LETTER WORK PLAN
2020 PER- AND POLYFLUOROALKYL SUBSTANCES

REMEDIAL INVESTIGATION

SITE 2 – FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK

Introduction

The Navy is conducting a Remedial Investigation (RI) to evaluate the extent of per- and polyfluoroalkyl substances (PFAS) in soil and groundwater at Site 2 – Former Fire Training Area at Naval Weapons Industrial Reserve Plant (NWIRP) Calverton, New York (Figure 1). Surface water, sediment, and drinking water will also be evaluated during this RI. This letter work plan was prepared by Tetra Tech, Inc. (Tetra Tech) under the Naval Facilities Engineering Command (NAVFAC) Atlantic Comprehensive Long-Term Environmental Action Navy (CLEAN) under Contract Number N62470-16-D-9008 Task Order N4008520F5104.

History

The Former Fire Training Area was used by Northrop Grumman and Navy crash rescue crews as a training area since 1955, and possibly as early as 1952. In 1982 and 1983, two spills of waste oil were reported at the Former Fire Training Area. As a result of these two spills, the entire Former Fire Training Area was upgraded with a concrete fire burn ring with spill protection designed to reduce the potential for release of organic solvents and fuels to the environment. Prior to the upgrades, activities at the Former Fire Training Area consisted of clearing an area up to 100 feet or more in diameter and enclosing it with an earthen berm. A layer of water was then placed within the bermed area. Waste fuels, oils, and waste solvents (including heating fuels that contained polychlorinated biphenyls [PCBs]) were floated on the water, ignited, and then extinguished. Aqueous Fire Fighting Foam (AFFF), Halon 1301 (a gas), and dry chemical extinguishers were used to extinguish the flames (NEESA 1986). AFFF used at military installations after the 1970s likely included some combination of PFAS. In 1996, fire training activities at the site ceased.

Current Conditions

The Site 2 clearing (where fire training exercises were conducted) has been excavated, regraded, and backfilled with imported backfill and topsoil. A groundwater monitoring well network is currently in place to monitor the migration and attenuation of volatile organic compounds (VOCs) in groundwater that resulted in the release of solvents at the Site (Figure 2). Groundwater flow at Site 2 is toward the southeast, with elevations ranging from 30 to 38 feet above mean sea level. Wetlands and surface water are not present at Site 2, but Swan Pond is located hydraulically downgradient of the site. Swan Pond drains to the Peconic River. McKay Lake is located on former NWIRP property to the east of Site 2 and discharges to Swan

Pond. McKay Lake receives storm water from the former facility and wastewater from Calverton Sewer District.

One residential drinking water well is located off-property and south of Site 2 and Swan Pond. A residential area that rely on groundwater as a source of drinking water is located to the west of the drainage pathway from Swan Pond to the Peconic River.

Previous Investigations

In 2016, the Navy conducted an initial Site Investigation for PFAS at Site 2. The residential drinking water well south of Site 2 as well as six groundwater monitoring wells were tested for PFAS. The results for the sample collected at the residential drinking water well were less than the Environmental Protection Agency (EPA) lifetime health advisory level. The residential well was sampled quarterly for a year and results for each of these samples were non-detect. Results for the groundwater samples collected from five of the six monitoring wells exceeded the calculated EPA risk screening level (RSL).

In 2017, the Navy began a PFAS Site Inspection (SI) at Site 2. The SI consisted of the collection of surface and subsurface soil, groundwater grab sampling from vertical profile borings (VPBs), groundwater sampling from existing monitoring wells, surface water sampling at McKay Lake and Swan Pond, and a drinking water sample from the private well. PFAS was present in surface and subsurface soil with the maximum detections located within the area of the former concrete burn ring. Results for PFOA and PFOS in groundwater sampled in the area of the former concrete burn ring and downgradient at the property boundary (FT-MW08S and FT-MW08I) exceeded the calculated EPA RSL.

PFOA and PFOS concentrations in groundwater at the western portion of the site and property boundary are below the calculated EPA RSL. The western portion of Site 2 along River Road and south of Swan Pond, two groundwater grab samples (FT-TW616 and FT-TW618) had detections of PFOA and PFOS that exceed the calculated EPA RSL. Further downgradient near Donahue pond, one detection of PFOA in an existing off property monitoring well (FT-PZ460I) exceeded the calculated EPA RSL. PFAS were also detected in surface water samples collected from Swan Pond and McKay Lake. PFOA and PFOS was not detected in the sample collected at the residential drinking water well.

2020 Remedial Investigation

Due to the presence of PFOA and PFOS at concentrations above the calculated EPA RSL in groundwater, an RI is warranted for Site 2. The objectives of this phase of the RI at Site 2 are as follows:

- Evaluate the extent of the PFAS release in subsurface soil on property.
- Evaluate the horizontal and vertical extent of PFAS impacted groundwater downgradient of Site 2 and downgradient of the drainage pathway from Swan Pond to the Peconic River.
- Supplement the existing monitoring well network to evaluate known PFAS releases flowing off property and to further evaluate groundwater flow throughout the study area.

- Evaluate whether surface water and sediment in Swan Pond has been impacted by groundwater from Site 2 or discharges from McKay Lake.
- Evaluate selected drinking water wells for PFAS and if present, evaluate whether concentrations are greater than the EPA lifetime health advisory.

To achieve the objectives, this Work Plan includes the collection of soil from macrocores, installation of VPBs (groundwater grab sampling), the installation of piezometers and the collection of groundwater samples and water levels from these wells, collection of surface water and sediment from Swan Pond and McKay Lake, and collection of drinking water from four residential wells. Soil and groundwater samples will be analyzed for the 25 PFAS compounds as indicated on Table 1 by Battelle Analytical Chemistry Services, which is approved under the Department of Defense Environmental Laboratory Accreditation Program and under the New York State Department of Health Environmental Laboratory Approval Program. Drinking water samples will be analyzed for 18 PFAS compounds as indicated in the Method 537.1 compound list on Table 1. Sample details and nomenclature for soil, groundwater grab samples from VPBs, groundwater samples from piezometers, surface water, and sediment samples are presented in Tables 2 through 7. The proposed sampling locations for soil and groundwater are on figures 3 through 6.

Soil Borings (Macrocore Collection)

Direct Push Technology (DPT) will be used to collect continuous macrocores to the clay layer to characterize soil lithology. Continuous macrocores will be collected at each piezometer location and at three VPBs unless field observations (e.g. change in elevation) indicate a need for additional macrocores. Lithology from these soil borings will be used to determine the depth of the water table and clay layer, and actual depths of the groundwater grab samples and screen of the piezometers. DPT will also be used to collected continuous macrocores to the water table so that soil samples can be obtained for PFAS analysis (Figure 3). Soil samples will be collected at depths as indicated on Table 2. Waste soil cuttings will be placed back into the soil boring as practical or containerized as investigation derived waste (IDW).

Vertical Profile Borings (Groundwater Grab Sampling) and Analysis

VPBs will be installed via DPT downgradient of the eastern portion of Site 2 and the drainage pathway from Swan Pond to the Peconic River. VPBs will be installed at existing monitoring wells FT-PZ460I, FT-PZ46I, and FT-PZ464I, and FT-PZ464S to determine whether the existing wells are screened at a depth suitable to evaluate PFAS in groundwater. The sample nomenclature and estimated depths of the VPB is summarized on Table 3. VPB locations are presented on Figures 4.

At each VPB, groundwater grab samples will be collected from temporarily screened well points. The initial groundwater grab samples will be collected at the water table, estimated to occur 10 to 15 feet below ground surface (bgs). Groundwater grab samples will then be collected from 5-foot screens at 10-foot intervals to the first clay layer (estimated to be at approximately 60 feet bgs). A peristaltic pump with high-density

polyethylene tubing will be used to purge the screen and provide the sample volume. Wells will be purged to reduce or eliminate turbidity as practical.

Monitoring Well and Piezometer Installation and Development

In 2020, five monitoring wells on property at Site 2 and 12 piezometers off property along River Road and Line Road will be installed to supplement the existing monitoring well network. The estimated depths and screen depths of the monitoring wells and piezometers are summarized on Table 4. The location of the proposed monitoring wells and piezometers are presented on Figure 5.

The five on property monitoring wells well be constructed with 2-inch diameter PVC, with a 10-foot length and 0.010-inch factory slotted screen. The 12 off property piezometers will be constructed with 1-inch diameter polyvinyl chloride (PVC) with a 10-foot length and 0.010-inch factory slotted screen. A No. 1 certified clean sand pack will extend from the bottom of the boring to approximately two feet above the top of the screen. Two feet of bentonite pellets will be placed above the sand pack and allowed to hydrate. A pre-packed sand pack and bentonite seal may also be used. A cement-bentonite grout will then be tremied into the annular space to near the ground surface. All piezometers and monitoring wells will be completed with a stick-up well protective steel casing. The top of the PVC casing will be secured with a lockable, watertight cap or plug. Soil generated from the installation of piezometers and monitoring wells will either be placed back into the boring and/or containerized in 55-gallon drums and transferred to the staging area for characterization, transportation and disposal.

The piezometers and monitoring wells will be developed by surging and pumping. During development, wellhead parameters will be measured and recorded on a log, initially and for each well volume removed. Development will continue until parameter readings do not vary by more than 10 percent, or for a maximum of two hours. Turbidity values will be measured during development to achieve a value of less than 10 Nephelometric Turbidity Units (NTUs), if feasible within the development time. Development water will be managed as IDW.

Groundwater, Surface Water, and Sediment Sampling and Analysis

Groundwater samples and water level measurements will be collected from new and existing monitoring wells and piezometers during two events. Surface water and sediment samples will also be collected from Swan Pond, McKay Lake, and Donahue Pond during these events. The list of locations selected for water level collection and sample and analysis for PFAS are presented on Table 5 and the sampling locations are presented on Figure 5.

A peristaltic or submersible pump (contingent on depth to groundwater) with high density polyethylene tubing will be used for purging and collection activities, in combination with a continuous flow-through cell suitable for taking water quality measurements. Turbidity measurements will be made using a separate

field turbidity meter specifically designated to measure only turbidity. Depending on the groundwater parameters, two to five screen volumes may be purged.

McKay Lake Investigation

It is currently unknown if surface water in Swan Pond has been impacted with PFAS from release at Site 2 or from an upgradient source by way of discharge from McKay Lake. McKay Lake has six inlets and one outlet that drains to Swan Pond (Figure 6). One (Inlet 01 on figure 6) of the six inlets to McKay Lake receives wastewater from Calverton Sewer District and the remaining five inlets receives storm water from the former facility.

Discharge samples will be collected from each inlet with flow and a surface water sample will be collect at the outlet during a rain and non-rain event over four quarters. The inlet sample bottles will be filled directly from the inlets. If the inlet does not contain flowing water, it will be noted, and no sample will be collected. The surface water sample bottles, collected at the outlet location, will be filled by directly dipping them into the water in front of the outlet. Water quality measurements will be collected prior to the collection of each sample.

Drinking Water Sample and Analysis

Drinking water samples will be collected from the residential well south of Swan Pond and three residential wells that are in proximity to the drainage pathway from Swan Pond and the Peconic River. The sample nomenclature is presented on Table 7. The water will be run for 5 minutes, or until stabilization parameters are within limits, from the sampling point closest to the water's point of origin (e.g., well, spigot or tap) to collect a representative sample. When filling sample containers, the water stream will be reduced.

Quality Control Samples

Quality assurance (QA) and quality control (QC) samples will be collected for soil, groundwater, surface water, sediment, and drinking water. Duplicate samples will be collected at a rate of 1 per 10 samples. Matrix spike and matrix spike duplicate (MS/MSD) samples (i.e., triple volume) will be collected at a rate of 1 per 20 samples. An equipment blank will be collected once a week that samples are collected with reusable equipment. A field reagent blank, using PFAS-free water supplied by the laboratory, will be collected once per day that groundwater samples are collected.

Equipment Decontamination

Decontamination of reusable sampling equipment will consist of washing using a non-phosphate detergent followed by a PFAS-free water rinse. IDW will be captured, containerized and stored at the Site 6A staging area.

Waste Management

IDW will include soil cuttings, water from well development and purge, and equipment decontamination fluids. Waste soil cuttings will be containerized and characterized for off-property disposal. Water from wells and equipment decontamination fluids will be transported to the staging area at Site 6A, treated with granular activated carbon to remove PFAS, and placed in the existing tank or 55-gallons drums. Waste profiling will be performed prior to proper transportation and offsite disposal. It is anticipated that all waste generated will be non-hazardous.

The granular activated carbon will be retained at the Site 6A staging area for use during subsequent events. Effluent samples from the carbon will be collected for every 5,000 gallons of water treated and at the end of each sample event to evaluate remaining capacity of the carbon for treating PFAS. The carbon will be disposed offsite.

Reporting

The work performed in 2020 is a continuation of the PFAS investigation and additional investigations will most likely be required to complete the RI. Results from the 2020 sampling will be presented in an interim Data Summary Report and later incorporated in an RI Report.

Tables

TABLE 1
ANALYTE LIST
2020 PER- AND POLYFLUOROALKYL SUBSTANCES
SITE 2 - FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLAN, CALVERTON, NEW YORK

Chemical Name[(1)]	Acronym	CAS Number	Method 537.1 Compound List	New York State Compound List
Perfluorobutanesulfonic acid	PFBS	375-73-5	X	X
Perfluorohexanesulfonic acid	PFHxS	355-46-4	X	X
Perfluoroheptanesulfonic acid	PFHpS	375-92-8		X
Perfluorooctanessulfonic acid	PFOS	1763-23-1	X	X
Perfluorodecanesulfonic acid	PFDS	335-77-3		X
Perfluorobutanoic acid	PFBA	375-22-4		X
Perfluoropentanoic acid	PFPeA	2706-90-3		X
Perfluorohexanoic acid	PFHxA	307-24-4	X	X
Perfluoroheptanoic acid	PFHpA	375-85-9	X	X
Perfluorooctanoic acid	PFOA	335-67-1	X	X
Perfluorononanoic acid	PFNA	375-95-1	X	X
Perfluorodecanoic acid	PFDA	335-76-2	X	X
Perfluoroundecanoic acid	PFUA/ PFUdA	2058-94-8	X	X
Perfluorododecanoic acid	PFDoA	307-55-1	X	X
Perfluorotridecanoic acid	PFTriA/ PFTrDA	72629-94-8	X	X
Perfluorotetradecanoic acid	PFTA/ PFTeDA	376-06-7	X	X
6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2		X
8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4		X
Perfluroroctanesulfonamide	FOSA	754-91-6		X
N-methyl perfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9	X	X
N-ethyl perfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6	X	X
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6	X	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9	X	
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	756426-58-1	X	
4,8-dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4	X	

CAS- Chemical Abstract Service Number.

1. Groundwater samples will be analyzed for PFAS by Liquid chromatography with tandem mass spectrometry (LC/MS/MS) compliant with Quality System Manual (QSM) 5.1, Table B-15 (modification of Environmental Protection Agency [EPA] method 537). The list of analytes includes the 21 compounds from the New York State PFAS Target Analyte List and four additional compounds that are included under EPA Method 537.1.

TABLE 2
2020 PROPOSED SUBSURFACE SOIL SAMPLING LOCATIONS,
DEPTHS, AND NOMENCLATURE
SITE 2 - FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK

PROPOSED LOCATIONS	DEPTH INTERVAL (FEET BGS)	NOMENCLATURE
FT-SB801	XX-XX[1]	FT-SB801-XXXX
	18-20[2]	FT-SB801-1820
FT-SB802	XX-XX[1]	FT-SB802-XXXX
	18-20[2]	FT-SB802-1820
FT-SB803	XX-XX[1]	FT-SB803-XXXX
	18-20[2]	FT-SB803-1820
FT-SB804	XX-XX[1]	FT-SB804-XXXX
	18-20[2]	FT-SB804-1820
FT-SB805	XX-XX[1]	FT-SB805-XXXX
	18-20[2]	FT-SB805-1820
FT-SB806	XX-XX[1]	FT-SB806-XXXX
	18-20[2]	FT-SB806-1820
FT-SB807	XX-XX[1]	FT-SB807-XXXX
	18-20[2]	FT-SB807-1820
FT-SB808	XX-XX[1]	FT-SB808-XXXX
	18-20[2]	FT-SB808-1820
FT-SB809	XX-XX[1]	FT-SB809-XXXX
	18-20[2]	FT-SB809-1820
FT-SB810	XX-XX[1]	FT-SB810-XXXX
	18-20[2]	FT-SB810-1820
FT-SB811	XX-XX[1]	FT-SB811-XXXX
	18-20[2]	FT-SB811-1820
FT-SB812	XX-XX[1]	FT-SB812-XXXX
	18-20[2]	FT-SB812-1820
FT-SB813	XX-XX[1]	FT-SB813-XXXX
	18-20[2]	FT-SB813-1820
FT-SB814	XX-XX[1]	FT-SB814-XXXX
	18-20[2]	FT-SB814-1820
FT-SB815	XX-XX[1]	FT-SB815-XXXX
	18-20[2]	FT-SB815-1820
FT-SB816	XX-XX[1]	FT-SB816-XXXX
	18-20[2]	FT-SB816-1820
FT-SB817	XX-XX[1]	FT-SB817-XXXX
	18-20[2]	FT-SB817-1820
FT-SB818	XX-XX[1]	FT-SB818-XXXX
	18-20[2]	FT-SB818-1820
FT-SB819	XX-XX[1]	FT-SB819-XXXX
	18-20[2]	FT-SB819-1820
FT-SB820	XX-XX[1]	FT-SB820-XXXX
	18-20[2]	FT-SB820-1820
FT-SB821	XX-XX[1]	FT-SB821-XXXX
	18-20[2]	FT-SB821-1820
FT-SB822	XX-XX[1]	FT-SB822-XXXX
	18-20[2]	FT-SB822-1820
FT-SB823	XX-XX[1]	FT-SB823-XXXX
	18-20[2]	FT-SB823-1820

BGS - below ground surface.

XX-XX - depth interval in feet.

1. The subsurface soil sample will be collected from the depth interval corresponding to potential residual volatile orgranic compound contamination, which would be indicated by an elevated photoionization detector reading or visual observation of staining. In absence of evidence of contamination, a soil sample will be collected at a depth of where native soil is first observed (approximately 2 to 6 feet bgs).

2. The soil sample will be collected just above the water table, which is at approximately 18 to 20 feet bgs. The depth of the water table will be confirmed in the field.

TABLE 3
2020 PROPOSED VERTICAL PROFILE BORING LOCATIONS,
DEPTHS, AND NOMENCLATURE
SITE 2 - FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK

PROPOSED LOCATIONS		SAMPLE DEPTH (feet bgs)[1]			
Location	**Sample ID**	**10-15**	**25-30**	**40-45**	**55-60**
FT-TW624	FT-TW614-XXXX	X	X	X	X
FT-TW625	FT-TW615-XXXX	X	X	X	X
FT-TW626	FT-TW616-XXXX	X	X	X	X
FT-TW627	FT-TW617-XXXX	X	X	X	X
FT-TW628	FT-TW618-XXXX	X	X	X	X
FT-TW701	FT-TW701-XXXX	X	X	X	X
FT-TW702	FT-TW702-XXXX	X	X	X	X
FT-TW703	FT-TW703-XXXX	X	X	X	X
FT-TW704	FT-TW704-XXXX	X	X	X	X
FT-TW705	FT-TW705-XXXX	X	X	X	X
FT-TW706	FT-TW706-XXXX	X	X	X	X
FT-TW707	FT-TW707-XXXX	X	X	X	X
FT-TW708	FT-TW708-XXXX	X	X	X	X
FT-TW709	FT-TW709-XXXX	X	X	X	X

bgs - below ground surface.

XXXX - Depth of sample. Example - If groundwater was collected at FT-TW701 at a depth of 25 feet to 30 feet bgs, then the Sample ID would be FT-TW701-2530.

1. Grab samples will be collected beginning at the water table (approximately 10 to 15 feet bgs) then at every 10 feet until the first clay layer is reached (approximately 60 feet bgs).

TABLE 4
2020 PROPOSED MONITORING WELL AND PIEZOMETER LOCATIONS, DEPTHS, AND SCREEN INTERVALS
SITE 2 - FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK

PROPOSED LOCATIONS	DEPTH[1]		SCREEN INTERVAL[1]	
	feet bgs	feet msl	feet bgs	feet msl
On Property Monitoring Wells				
FT-MW05I1	45	3	35 to 45	13 to 3
FT-MW08D	58	-15	48 to 58	- 5 to -15
FT-MW11S	15	28	5 to 15	38 to 28
FT-MW11I	33	10	23 to 33	20 to 10
FT-MW11D	58	-15	48 to 58	- 5 to -15
Off Property Piezometers				
FT-PZ456I1	26	15	21 to 26	20 to 15
FT-PZ458I1	21	15	16 to 21	20 to 15
FT-PZ459I1	27	15	22 to 27	20 to 15
FT-PZ501S	15	36	5 to 15	45 to 35
FT-PZ501I	35	15	25 to 35	25 to 15
FT-PZ501D	60	-10	50 to 60	0 to -10
FT-PZ502S	15	30	5 to 15	40 to 30
FT-PZ502I	35	10	25 to 35	20 to 10
FT-PZ502D	60	-15	50 to 60	-5 to -15
FT-PZ503S	15	25	5 to 15	35 to 25
FT-PZ503I	35	5	25 to 35	15 to 5
FT-PZ503D	60	-20	50 to 60	-10 to -20

bgs - below ground surface.

msl- mean sea level.

1 - Actual depth intervals may change based on lithology.

TABLE 5
2020 MONITORING WELL, PIEZOMETER, SURFACE WATER, AND SEDIMENT
SAMPLE LOCATION AND NOMENCLATURE
SITE 2 - FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK

LOCATIONS	MEDIA	SCREEN INTERVAL (FEET BGS)	NOMENCLATURE
On Property			
FT-MW01S	Groundwater	18.5-28.5	FT-MW01S-2020MMDD
FT-MW01I	Groundwater	68-78	FT-MW01I-2020MMDD
FT-MW02S	Groundwater	10.5-20.5	FT-MW02S-2020MMDD
FT-MW02I	Groundwater	5-15	FT-MW02I-2020MMDD
FT-MW03S	Groundwater	21.5-31.5	FT-MW03S-2020MMDD
FT-MW05S	Groundwater	7.5-17.5	FT-MW05S-2020MMDD
FT-MW05I	Groundwater	48-58	FT-MW05I-2020MMDD
FT-MW05I1	Groundwater	35-45[1]	FT-MW05I1-2020MMDD
FT-MW06S	Groundwater	17-27	FT-MW06S-2020MMDD
FT-MW06I	Groundwater	65-75	FT-MW06I-2020MMDD
FT-MW07S	Groundwater	25-35	FT-MW07S-2020MMDD
FT-MW08S	Groundwater	3-14	FT-MW08S-2020MMDD
FT-MW08I	Groundwater	23-33	FT-MW08I-2020MMDD
FT-MW08D	Groundwater	48-58[1]	FT-MW08D-2020MMDD
FT-MW09I	Groundwater	28-38	FT-MW09I-2020MMDD
FT-MW10I	Groundwater	20-30	FT-MW10I-2020MMDD
FT-MW11S	Groundwater	5-15[1]	FT-MW11S-2020MMDD
FT-MW11I	Groundwater	23-33[1]	FT-MW11I-2020MMDD
FT-MW11D	Groundwater	48-58[1]	FT-MW11D-2020MMDD
FT-PZ451S	Groundwater	5-15	FT-PZ451S-2020MMDD
FT-PZ452S	Groundwater	6-16	FT-PZ452S-2020MMDD
Off Property			
FT-PZ453S	Groundwater	3-13	FT-PZ453S-2020MMDD
FT-PZ454S	Groundwater	3-13	FT-PZ454S-2020MMDD
FT-PZ455S	Groundwater	25-35	FT-PZ455S-2020MMDD
FT-PZ455I	Groundwater	68-73	FT-PZ455I-2020MMDD
FT-PZ456S	Groundwater	3-13	FT-PZ456S-2020MMDD
FT-PZ456I	Groundwater	47-52	FT-PZ456I-2020MMDD
FT-PZ456I1	Groundwater	21-26[1]	FT-PZ456I1-2020MMDD
FT-PZ457S	Groundwater	4-14	FT-PZ457S-2020MMDD
FT-PZ458S	Groundwater	3-13	FT-PZ458S-2020MMDD
FT-PZ458I	Groundwater	40-45	FT-PZ458I-2020MMDD
FT-PZ458I1	Groundwater	16-21[1]	FT-PZ458I1-2020MMDD
FT-PZ459S	Groundwater	7-17	FT-PZ459S-2020MMDD
FT-PZ459I	Groundwater	41-46	FT-PZ459I-2020MMDD
FT-PZ459I1	Groundwater	22-27[1]	FT-PZ459I1-2020MMDD
FT-PZ460I	Groundwater	45-50	FT-PZ460I-2020MMDD
FT-PZ461I	Groundwater	54-59	FT-PZ461I-2020MMDD
FT-PZ462S	Groundwater	3-13	FT-PZ462S-2020MMDD
FT-PZ462I	Groundwater	44-49	FT-PZ462I-2020MMDD
FT-PZ463I	Groundwater	43.5-53.5	FT-PZ463I-2020MMDD
FT-PZ464S	Groundwater	10-20	FT-PZ464S-2020MMDD
FT-PZ464I	Groundwater	39-49	FT-PZ464I-2020MMDD

TABLE 5
2020 MONITORING WELL, PIEZOMETER, SURFACE WATER, AND SEDIMENT
SAMPLE LOCATION AND NOMENCLATURE
SITE 2 - FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK

LOCATIONS	MEDIA	SCREEN INTERVAL (FEET BGS)	NOMENCLATURE
FT-PZ501S	Groundwater	5-15[2]	FT-PZ501S-2020MMDD
FT-PZ501I	Groundwater	25-35[2]	FT-PZ501I-2020MMDD
FT-PZ501D	Groundwater	50-60[2]	FT-PZ501D-2020MMDD
FT-PZ502S	Groundwater	5-15[2]	FT-PZ502S-2020MMDD
FT-PZ502I	Groundwater	25-35[2]	FT-PZ502I-2020MMDD
FT-PZ502D	Groundwater	50-60[2]	FT-PZ502D-2020MMDD
FT-PZ503S	Groundwater	5-15[2]	FT-PZ503S-2020MMDD
FT-PZ503I	Groundwater	25-35[2]	FT-PZ503I-2020MMDD
FT-PZ503D	Groundwater	50-60[2]	FT-PZ503D-2020MMDD
FT-PZ504S	Groundwater	5-15[2]	FT-PZ504S-2020MMDD
FT-PZ504I	Groundwater	25-35[2]	FT-PZ504I-2020MMDD
FT-PZ504D	Groundwater	50-60[2]	FT-PZ504D-2020MMDD
FT-SW10	Surface water	--	FT-SW10-2020MMDD
FT-SD10	Sediment	--	FT-SD10-2020MMDD
FT-SW12	Surface water	--	FT-SW12-2020MMDD
FT-SD12	Sediment	--	FT-SD12-2020MMDD
FT-SW13	Surface water	--	FT-SW13-2020MMDD
FT-SD13	Sediment	--	FT-SD13-2020MMDD
SA-SW01	Surface water	--	SA-SW01-2020MMDD
SA-SD01	Sediment	--	SA-SD01-2020MMDD

bgs - below ground surface

MMDD- Month and day that samples are collected. Example- If a groundwater sample is collected at FT-MW01S on July 15, 2020, then the sample ID would be FT-MW01S-20200715.

1 - Proposed screened interval.

2 - Actual screen depth intervals may change based on lithology.

TABLE 6
2020 MCKAY LAKE INVESTIGATION SAMPLE LOCATIONS
AND NOMENCLATURE
SITE 2 - FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK

LOCATIONS	MEDIA	DEPTH INTERVAL (FEET BGS)	NOMENCLATURE
Piezometer Locations			
FT-PZ451S	Groundwater	5-15	FT-PZ451S-2020MMDD
FT-PZ452S	Groundwater	6-16	FT-PZ452S-2020MMDD
FT-PZ453S	Groundwater	3-13	FT-PZ453S-2020MMDD
FT-PZ454S	Groundwater	3-13	FT-PZ454S-2020MMDD
McKay Lake Locations			
FT-INLET01	Waste Water Discharge	NA	FT-INLET01-2020MMDD
FT-INLET02	Storm Water Discharge	NA	FT-INLET02-2020MMDD
FT-INLET03	Storm Water Discharge	NA	FT-INLET03-2020MMDD
FT-INLET04	Storm Water Discharge	NA	FT-INLET04-2020MMDD
FT-INLET05	Storm Water Discharge	NA	FT-INLET05-2020MMDD
FT-INLET06	Storm Water Discharge	NA	FT-INLET06-2020MMDD
FT-SW10	Surface Water	NA	FT-SW10-2020MMDD

NA - not applicable.
bgs - below ground surface.
MMDD- Month and day that samples are collected. Example- If a groundwater sample is collected at FT-PZ451S on July 15, 2020, then the sample ID would be FT-PZ451S-20200715.

TABLE 7
2020 DRINKING WATER LOCATIONS AND NOMENCLATURE
SITE 2 - FORMER FIRE TRAINING AREA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK

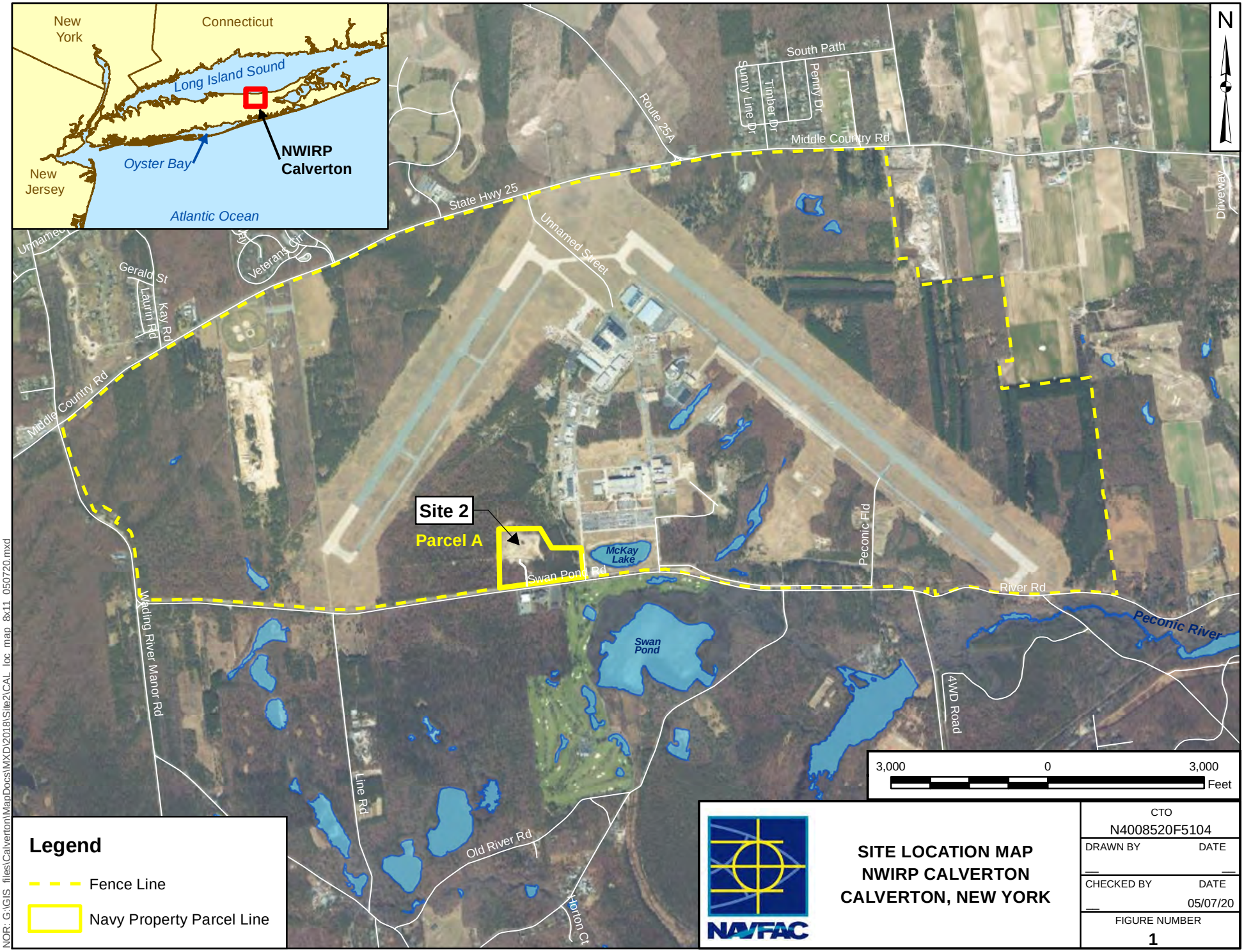
LOCATIONS	NOMENCLATURE
RW01	FT-RW01-2020MMDD
CAL-DW17	CAL-DW17-2020MMDD
CAL-DW18	CAL-DW18-2020MMDD
CAL-DW19	CAL-DW19-2020MMDD

NA - not applicable.

bgs - below ground surface.

MMDD- Month and day that samples are collected. Example- If a drinking water sample is collected at FT-RW01 on September 15, 2020, then the sample ID would be FT-RW01-20200915.

Figures



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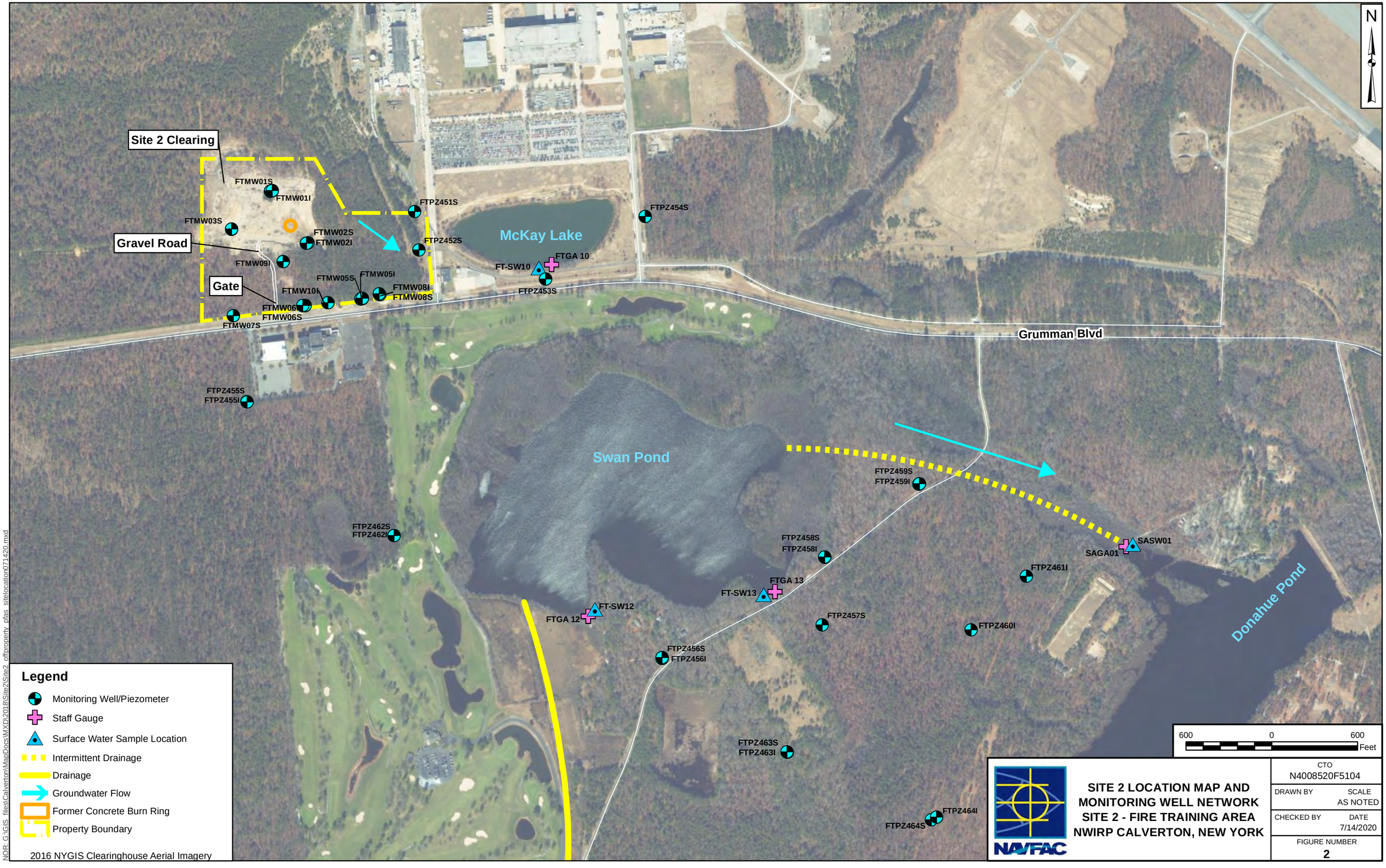


Legend

- Monitoring Well/Piezometer
- Staff Gauge
- Surface Water Sample Location
- Intermittent Drainage
- Drainage
- Groundwater Flow
- Former Concrete Burn Ring
- Property Boundary

2016 NYGIS Clearinghouse Aerial Imagery

NAVFAC

SITE 2 LOCATION MAP AND MONITORING WELL NETWORK SITE 2 - FIRE TRAINING AREA NWIRP CALVERTON, NEW YORK

CTO	N4008520F5104
DRAWN BY	SCALE: AS NOTED
CHECKED BY	DATE: 7/14/2020
FIGURE NUMBER	2

NOR: G:\GIS_files\Calverton\MapDocs\MXD\2018\Site2\Site2_offproperty_pfas_sitelocation071420.mxd

FT-SB819
FT-SB820
FT-SB821
FT-SB822
FT-SB823
FT-SB814
FT-SB815
FT-SB816
FT-SB817
FT-SB818
FT-SB810
FT-SB811
FT-SB812
FT-SB813
FT-SB806
FT-SB807
FT-SB808
FT-SB809
FT-SB805
FT-SB801
FT-SB802
FT-SB803
FT-SB804
Grumman Blvd
N

Legend

- 2020 Proposed Soil Boring/ Soil Sampling Location
- 2019 Soil boring
- 2019 Surface Soil Sample Location
- 2019 Temporary Well
- Piezometer
- Former Concrete Burn Ring
- Property Boundary

Notes:
PFAS - per- and polyfluoroalkyl substances

0 75 150 300 Feet

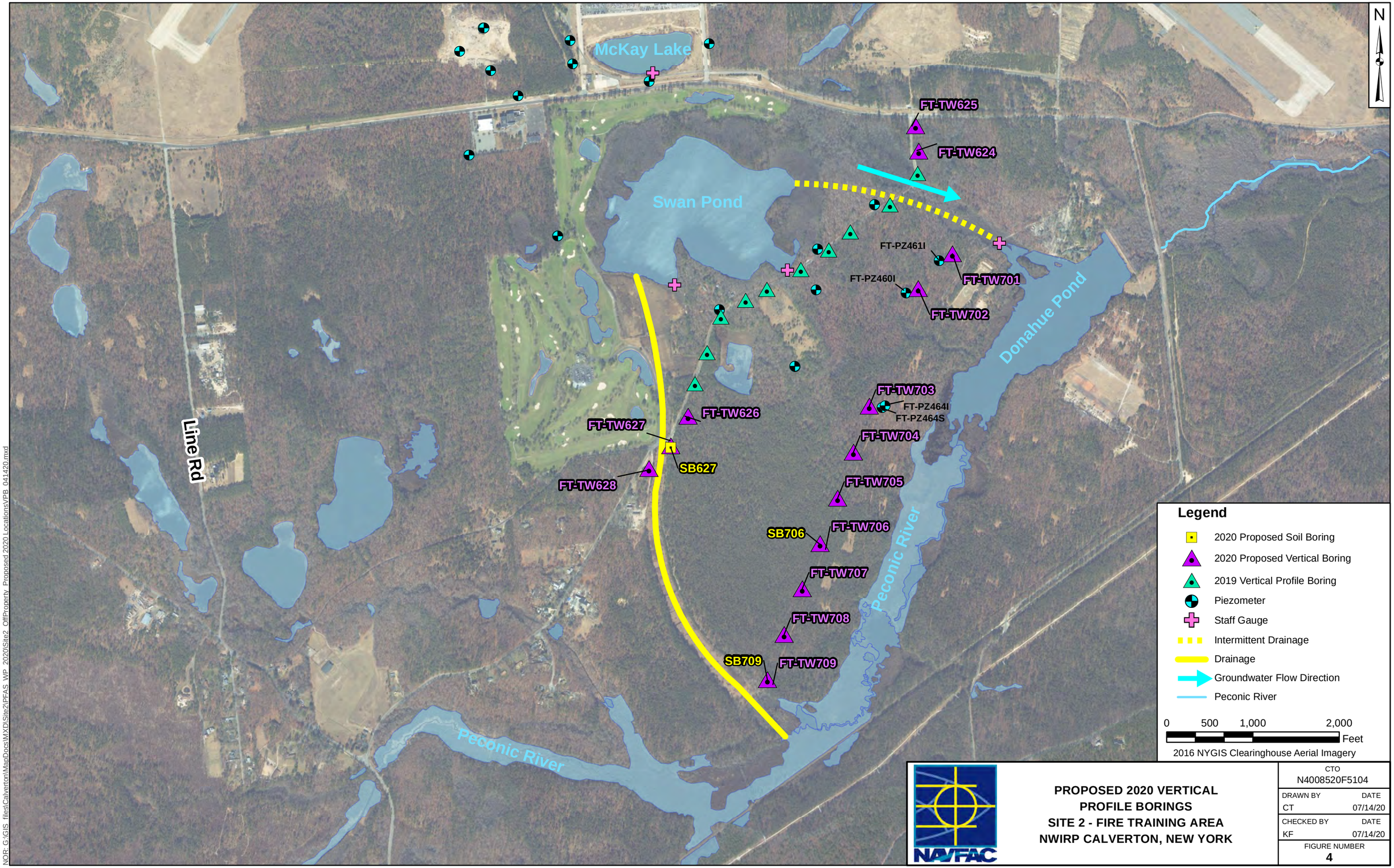
2016 NYGIS Clearinghouse Aerial Imagery

NAVFAC

PROPOSED 2020 SOIL SAMPLING LOCATIONS
SITE 2 - FIRE TRAINING AREA
NWIRP CALVERTON, NEW YORK

CTO	
N4008520F5104	
DRAWN BY	DATE
KB	05/15/20
REV	DATE
KF	05/15/20
FIGURE NUMBER	
3	

NOR: G:\GIS_files\Calverton\MapDocs\MXD\Site2\PFAS_WP_2020\Site2_OnProperty_Proposed 2020 Locations_050720.mxd



NAVFAC

PROPOSED 2020 VERTICAL PROFILE BORINGS
SITE 2 - FIRE TRAINING AREA
NWIRP CALVERTON, NEW YORK

CTO	N4008520F5104
DRAWN BY	DATE
CT	07/14/20
CHECKED BY	DATE
KF	07/14/20
FIGURE NUMBER	4

NOR: G:\GIS_files\Calverton\MapDocs\MXD\Site2\PFAS_WP_2020\Site2_OffProperty_Proposed2020LocationsVPB_041420.mxd

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PROPOSED 2020
PIEZOMETER LOCATIONS
SITE 2 - FIRE TRAINING AREA
NWIRP CALVERTON, NEW YORK

CTO	N4008520F5104
DRAWN BY	KB
DATE	07/14/20
CHECKED BY	KF
DATE	07/14/20
FIGURE NUMBER	5

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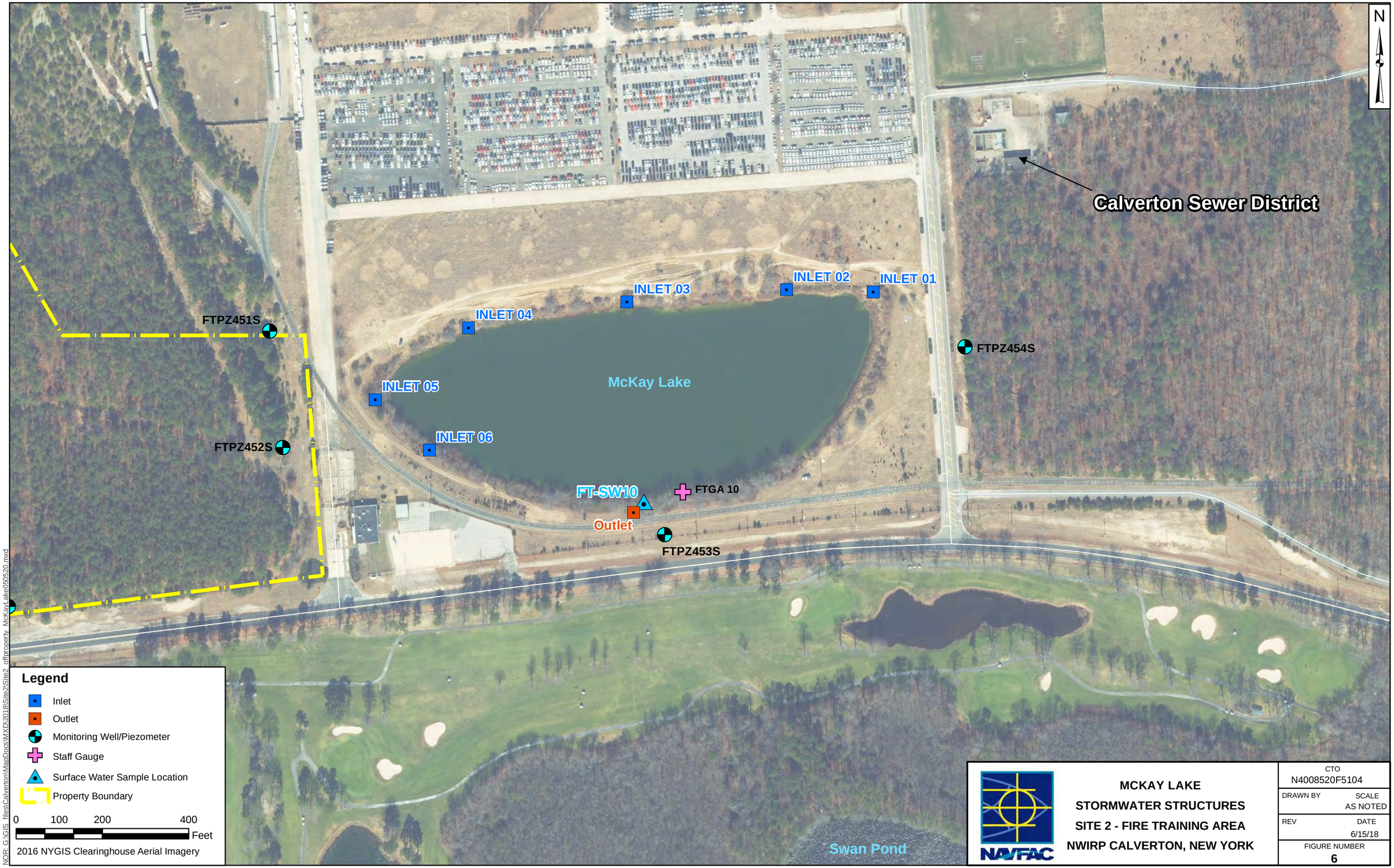

NOR: G:\GIS_files\Calverton\MapDocs\MXD\2018\Site2\Site2_offproperty_McKaylake050520.mxd

MCKAY LAKE
STORMWATER STRUCTURES
SITE 2 - FIRE TRAINING AREA
NWIRP CALVERTON, NEW YORK

CTO	N4008520F5104
DRAWN BY	SCALE AS NOTED
REV	DATE 6/15/18
FIGURE NUMBER	6