



US Army Corps
of Engineers



WELCOME to the Joint Base McGuire-Dix-Lakehurst PFAS Public Information Session

For more information, visit the JB MDL
PFAS information page:

www.jbmdl.jb.mil/pfcs

Or AFCEC information page:

www.afcec.af.mil/WhatWeDo/Environment/Perfluorinated-Compounds/

If you have specific questions, contact the
JB MDL Public Affairs Office:

609-754-2104

What Are Per- and Polyfluoroalkyl Substances (PFAS)?

PFAS

- PFAS are a group of synthetic fluorinated chemicals. The most studied include:
 - perfluorooctanoic acid (PFOA),
 - perfluorooctane sulfonic acid (PFOS),
 - perfluorononanoic acid (PFNA)
 - hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as GenX Chemicals)
 - perfluorohexane sulfonic acid (PFHxS)
 - perfluorobutane sulfonic acid (PFBS)
- These PFAS chemical are classified as emerging contaminants.
- EPA published the final rule in the Federal Register listing PFOA and PFOS as CERCLA Hazardous Substances on May 8, 2024. The ruling is anticipated to be effective on July 8, 2024.
- Used in industrial and consumer products such as nonstick cookware, stain-resistant fabric and carpet, some food packaging as well as in certain firefighting agents called aqueous film-forming foam (AFFF).
- The Air Force replaced legacy C-8 AFFF with C-6 AFFF. The transition occurred step wise from 2017 in fire response vehicles and in 2018 to hangar fire suppression systems.
- The Air Force intends on replacing the C-6 AFFF with fluorine-free foam (F3) beginning in 2024 once sufficient stockpiles of the F3 are manufactured and available to installations. The C-6 AFFF equipment has been restricted from use in fire suppression systems in Air Force owned hangars as of January 2023.

PFAS AND DRINKING WATER

REGULATORY STANDARDS

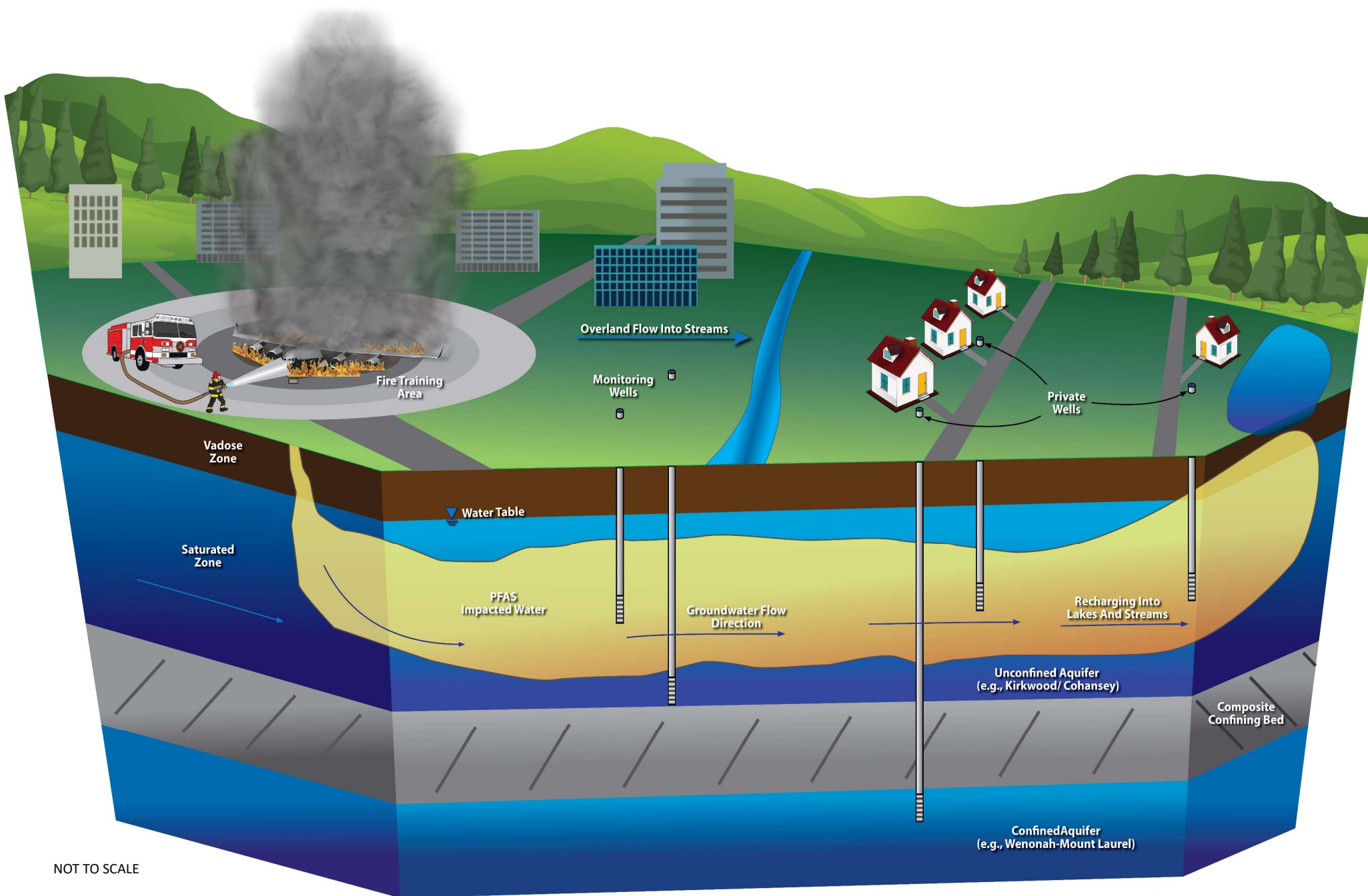
- EPA published the final rule listing maximum contaminant levels (MCLs) for selected PFAS in the Federal Register on April 26, 2024. The ruling is anticipated to be effective on June 25, 2024.
 - PFOA and PFOS: 4 ppt each; PFHxS, PFNA and HFPO-DA (GenX): 10 ppt each
 - Mixtures of two or more of PFHxS, PFNA, HFPO-DA, and PFBS: Hazard Index of 1
- The Department of Air Force (DAF) is reviewing existing PFAS sampling results, and expanding cleanup investigations
- DAF will provide drinking water treatment for impacted off-base wells prioritized based on concentrations, with focus on installing enduring solutions such as municipal connections or whole-house filters

PFAS IN DRINKING WATER OFF-BASE

- DAF conducts sampling of drinking water off-base to ensure the DAF identifies potential impacts of PFAS resulting from DAF activities. Off-base drinking water includes non-DAF drinking water systems and private wells located outside the installation boundary.
 - JBMDL has been proactive in sampling off-base drinking water and providing mitigation where applicable since 2016.
- Where DAF is the known source of PFAS, DAF will take action when testing results show an exceedance above a trigger level that warrants further action.
- DAF's actions include treatment of drinking water or providing alternative water supplies, such as implementing a whole-house filtration system or connecting private drinking water wells to public drinking water systems.

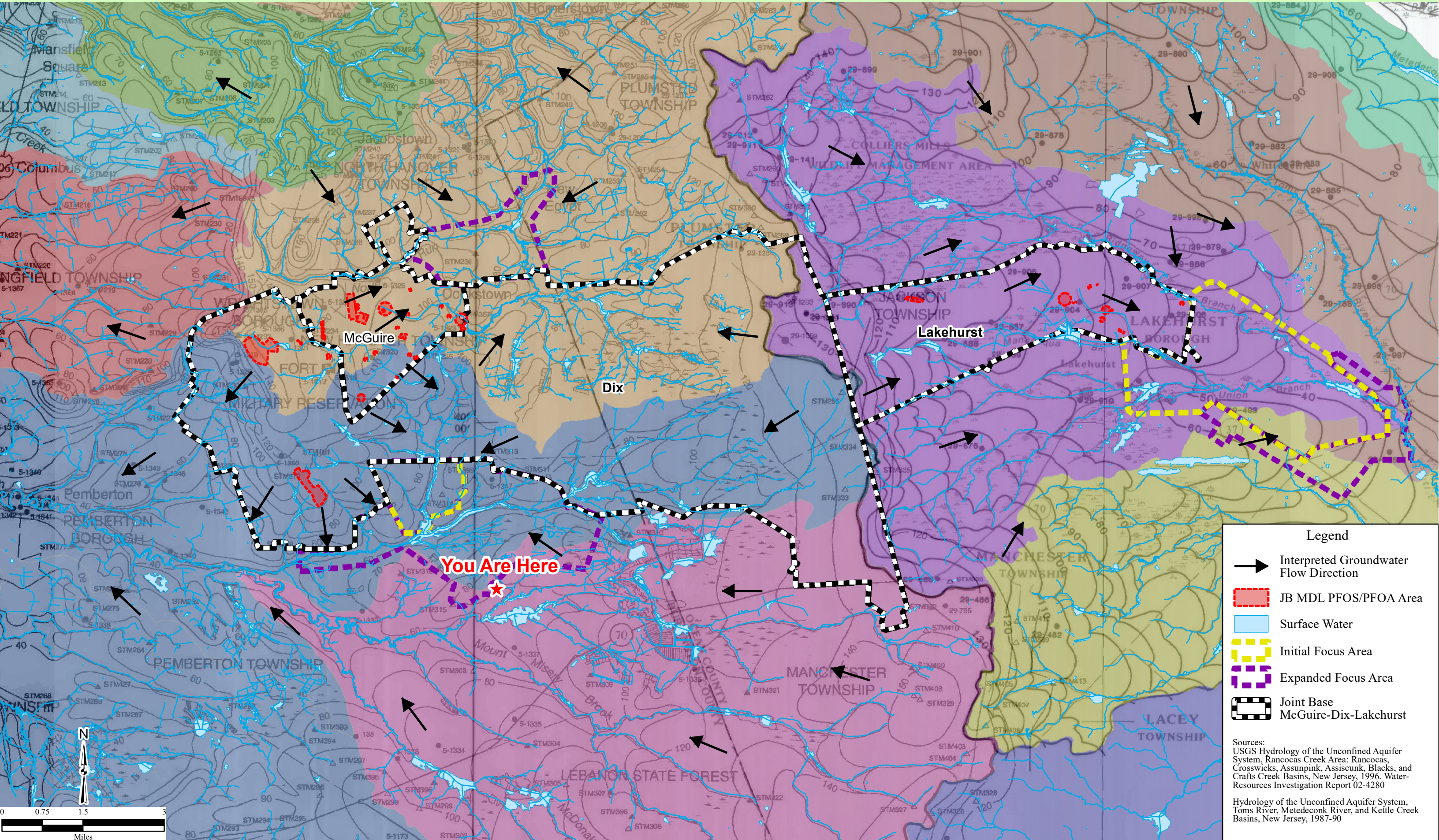
* 1 PPT (i.e., 1 nanogram per liter [ng/L]) is similar to 1 drop of water in 20 Olympic size swimming pools

HOW PFAS COULD MOVE INTO DRINKING WATER



NOT TO SCALE

Regional Groundwater Flow Direction



Legend

→

Interpreted Groundwater Flow Direction

JB MDL PFOS/PFOA Area

Surface Water

Initial Focus Area

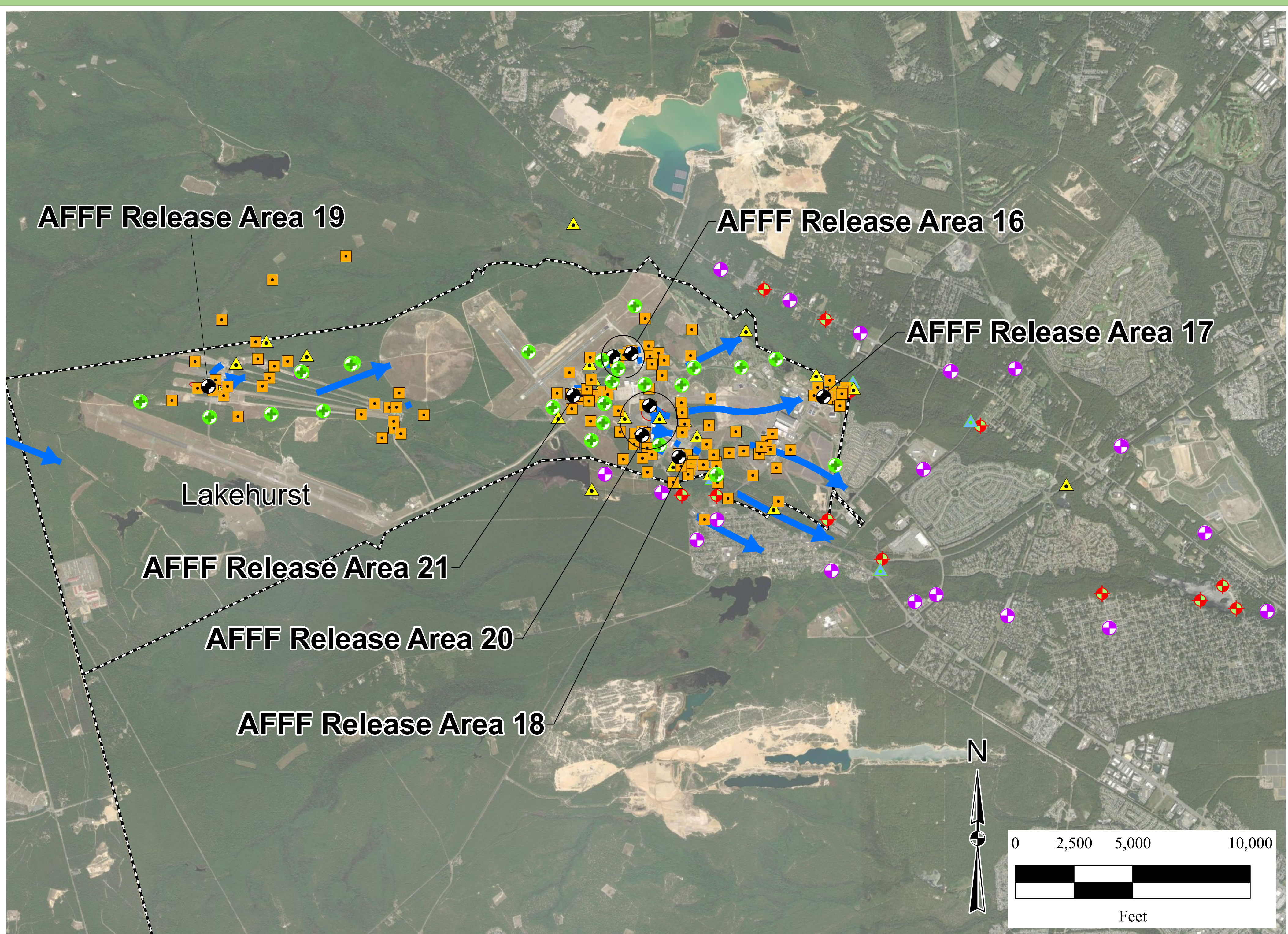
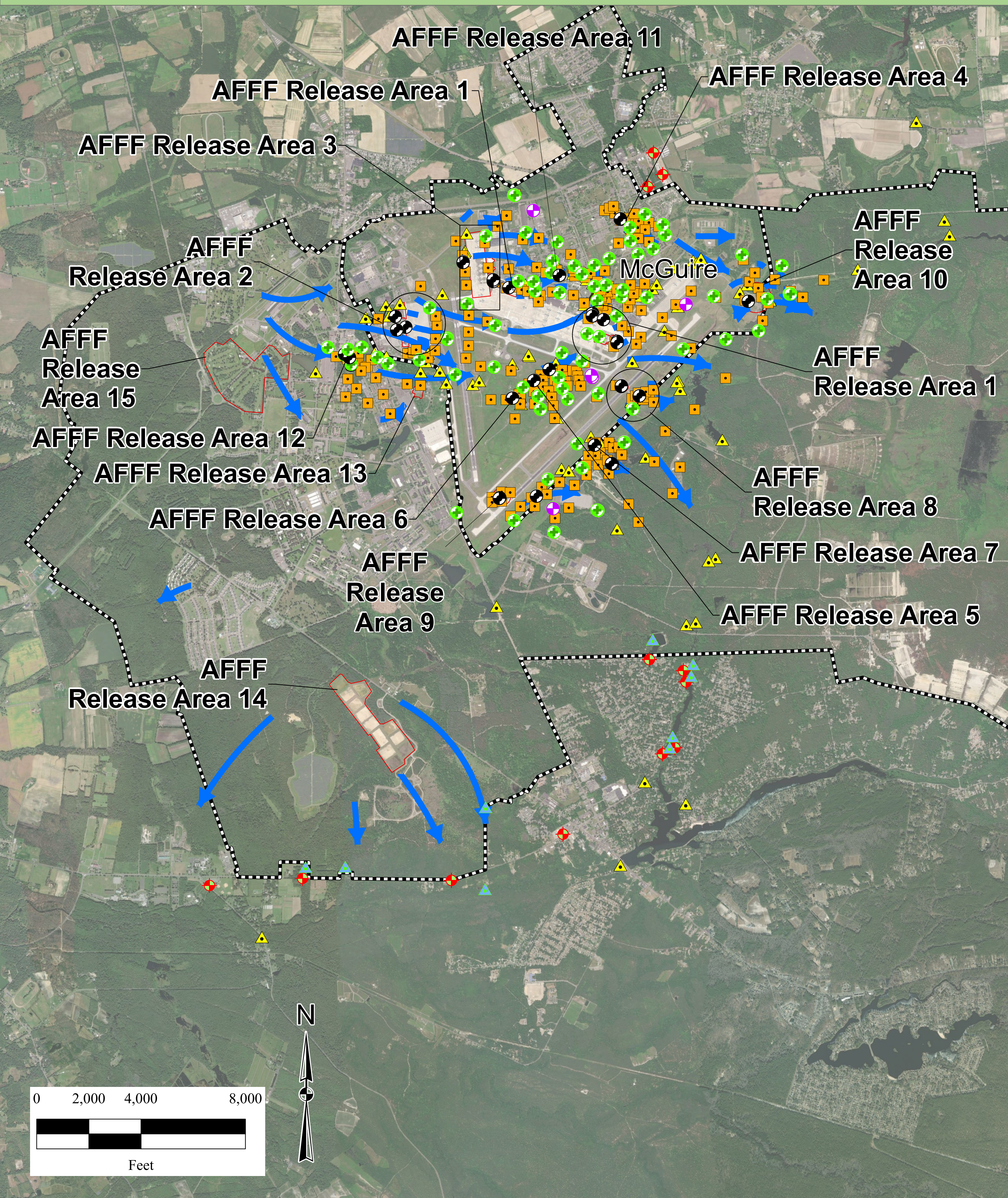
Expanded Focus Area

Joint Base McGuire-Dix-Lakehurst

Sources:
USGS Hydrology of the Unconfined Aquifer System, Rancocas Creek Area: Rancocas, Crosswicks, Assunpink, Assiscunk, Blacks, and Crafts Creek Basins, New Jersey, 1996. Water-Resources Investigation Report 02-4280

Hydrology of the Unconfined Aquifer System, Toms River, Metedeconk River, and Kettle Creek Basins, New Jersey, 1987-90

JBMDL GROUNDWATER & SURFACE WATER PFAS REMEDIAL INVESTIGATION SAMPLE LOCATIONS (2022-2024)



Installation	DPT-GW		DPT-Soil		Existing Wells		New Wells			Lysimeters				SW/SED		
	Locations	Samples	Locations	Samples	First Delineation Samples	Round 1 Samples	Installed	Install Soil Samples	Round 1 Samples	Installed	Round 1 Samples	Round 2 Samples	Round 3 Samples	Round 1 Locations	Round 1 Samples	Round 2 Locations
Lakehurst	133	432	156	524	34	34	52	19	36	24	23	18	14	28	28	47
Dix	27	100	22	85	4	4	10	3	10	3	3	3	3	6	6	28
McGuire	204	736	298	1086	86	85	118	35	115	42	40	40	32	53	53	101
Totals	364	1268	476	1695	124	123	180	57	161	69	66	61	49	87	87	176

Date: 01 May 2024

Legend

- Temporary Groundwater Sample

▲ Surface Water/Sediment Sample

➡ Groundwater Flow Direction

● Proposed New Monitoring Well

● 2022 Monitoring Well

□ AFFF Inspection Area (validated site)

● Installed New Monitoring Well

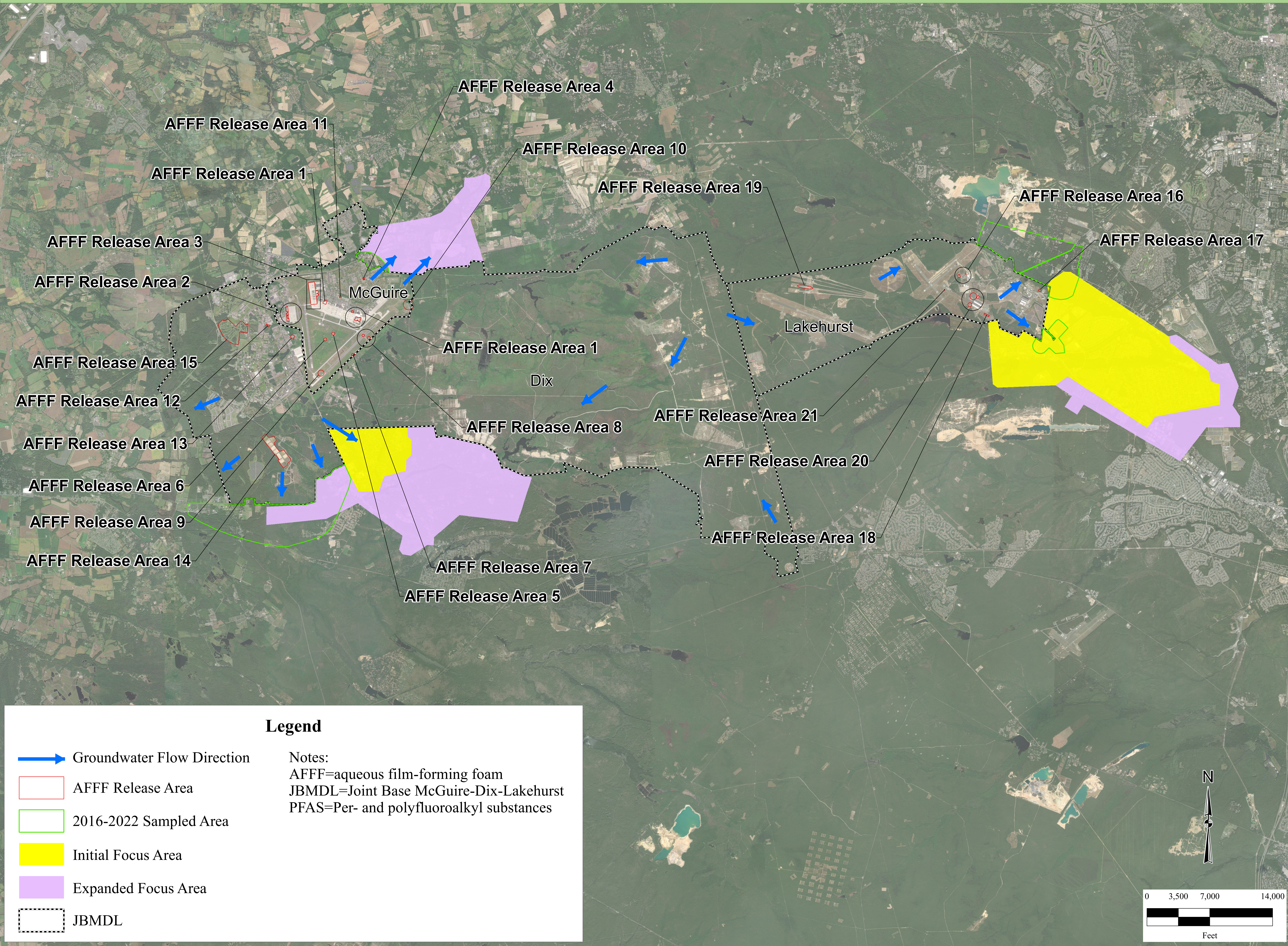
▲ 2022 Surface Water Sample

□ JBMDL

● Sampled New Monitoring Well










Notes:
AFFF=aqueous film-forming foam
DPT=direct push technology
ESI=Expanded Site Inspection
JBMDL=Joint Base McGuire-Dix-Lakehurst
PFAS=Per- and polyfluoroalkyl substances

PFAS Off-Base Response, Joint Base McGuire-Dix-Lakehurst—New Jersey



PFAS Off-Base Response McGuire Sampling Area, Joint Base McGuire-Dix-Lakehurst—New Jersey

Legend

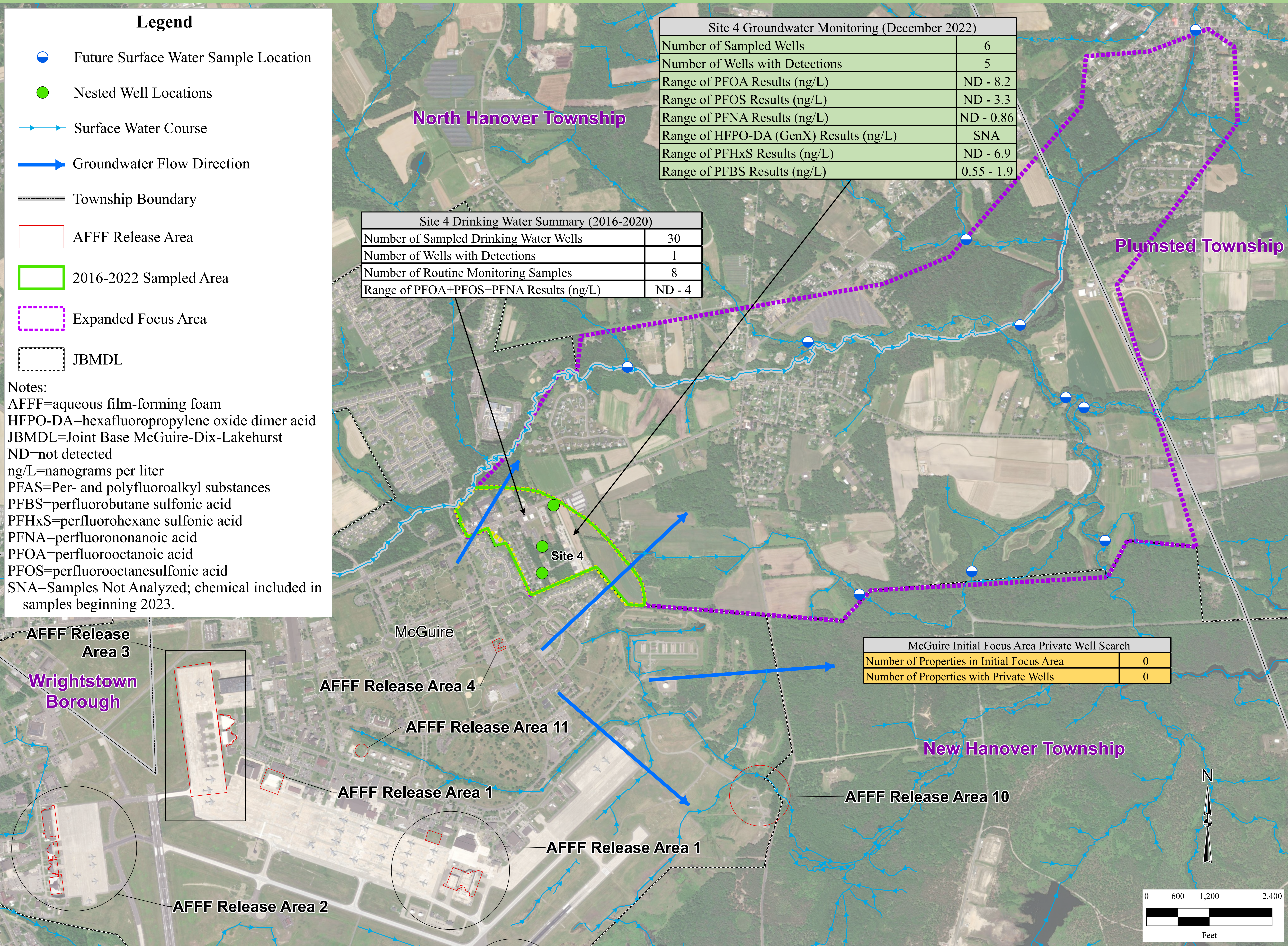
-  Future Surface Water Sample Location
-  Nested Well Locations
-  Surface Water Course
-  Groundwater Flow Direction
-  Township Boundary
-  AFFF Release Area
-  2016-2022 Sampled Area
-  Expanded Focus Area
-  JBMDL

Notes:
AFFF=aqueous film-forming foam
HFPO-DA=hexafluoropropylene oxide dimer acid
JBMDL=Joint Base McGuire-Dix-Lakehurst
ND=not detected
ng/L=nanograms per liter
PFAS=Per- and polyfluoroalkyl substances
PFBS=perfluorobutane sulfonic acid
PFHxS=perfluorohexane sulfonic acid
PFNA=perfluorononanoic acid
PFOA=perfluorooctanoic acid
PFOS=perfluorooctanesulfonic acid
SNA=Samples Not Analyzed; chemical included in samples beginning 2023.

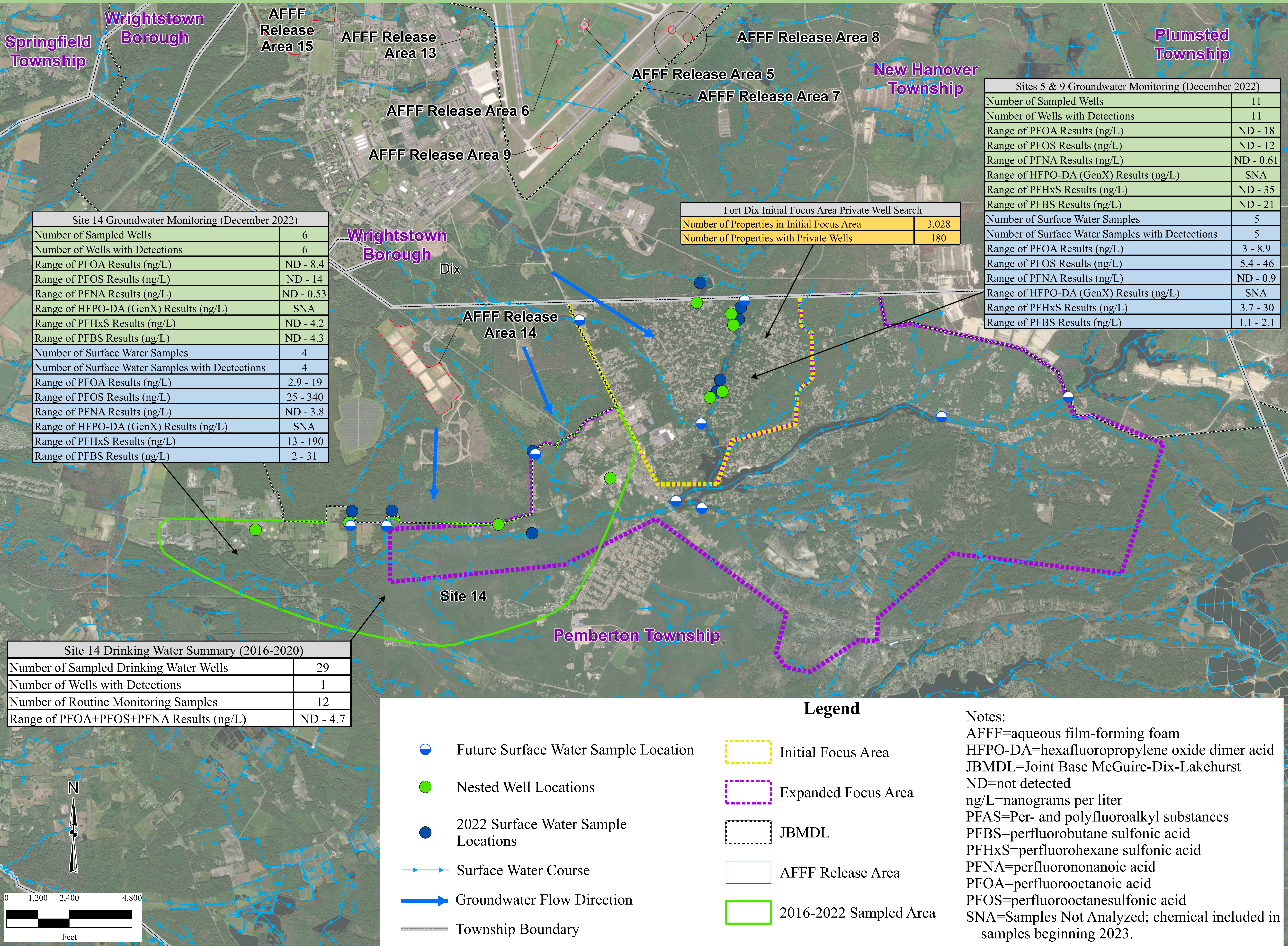
Site 4 Groundwater Monitoring (December 2022)	
Number of Sampled Wells	6
Number of Wells with Detections	5
Range of PFOA Results (ng/L)	ND - 8.2
Range of PFOS Results (ng/L)	ND - 3.3
Range of PFNA Results (ng/L)	ND - 0.86
Range of HFPO-DA (GenX) Results (ng/L)	SNA
Range of PFHxS Results (ng/L)	ND - 6.9
Range of PFBS Results (ng/L)	0.55 - 1.9

Site 4 Drinking Water Summary (2016-2020)	
Number of Sampled Drinking Water Wells	30
Number of Wells with Detections	1
Number of Routine Monitoring Samples	8
Range of PFOA+PFOS+PFNA Results (ng/L)	ND - 4

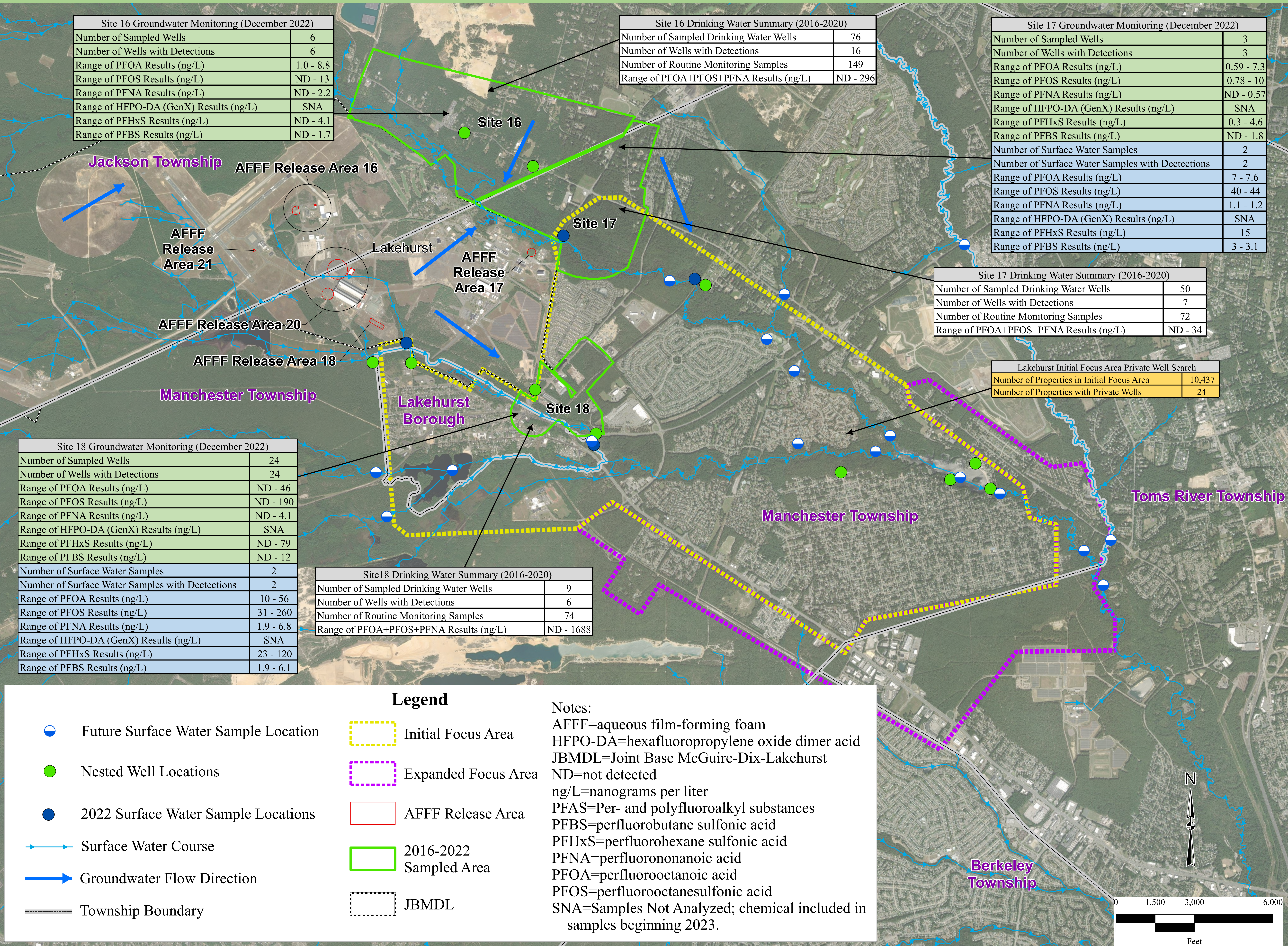
McGuire Initial Focus Area Private Well Search	
Number of Properties in Initial Focus Area	0
Number of Properties with Private Wells	0



PFAS Off-Base Response Fort Dix Sampling Area, Joint Base McGuire-Dix-Lakehurst—New Jersey



PFAS Off-Base Response Lakehurst Sampling Area, Joint Base McGuire-Dix-Lakehurst—New Jersey



PRIVATE WELL DRINKING WATER SAMPLING



Air Force Mails Request for Access Letters to Owners

Complete Sampling Permission Form and Send Back to Air Force



Air Force Contractor Will Schedule Sampling Appointment with Owners



Overnight Delivery



**Laboratory Analysis
(Approx. 60-90 calendar days)**



Collect Drinking Water Sample

- ☐ Collect sample directly from faucet or spigot into approved laboratory bottle
 - For properties without treatment, a sink or exterior spigot will be sampled
 - For properties with treatment (e.g., carbon filter or water softener) a sample port prior to the treatment system will be sampled, where possible
- ☐ Run cold water from faucet or spigot for approximately 10 minutes
- ☐ Measure and record water temperature

**Validation
(Approx. 30 calendar days)**



**Results sent via email and US Mail
(Received approx. 12-15 weeks from sampling date)**



- ☐ Preliminary data validation will be completed within 7 days following receipt of drinking water sample data.
- ☐ The Department of Air Force will take action to address PFAS impacts to drinking water when sample results exceed a trigger level.
- ☐ Full validation of the sample data will be completed to confirm the results are valid prior to sending out the results to the property owner.

IF YOUR DRINKING WATER IS IMPACTED WITHIN OFF-BASE FOCUS AREA

LONG-TERM ENDURING SOLUTIONS

✓ Drinking Water Treatment by the Air Force

A carbon or ion exchange treatment system may be installed by the Air Force. The treatment system will include either a "Point-of-Entry" system that is installed at the main water line entering the property or a "Point-of-Use" system that is installed under a sink.



✓ Connect to public water

The Air Force will evaluate connecting properties with private drinking water wells to a public water supply.



Note: Carbon and ion exchange are the two commonly used alternatives for PFAS treatment.

HEALTH EFFECTS

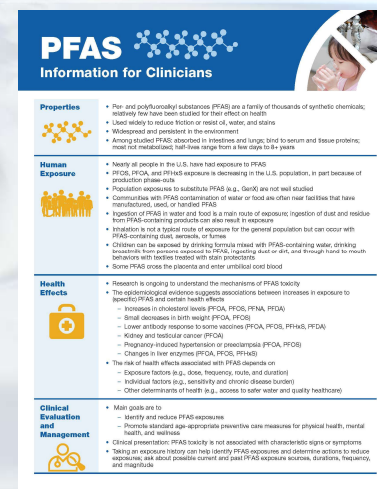
What are the Potential Health Effects?

- Scientists are still learning about PFAS mechanism of toxicity and how exposure to PFAS might affect people's health.
- The epidemiological evidence suggests associations between increases in exposure to (specific) PFAS and certain health effects:
 - Increases in cholesterol levels (PFOA, PFOS, PFNA, PFDA)
 - Lower antibody response to some vaccines (PFOA, PFOS, PFHxS, PFDA)
 - Changes in liver enzymes (PFOA, PFOS, PFHxS)
 - Small decreases in birth weight (PFOA, PFOS)
 - Kidney and testicular cancer (PFOA)
 - Pregnancy-induced hypertension or preeclampsia (PFOA, PFOS)
- The risk of health effects associated with PFAS depends on exposure factors (e.g., dose, frequency, route, and duration), individual factors (e.g., sensitivity and chronic disease burden), and other determinants of health (e.g., access to safer water and quality healthcare).
- **Levels of PFAS in drinking water do not predict health impacts.**

Are Blood Tests Available for PFAS?

- Blood testing for PFAS is available but is **not** a regular test offered by a doctor.
- PFAS blood testing results do not provide information for treatment or predict future health problems.
- There are no approved medical treatments available to reduce PFAS in the body.
- ATSDR will continue to review the science and periodically update this information.

Chemical exposures do not always lead to health effects.



For more information, please pick up the Fact Sheets or visit the Air Force, USEPA, ATSDR, and NJ Department of Health websites:



<https://www.acq.osd.mil/eie/eer/ecc/pfas/news.html>

Air Force



<https://www.epa.gov/pfas>

USEPA



<https://www.atsdr.cdc.gov/pfas/index.html>

ATSDR



https://www.nj.gov/health/ceohs/documents/pfas_drinking%20water.pdf

NJDOH



Final PFAS National Primary Drinking Water Regulation (NPDWR)

What is an NPDWR?

- A National Primary Drinking Water Regulation (NPDWR) establishes enforceable standards that apply to public drinking water systems.
- Such enforceable standards include Maximum Contaminant Levels (MCLs).
- EPA must promulgate an NPDWR when the Agency determines that a contaminant:
 - May have adverse health effects;
 - Occurs or is likely to occur in public water systems at a level of concern; and
 - There are meaningful opportunities for health risk reductions for people served by public water systems.



PFAS NPDWR

- In March 2023, the EPA proposed a National Primary Drinking Water Regulation for six per- and polyfluoroalkyl substances (PFAS).
- This regulation would establish legally enforceable MCLs to regulate:
 - Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) as individual contaminants, and
 - Perfluorohexanesulfonic acid (PFHxS) perfluorononanoic acid (PFNA) and GenX chemicals as a PFAS mixture.
- At the same time, the EPA also proposed health-based, non-enforceable Maximum Contaminant Level Goals (MCLGs) for these PFAS
- Public water systems would be required to **monitor** for these chemicals.
- Public water systems would be required to **notify** the public of exceedances.
- Public water systems would be required to **reduce the level of PFAS** in drinking water if exceedances occur.
- The final rule, announced on **April 10, 2024** has resulted in significantly less PFAS in drinking water across the United States.

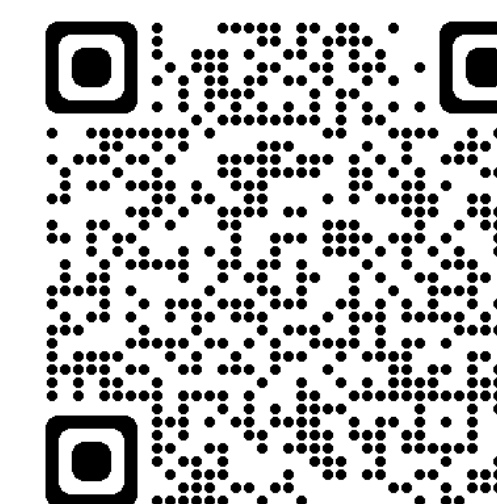
Chemical	Maximum Contaminant Level Goal (MCLG)	Maximum Contaminant Level (MCL)
PFOA	0	4.0 ppt
PFOS	0	4.0 ppt
PFNA	10 ppt	10 ppt
PFHxS	10 ppt	10 ppt
HFPO-DA (GenX chemicals)	10 ppt	10 ppt
Mixture of two or more: PFNA, PFHxS, HFPO-DA, and PFBS	Hazard Index of 1	Hazard Index of 1
Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.		

What Was the Regulatory Process

- In June 2022, the EPA issued interim updated drinking water health advisories for PFOA and PFOS, that replace those issued in 2016. These health advisories were in place until final ruling was announced.
- The proposed PFAS NPDWR were posted on March 14th, 2023 which initiated a 60-day public-comment period which closed on May 20th, 2023.
 - The public comment period provided an opportunity for all impacted stakeholders to share their feedback.
 - During the public comment period, EPA facilitated various informational webinars and held a public hearing.
 - EPA considered the public comments as it worked to finalize the proposed rule.
 - **EPA announced the final rule on April 10, 2024.**

Further Information

- For further information on the final PFAS NPDWR, please visit:
<https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>



- This webpage includes an overview of the final rule and supporting materials, including recordings of the public webinars, technical documents, frequently asked questions, and more.
- Information on New Jersey Department Environmental Protection PFAS standards and regulations is accessible by visiting: <https://dep.nj.gov/pfas/standards/>

INDEX OF POSTERS/MAP OF ROOM

POSTER TOPIC (IN ORDER AROUND ROOM)

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7. PFAS OFF-BASE RESPONSE McGUIRE SAMPLING AREA
8. PFAS OFF-BASE RESPONSE FORT DIX SAMPLING AREA
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10. PRIVATE WELL DRINKING WATER SAMPLING
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13. FINAL PFAS NATIONAL PRIMARY DRINKING WATER REGULATION

ROOM LAYOUT

