



PHIL-27894

January 22, 2024

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 - December 1 to December 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. Magge:

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 December 1 to December 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 September 5, 2020, January 27, 2021, July 23, 2021, January 13, 2022, July 1, 2022 (modified on September 12, 2022), December 28, 2022, and June 14, 2023. PADEP approved a request to extend the permit equivalency duration for 180 more days on December 22, 2023. In addition to previous sampled parameters, the Navy began sampling for perfluorobutanoic acid (PFBA) on June 26, 2023.

Full-time operation of the Hangar 680 PFAS pilot test system was initiated on March 2, 2020. A total of 34,475,903 gallons of water have been treated and discharged to Outfall 8 as of December 27, 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 on December 5 and December 19, 2023. These samples were collected from shallow extraction well HA-EW-1S (however, this well was offline on December 19 and did not have a sample collected that day), the first intermediate extraction well HA-EW-11, the second intermediate extraction well HA-EW-21, 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 this reporting period, the first intermediate extraction well, HA-EW-11, was operated at approximately 6.1 gpm and the second intermediate extraction well, HA-EW-21, was operated at approximately 7.2 gpm. The first shallow extraction well, HA-EW-1S, was operated at approximately 5.0 gallons per minute (gpm), but following the December 5 sampling, the pressure sensor malfunctioned and the pump went offline; therefore, there is no influent data from this well on December 19.

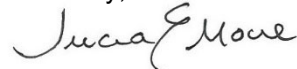
- Effluent samples were collected on December 5 and December 19, 2023, and analyzed for PFAS, specifically PFOA and PFOS. Effluent samples for tetrachloroethene (PCE), trichloroethene (TCE), carbon tetrachloride (CTC), 1,2-dichloroethane (1,2-DCA), and total lead also were collected on December 5, 2023. All effluent analytical sample results for this reporting period are provided in Table 2. Field blank QA/QC samples were collected on December 5 and December 19, 2023. During this reporting period, the system discharge was approximately 13.7 gpm.
- Trip blank QA/QC samples were collected on December 5, 2023. These samples were analyzed for PCE, TCE, CTC, and 1,2-DCA. The results are provided in Table 2.
- Per the December 22, 2023 permit equivalency extension, biweekly monitoring of PFOA and PFOS shall be conducted at discharge sampling port HA-Mid2IX to determine if maintenance actions are needed. Although the effluent results are below the temporary discharge limit of 0.07 µg/L for PFOA+PFOS, the concentration of PFOS was at the PADEP MCL of 0.018 µg/L for the December 5, 2023 sampling, and above the PADEP MCL (0.029 µg/L) for the December 19, 2023 sampling. Due to these observations, the Navy will conduct a media changeout of both the granular activated carbon (GAC) and ion exchange resin (IXR) in mid-February 2024.
- During the previous reporting period (November 2023), an anomalous PFOS value was observed in the effluent duplicate sample collected on November 20, 2023, which was not supported by the non-detect PFOS concentration for the parent sample concentration. The laboratory re-extracted and re-analyzed both samples, and the second set of concentrations of parent and duplicate samples more closely matched.

The aqueous IDW treatment system was not operated during this reporting period; therefore, there are no discharge results to report.

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 continue to 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

TEM/nfs

Attachments:

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

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

c: Brian Helland (Navy BRAC PMOE)  
Dawn DeFreitas (Navy BRAC PMOE)  
Jon Harris (Navy BRAC PMOE)  
Colin Wade (PADEP)  
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## **TABLES**

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

Parameter	Maximum Effluent Limit <sup>(1)</sup>	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent - 2	Combined Influent
Operation Week		197			
Sample ID		HA-EW-1S-20231205	HA-EW-1I-20231205	HA-EW-2I-20231205	HA-CombinedINF-20231205
Sample Date		12/5/2023	12/5/2023	12/5/2023	12/5/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.441	2.300 D	2.220 D	1.360 D
Perfluorooctanesulfonic acid (PFOS)	NA	26.500 D	7.030 D	45.100 D	19.600 D
PFOA + PFOS	0.07	<b>26.941</b>	<b>9.330</b>	<b>47.320</b>	<b>20.960</b>

Notes:

<sup>(1)</sup>: Maximum effluent limits per PADEP Temporary Discharge Request - Extension (December 22, 2023).

**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]).

--: Not sampled.

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

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

Parameter	Maximum Effluent Limit <sup>(1)</sup>	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent - 2	Combined Influent
Operation Week		199			
Sample ID		HA-EW-1S-20231219	HA-EW-1I-20231219	HA-EW-2I-20231219	HA-CombinedINF-20231219
Sample Date		12/19/2023	12/19/2023	12/19/2023	12/19/2023
Units		µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	--	2.690 D	2.390 D	2.460 D
Perfluorooctanesulfonic acid (PFOS)	NA	--	11.000 D	49.200 D	26.600 D
PFOA + PFOS	0.07	--	<b>13.690</b>	<b>51.590</b>	<b>29.060</b>

Notes:

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

--: Not sampled.

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

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

Parameter	Maximum Effluent Limit <sup>(1)</sup>	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		197		
Sample ID		HA-GEFF-20231205	HA-DUP-189-20231205	HA-FB-20231205
Sample Date		12/5/2023	12/5/2023	12/5/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)		NA	0.00227 U	0.00232 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.01790	0.01850	0.00253 U
PFOA + PFOS	0.07	0.01790	0.01850	ND

Parameter	Maximum Effluent Limit <sup>(1)</sup>	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		197		
Sample ID		HA-GEFF-20231205	HA-DUP-189-20231205	HA-TB-20231205
Sample Date		12/5/2023	12/5/2023	12/5/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)		0.69	0.20 U	0.2 U
Trichloroethylene (TCE)	2.5	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	0.23	0.11 J	0.11 J	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:

<sup>(1)</sup>: Maximum effluent limits per PADEP Temporary Discharge Request - Extension (December 22, 2023).

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

**Bold value indicates result is above applicable maximum effluent limit.**

Quality assurance/quality control sample (field blank and trip blank) results are not validated.

PADEP: Pennsylvania Department of Environmental Protection

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

NA: Not applicable.

U: Analyte not detected (lab qualifier). Value reported to limit of detection.

ND: Not detected.

J: Estimated (lab qualifier). The analyte was positively identified; the quantitation is an estimation.

--: Not sampled.

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

Parameter	Maximum Effluent Limit <sup>(1)</sup>	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		199		
Sample ID		HA-GEFF-20231219	HA_DUP-190-20231219	HA-FB-20231219
Sample Date		12/19/2023	12/19/2023	12/19/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00219 U	0.00244 U	0.00228 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.02900	0.03080	0.00228 U
PFOA + PFOS	0.07	0.02900	0.03080	ND

Parameter	Maximum Effluent Limit <sup>(1)</sup>	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		199		
Sample ID		HA-GEFF-20231219	HA_DUP-190-20231219	--
Sample Date		12/19/2023	12/19/2023	12/19/2023
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:

<sup>(1)</sup>: Maximum effluent limits per PADEP Temporary Discharge Request - Extension (December 22, 2023).

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

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