

# TETRA TECH

#### Per- and Polyfluoroalkyl Site Inspection

#### Cheatham Annex – NWS Yorktown

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- Building CAD 119–Fire Station No. 15 was built in 1943.
- Historically, AFFF was stored at the fire station and on the fire trucks. Storage of 45 gallons of AFFF was reported in the Navy's hazardous materials inventory for CAD 119.
- In 2016, all reserve inventory of AFFF concentrate stored at Building CAD 119 was removed from CAX and transported to Naval Station Norfolk, Virginia.
- Fire trucks with foam capabilities are the only locations where AFFF is currently stored at CAX.
- There is no record of PFAS release at CAD 119.

## Site Background





## Field Investigation Summary



- 6 surface and 6 subsurface soil samples were collected at the potential PFAS release area.
  - Surface soil samples were collected from 0 to 2 feet bgs. Subsurface soil samples were collected from the 13- to 15-feet bgs depth interval, which was the 2-foot interval above the first water bearing zone.
- Soil samples were analyzed for the 18 PFAS compounds listed in the USEPA drinking water method (Method 537.1)
- Six new monitoring wells were installed the potential PFAS release area (CAD119-MW01 to CAD-119-MW06)
  - 5 wells installed to 25 feet and 1 well installed to 20 feet (CAD119-MW06)
  - The well screens consist of 10 feet of 2-inch inner diameter
- Groundwater samples were analyzed for the 18 PFAS compounds listed in the USEPA drinking water method (Method 537.1)

## Field Investigation Summary







Analyte	Soil PSL (µg/kg)	Groundwater PSL (ng/L)
PFOA	19	6
PFOS	13	4
PFBS	1,900	600
PFHxS	130	39
PFNA	19	5.9
HFPO-DA	23	6
PFHxA	3,200	990

The available medium-specific PSLs used to screen PFAS concentrations detected during this SI, based on the risk-based RSLs at a hazard quotient of 0.1 are summarized below.

## Field Investigation Results - Soil



- PFOA was detected in surface (one sample) and subsurface soil (three samples) at concentrations below the PSL of 19 µg/kg.
- PFOS was detected in surface (six samples and a duplicate) and subsurface soil (four samples and a duplicate).
  - Exceedances of the PFOS PSL (13 μg/kg) were at three of the soil sample locations with concentrations ranging from 17.2 μg/kg (CAD119-SS04) to 299 μg/kg (CAD119-SB05).
- PFBS was detected in one subsurface soil sample at a concentration below the PSL of 1,900 µg/kg.
- PFHxS was detected in surface (four samples and a duplicate) and subsurface soil (three samples) at concentrations below the PSL of 130 µg/kg.
- PFNA was detected in one surface soil sample at a concentration below the PSL of 19 μg/kg.
- PFHxA was detected in seven soil samples, but concentrations did not exceed the PSL of 3,200 µg/kg.
- HFPO-DA was not detected in any of the soil samples.

#### Field Investigation Results – Soil

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Legend		CAD 119-SS/SB0	3 12/1/2022				80	reening C	riteria
Soil Boring	The second second	PFAS (µg/kg)	0-2 13-15	Sample I	D CAD 119-SS/SBI	04 12/1/2022 Date 0-2 13-15 Date			SL (µg/kg)
Potential PFAS Release Area		PFOA	0.50 U 0.24 J	Results -	PFOA PFOS	0.346 J 0.877 J Sam	1.	FOA	19
Installation Boundary	Charles /		23.30 J- 28.20	13/10	PFBS	0.5 U 0.5 U Dep	th PF	OS	13
bgs - Below ground surface	60	PFBS	0.50 U 0.50 U		PFHxS	0.461 J 4.07 (fee 0.228 J 0.5 U	t hac)	BS	1900
DUP - Duplicate sample collected I - The result is an estimated value	1 Level and the second	PFHxS	0.92 J 2.03	1	HEPO-DA	0.5 U 0.5 U	PF	FHxS	130
IThe result is an estimated value, biased low J-The analyte was analyzed for, but was not detected	Cold Store of Sta	PFNA	0.50 U 0.50 U	THE	THE THERE	AND AND AND AND	PF	-NA	19
at a level greater than or equal to the level of the adjusted detection limit.	Gor	HFPO-DA	0.50 U 0.50 U	9	1	1010 10101	H	PO-DA	23
ig/kg - micrograms per kilogram PFAS - Per- and polyfuoroakyl substances	1 / Jacks W	PFHxA	0.24 J 0.32 J	Sales -	100	the seat of the	PF	FHxA	3200
FPO-DA: Hexafluoropropylene oxide dimer acid		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	14	Call Street			123	01110000	Teles Co.
PEBA: Perfluorobutanoic acid PEBS: Perfluorobutanesulfonic acid	A Martin					CAD119-SS/SE	1000	2/1/2022	a state
FHxS: Perfluoronexanesulfonic acid FNA: Perfluorononanoic acid		1	1 Start			PFAS (µg/kg)	0-2	13-15	A Cast
PFOA: Perfluorooctanoic acid PFOS: Perfluorooctanesulfonic acid	L -		1-		2 11	PFOA	0.35 J	0.88 J	States 1
FHxA: Perfluorohexanoic Acid			11-	the second second	the second	PFOS	17.20 J	131	14 100
olded results indicate a detection.		5 1	C. C. A. S. C.		A CONTRACTOR	PFBS	0.50 U	0.50 U	No walk
old circle an exceedance of the oject screening level (PSL).						PFHxS	0.46 J 0.23 J	4.07 0.50 U	S.F. Str
FBA was not included in the list of 18 compounds analyzed						HEPO-DA	0.23 J	0.50 U	A. Burg
uring this SI; therefore, this PFAS compound is not evaluated gainst the available PSL.		-	1 Carton			PFHxA	0.40 J	0.32 J	Charles and
uman health PSL values are based on United States	1		the law second					0.32 J	
nvironmental Protection Agency (USEPA)			and freedom			CAD119-SS/SB	and the second se	10.15	12/1/2022
Regional Screening Level (RSL) calculations (USEPA, 2023).		1. 2. 10	H. L			PFAS (µg/kg)	0-2	13-15	13-15 (DUP)
Esri Aerial Imagery captured July 2020 Spatial Reference: NAD 1983 (2011) State Plane		1 1 1 2				PFOA PFOS	0.50 U	4.83 299 J	2.38 83.60 J
irginia South FIPS 4502 (US Feet)	1		Carlos 17	Share -		IPFBS	44.10 0.50 U	0.55 J	Contraction of the local division of the loc
CAD119-SS/SB01 12/2/2022			Call of All	Carlos and		PEHXS	1.05	0.55 J	0.30 J 9.20 J
			All and a	Car and the		PENA	0.50 U	0.50 U	0.50 U
PFAS (µg/kg) 0-2 13-15 PFOA 0.50 U 0.51 U		9/	a the			HFPO-DA	0.50 U	0.50 U	0.50 U
PFOS 1.20 0.51 U					1 434	PFHxA	0.24 J	1.28	0.92 J
PFBS 0.50 U 0.51 U		1 and	CAD119-SS/SB	06	12/1/2022	111001	AN OWNER		CICL C
PFHxS 0.50 U 0.51 U	le la cler	/	PFAS (µg/kg)	0-2 0-2 (D		Carlos Carlos	C. C. C. C.	State 1	19.510.5
PFNA 0.50 U 0.51 U	BLDG CAD 119 Fire	Station No. 15	PFOA		0U 0.50U	CONSISTING &	2. CAL	Chille -	A BARK
HFPO-DA 0.50 U 0.51 U		A Station	PFOS	6.56 J- 6.4		Stan La Stat	COMP.	AL COM	settors
PFHxA 0.50 U 0.51 U	A share the state of the state	A SHEER SHEER	PFBS	0.50 U 0.5		Contraction of the	S BOAR	the Cree	Carlow C
8	and the state of t	AU CONTRACT	PFHxS	0.30 J 0.4	6 J 0.50 U	ALL AND ALL AN	6. 51.2	Carlos Carlos	2004
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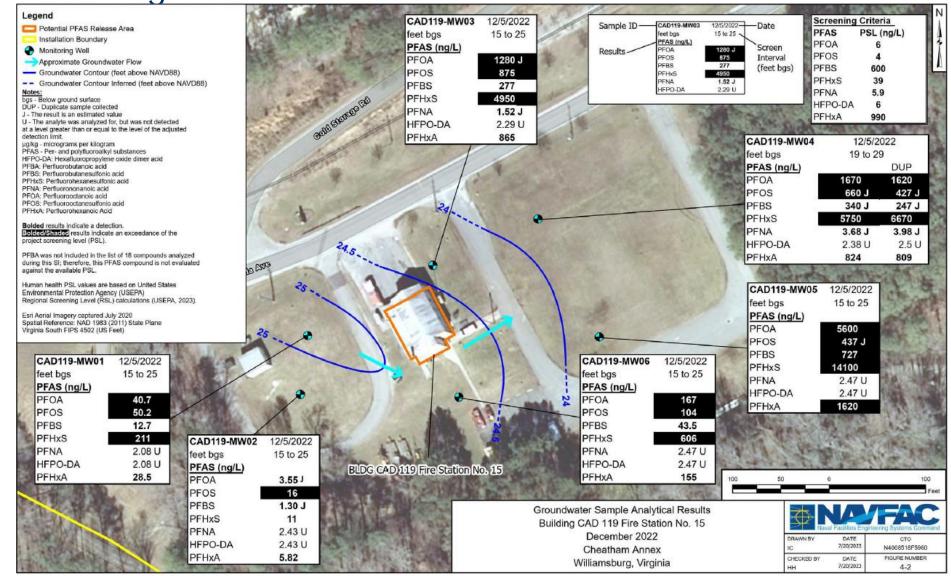
## Field Investigation Results - Groundwater



- PFOA exceeded the PSL of 6 ng/L at five of the six sample locations with concentrations ranging from 40.7 ng/L (CAD119-MW01) to 5,600 ng/L (CAD119-MW05).
- PFOS exceeded the PSL of 4 ng/L at all sample locations with concentrations ranging from 16 ng/L (CAD119-MW02) to 875 ng/L (CAD119-MW03).
- PFBS exceeded the PSL of 600 ng/L at one sample location with a concentration of 727 ng/L (CAD119-MW05).
- PFHxS exceeded the PSLs of 39 ng/L at 5 of the 6 sample locations with concentrations ranging from 211 ng/L (CAD119-MW01) to 14,100 ng/L (CAD119-MW05).
- PFHxA exceeded the PSL of 990 ng/L in one sample location (CAD119-MW05) with a concentration of 1,620 ng/L.
- PFNA was detected but did not exceed the PSL of 5.9 ng/L in any of the groundwater samples.
- HFPO-DA was not detected in any of the groundwater samples.

#### Field Investigation Results – Groundwater

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## Conclusions



#### **RI** is recommended

 Per the Decision Rule #1 if PFAS are present at levels greater than PSLs and the CSM indicates a significant site-related release in which unacceptable risks are probable, additional investigation will be recommended in the form of an RI.

#### Off-based drinking water investigation is not warranted

 Per Decision Rule #2 if the concentrations of applicable PFAS in groundwater are greater than the 2016 USEPA drinking water lifetime health advisories and refinement of groundwater flow confirms that the off-base drinking water wells are located in the downgradient direction, the Navy will evaluate whether an off-base drinking water investigation is warranted. There are no water supply wells located within 1 mile downgradient of CAD 119.