treatment system by You shall be for the account of You. No allowance shall be granted for repairs or alterations made by You without ECT2's prior written consent. The Mechanical Warranty shall not apply to parts which have been altered from their original state by either You or any third party.

12. **Goods Warranty.** ECT2 hereby warrants to you the following as applicable based upon the scope of work identified in the Proposal:

    (a) The Goods that are provided shall be of the kind and quality as set forth in the Proposal, new and of good and merchantable quality, free from defects in design, workmanship and material, and shall perform in accordance with the specifications and drawings, if any, referred to in the Proposal and/or the cover page of the Goods. All Goods shall at all times be subject to Your inspection but neither Your inspection nor failure to inspect shall relieve ECT2 of any obligations under this Good Warranty.

    (b) The Good Warranty excludes any remedy for damages, defects, deficiencies or failures in the Goods to the extent due to or caused by: (i) the negligence, abuse, willful misconduct, or neglect by You or a third party not under ECT2's control; (ii) any accident, not due to the fault of ECT2, following the delivery of the goods which is not itself attributable to a breach of the Good Warranty; (iii) the failure to store, operate and maintain any of the Goods in accordance with the written instructions of ECT2; (iv) any modifications, repairs or alterations to the Goods not performed or authorized in writing by ECT2; (v) consumable or wearable parts of any item of equipment subject to replacement as part of a program of normal or scheduled maintenance; or (vi) corrosion, erosion or abrasion; abnormal conditions of temperature, moisture or dirt; or deterioration or wear occasioned by chemicals.

(c) Notwithstanding the above Goods and Mechanical Warranties, unless stated in the Proposal, ECT2 does not warrant and/or guarantee the performance of the selected Goods referenced in the Proposal based upon the Goods' performance during any testing that was previously conducted by ECT2 for You.

13. **Limitation of Remedies.** To the fullest extent permitted by law, the total aggregate liability of ECT2, its parent company, officers, directors, and employees to Client, and anyone claiming by, through, or under Client, for any and all injuries, claims, losses, expenses, or damages whatsoever arising out of or in any way related to ECT2's Services and/or Goods, from any cause or causes whatsoever, including, but not limited to, negligence, errors, omissions, strict liability or contract, shall be limited to and shall not exceed the total compensation received by ECT2 under this agreement, or $50,000, whichever is greater.

14. **Mutual Waiver of Consequential Damages**. Neither party, nor their parent, affiliated or subsidiary companies, nor the officers, directors, agents, employees, or contractors of any of the foregoing, shall be liable to the other in any action or claim for incidental, indirect, special, collateral, punitive, exemplary or consequential damages, including, but not limited to financial loss, loss of profits, loss of revenue, delay, disruption, loss of anticipated profits or revenue, loss of use of any structure, system or equipment, or non-operation or increased cost of operation arising out of or related to the Services and/or Goods, whether the action in which recovery of damages is sought is based upon contract, tort (including, to the greatest extent permitted by law, the sole, concurrent or other negligence, whether active or passive, and strict liability of any protected individual or entity), statute or otherwise.

15. **Governing Law**. This Agreement shall be solely governed and construed and enforced in accordance with the laws of the Commonwealth of Massachusetts, without regard to its conflict of laws rules. If any dispute relating to the Agreement cannot be resolved through good faith negotiation, you agree to submit and consent to the jurisdiction of the courts present in Massachusetts in any action brought to enforce (or otherwise arising from or relating to) this Agreement.

16. **Force Majeure.** ECT2 shall not be responsible for any delay or non-performance under the Agreement due to governmental regulation, labor disputes, terrorism, war or war-like actions, civil disturbances or riots, weather, fire, acts of God or any other causes beyond the reasonable control of ECT2.

17. **Waiver**. Delay in enforcing any or all of the above terms and conditions shall not constitute a waiver nor preclude any subsequent enforcement. Failure to take prompt action with respect to any act or omission contrary to these terms and conditions shall not constitute a waiver of any right with respect to such act or omission or any subsequent act or omission.

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END OF TERMS AND CONDITIONS