



PHIL-27727

February 28, 2023

Project Number 08005-WE04

Mr. Thomas Magge
Clean Water Environmental Program Manager
Pennsylvania Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, Pennsylvania 19401

Reference: Contract No. N6247016D9008
Contract Task Order No. WE04

Subject: Temporary Discharge Monitoring Report - January 1 to January 31, 2023
Hangar 680 Per- and Polyfluoroalkyl Substances Pilot Test System
Former Naval Air Station Joint Reserve Base Willow Grove
Horsham Township, Pennsylvania

Dear Mr. Magee:

On behalf of the United States (U.S.) Navy, Tetra Tech is pleased to submit the Temporary Discharge Monitoring Report (DMR) for the Hangar 680 per- and polyfluoroalkyl substances (PFAS) pilot test system at the Former Naval Air Station Joint Reserve Base Willow Grove in Horsham Township, Pennsylvania. This DMR includes available influent, effluent, and field quality assurance/quality control (QA/QC) results for sampling from January 1 to January 31, 2023.

The temporary discharge was first approved by the Pennsylvania Department of Environmental Protection (PADEP) on February 10, 2020, as requested by the U.S. Navy under a Federal Facility Agreement permit equivalency. PADEP approved subsequent modifications to the permit equivalency in letters dated August 5, 2020, January 27, 2021, July 23, 2021, January 13, 2022, and July 1, 2022 (modified on August 12, 2022). PADEP approved a request to extend the permit equivalency duration for 180 more days on December 28, 2022. As part of this extension approval, phenols are no longer sampled, and the schedule for sampling for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) has been reduced from weekly to biweekly; however, the Navy would like to continue sampling on a weekly basis for data collection purposes.

Full-time operation of the Hangar 680 PFAS pilot test system was initiated on March 2, 2020. A total of 33,433,603 gallons of water have been treated and discharged to Outfall 8 as of January 30, 2023. The discharge for the reporting period complied with the effluent limitations and monitoring requirements as summarized in the following bullets:

- Influent samples were collected weekly on January 4, January 10, January 16, January 23, and January 30, 2023. These samples were collected from shallow extraction well HA-EW-1S, first intermediate extraction well HA-EW-1I, second intermediate extraction well HA-EW-2I, and the combined influent of these extraction wells. These samples were analyzed for PFAS, specifically PFOA and PFOS, and the results are provided in Table 1. During the operational period, the shallow extraction well HA-EW-1S was operated at approximately 4.8 gallons per minute (gpm), the first intermediate extraction well HA-EW-1I was operated at approximately 6.6 gpm, and the second intermediate extraction well HA-EW-2I was operated at approximately 9.4 gpm.

- Effluent samples were collected weekly on January 4, January 10, January 16, January 23, and January 30, 2023. These samples were analyzed for PFOA and PFOS. Effluent samples for tetrachloroethene (PCE), trichloroethene (TCE), carbon tetrachloride (CTC), 1,2-dichloroethane (1,2-DCA), and total lead were collected on January 4, 2023. All effluent analytical sample results for this reporting period are provided in Table 2. Field blank QA/QC samples were collected weekly on January 4, January 10, January 16, January 23, and January 30, 2023. These samples were analyzed for PFOA, PFOS, and their analytical results are provided in Table 2.
- A trip blank QA/QC sample was collected on January 4, 2023. This sample was analyzed for PCE, TCE, CTC, and 1,2-DCA. The results are provided in Table 2.
- Per the August 12, 2022 permit equivalency modification and the December 28, 2022 permit equivalency extension, weekly monitoring of PFOA and PFOS shall be conducted at discharge sampling port HA-Mid2IX to determine if maintenance actions are needed. During this reporting period, all weekly PFOA and PFOS sampling results at HA-Mid2IX were below the maintenance levels described in the permit equivalency modification (0.014 µg/L PFOA and 0.018 µg/L PFOS). Therefore, no maintenance actions are planned before the next reporting period.

Lastly, analytical results from samples collected since the start of the Hangar 680 PFAS pilot test system and intermittent operation of the aqueous IDW treatment system have demonstrated that both systems effectively reduce the compounds identified in the permit equivalency to below the established limits.

Please do not hesitate to contact me if you have any questions.

Sincerely,



Tricia E. Moore, PG
Senior Project Manager

TM/nfs

Attachments:

Table 1 – NPDES Permit Equivalency Influent Sample Results from January 1, 2023 through January 31, 2023

Table 2 – NPDES Permit Equivalency Effluent Sample Results from January 1, 2023 through January 31, 2023

c: Brian Helland (Navy BRAC PMO)
Dawn DeFreitas (Navy BRAC PMO)
Colin Wade (PADEP)
Sarah Kloss (EPA Region 3)
Navy Caretaker Office
Horsham Library
NIRIS RDM

TABLES

**Table 1: NPDES Permit Equivalency Influent Sample Results from January 1, 2023 through January 31, 2023
Hangar 680 PFAS Pilot Test
Former Naval Air Station Joint Reserve Base Willow Grove**

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		149			
Sample ID		HA-EW-1S-20230104	HA-EW-1I-20230104	HA-EW-2I-20230104	HA-CombinedINF-20230104
Sample Date		1/4/2023	1/4/2023	1/4/2023	1/4/2023
Units		µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.784	2.670 D	2.750 D	2.380 D
Perfluorooctanesulfonic acid (PFOS)	NA	44.100 D	17.000 D	96.700 D	46.500 D
PFOA + PFOS	0.07	44.884	19.670	99.450	48.880

Notes:

⁽¹⁾: Maximum effluent limits per PADEP Temporary Discharge Request - Extension (December 28, 2022).

Results from the shallow (HA-EW-1S), first intermediate (HA-EW-1I), second intermediate (HA-EW-2I), and combined (HA-CombinedINF) influent locations are not validated.

Bold value indicates result is above applicable maximum effluent limit.

PADEP: Pennsylvania Department of Environmental Protection.

µg/L: Micrograms per liter (also referred to as parts per billion [ppb]).

D: Dilution Run. Initial run outside the initial calibration range of the instrument.

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		150			
Sample ID		HA-EW-1S-20230110	HA-EW-1I-20230110	HA-EW-2I-20230110	HA-CombinedINF-20230110
Sample Date		1/10/2023	1/10/2023	1/10/2023	1/10/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.761 D	2.410 D	2.940 D	1.980 D
Perfluorooctanesulfonic acid (PFOS)	NA	35.100 D	11.200 D	43.900 D	33.000 D
PFOA + PFOS	0.07	35.861	13.610	46.840	34.980

Notes:

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		150			
Sample ID		HA-EW-1S-20230116	HA-EW-1I-20230116	HA-EW-2I-20230116	HA-CombinedINF-20230116
Sample Date		1/16/2023	1/16/2023	1/16/2023	1/16/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	1.020	2.420 D	2.180 D	1.860 D
Perfluorooctanesulfonic acid (PFOS)	NA	55.700 D	9.470 D	43.200 D	34.600 D
PFOA + PFOS	0.07	56.720	11.890	45.380	36.460

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Hangar 680 PFAS Pilot Test
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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		151			
Sample ID		HA-EW-1S-20230123	HA-EW-1I-20230123	HA-EW-2I-20230123	HA-CombinedINF-20230123
Sample Date		1/23/2023	1/23/2023	1/23/2023	1/23/2023
Units		µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.649 D	2.580 D	2.560 D	2.050 D
Perfluorooctanesulfonic acid (PFOS)	NA	46.100 D	14.500 D	60.600 D	41.000 D
PFOA + PFOS	0.07	46.749	17.080	63.160	43.050

Notes:

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		152			
Sample ID		HA-EW-1S-20230123	HA-EW-1I-20230123	HA-EW-2I-20230123	HA-CombinedINF-20230123
Sample Date		1/30/2023	1/30/2023	1/30/2023	1/30/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.472	2.520 D	2.550 D	1.880 D
Perfluorooctanesulfonic acid (PFOS)	NA	35.400 D	14.900 D	60.700 D	38.700 D
PFOA + PFOS	0.07	35.872	17.420	63.250	40.580

Notes:

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**Table 2: NPDES Permit Equivalency Effluent Sample Results from January 1, 2023 through January 31, 2023
Hangar 680 PFAS Pilot Test
Former Naval Air Station Joint Reserve Base Willow Grove**

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample					
		Effluent		Effluent Field Duplicate		Field Blank	
Operation Week		149					
Sample ID		HA-GEFF-20230104		HA-DUP153-20230104		HA-FB-20230104	
Sample Date		1/4/2023		1/4/2023		1/4/2023	
Units		µg/L		µg/L		µg/L	
Perfluorooctanoic acid (PFOA)	NA	0.00220	U	0.00222	U	0.00246	U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00220	U	0.00222	U	0.00246	U
PFOA + PFOS	0.07	ND		ND		ND	

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample					
		Effluent		Effluent Field Duplicate		Trip Blank	
Operation Week		149					
Sample ID		HA-GEFF-20230104		HA-DUP153-20230104		HA-TB-20230104	
Sample Date		1/4/2023		1/4/2023		1/4/2023	
Units		µg/L		µg/L		µg/L	
Tetrachloroethylene (PCE)	0.69	0.2	U *	0.2	U	0.2	U
Trichloroethylene (TCE)	2.5	0.2	U *	0.2	U	0.2	U
Carbon Tetrachloride	0.23	0.2	U *	0.2	U	0.2	U
1,2-Dichloroethane	0.38	0.2	U *	0.2	U	0.2	U
Lead (total)	3.2	0.70	U	0.70	U	--	

Notes:

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Effluent and effluent field duplicate results have not yet been validated.

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		150		
Sample ID		HA-GEFF-20230110	HA-DUP-154-20230110	HA-FB-20230110
Sample Date		1/10/2023	1/10/2023	1/10/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00233 U	0.00222 U	0.00241 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00233 U	0.00222 U	0.00241 U
PFOA + PFOS	0.07	ND	ND	ND

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		150		
Sample ID		HA-GEFF-20230110	HA-DUP-154-20230110	HA-TB-20230110
Sample Date		1/10/2023	1/10/2023	1/10/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)	0.69	--	--	--
Trichloroethylene (TCE)	2.5	--	--	--
Carbon Tetrachloride	0.23	--	--	--
1,2-Dichloroethane	0.38	--	--	--
Lead (total)	3.2	--	--	--

Notes:

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		151		
Sample ID		HA-GEFF-20230116	HA-DUP-155-20230116	HA-FB-20230116
Sample Date		1/16/2023	1/16/2023	1/16/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00233 U	0.00237 U	0.00243 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00233 U	0.00237 U	0.00243 U
PFOA + PFOS	0.07	ND	ND	ND

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		151		
Sample ID		HA-GEFF-20230116	HA-DUP-155-20230116	HA-TB-20230116
Sample Date		1/16/2023	1/16/2023	1/16/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)	0.69	--	--	--
Trichloroethylene (TCE)	2.5	--	--	--
Carbon Tetrachloride	0.23	--	--	--
1,2-Dichloroethane	0.38	--	--	--
Lead (total)	3.2	--	--	--

Notes:

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		152		
Sample ID		HA-GEFF-20230123	HA-DUP-156-20230123	HA-FB-20230123
Sample Date		1/23/2023	1/23/2023	1/23/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00219 U	0.00222 U	0.00252 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00219 U	0.00222 U	0.00252 U
PFOA + PFOS	0.07	ND	ND	ND

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		152		
Sample ID		HA-GEFF-20230123	HA-DUP-156-20230123	HA-TB-20230123
Sample Date		1/23/2023	1/23/2023	1/23/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)	0.69	--	--	--
Trichloroethylene (TCE)	2.5	--	--	--
Carbon Tetrachloride	0.23	--	--	--
1,2-Dichloroethane	0.38	--	--	--
Lead (total)	3.2	--	--	--

Notes:

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		153		
Sample ID		HA-GEFF-20230130	HA-DUP-157-20230130	HA-FB-20230130
Sample Date		1/30/2023	1/30/2023	1/30/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00227 U	0.00231 U	0.00247 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00227 U	0.00231 U	0.00247 U
PFOA + PFOS	0.07	ND	ND	ND

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		153		
Sample ID		HA-GEFF-20230130	HA-DUP-157-20230130	HA-TB-20230130
Sample Date		1/30/2023	1/30/2023	1/30/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)	0.69	--	--	--
Trichloroethylene (TCE)	2.5	--	--	--
Carbon Tetrachloride	0.23	--	--	--
1,2-Dichloroethane	0.38	--	--	--
Lead (total)	3.2	--	--	--

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