Borough of
Oakland
New Jersey

PFAS Drinking Water Quality Discussion

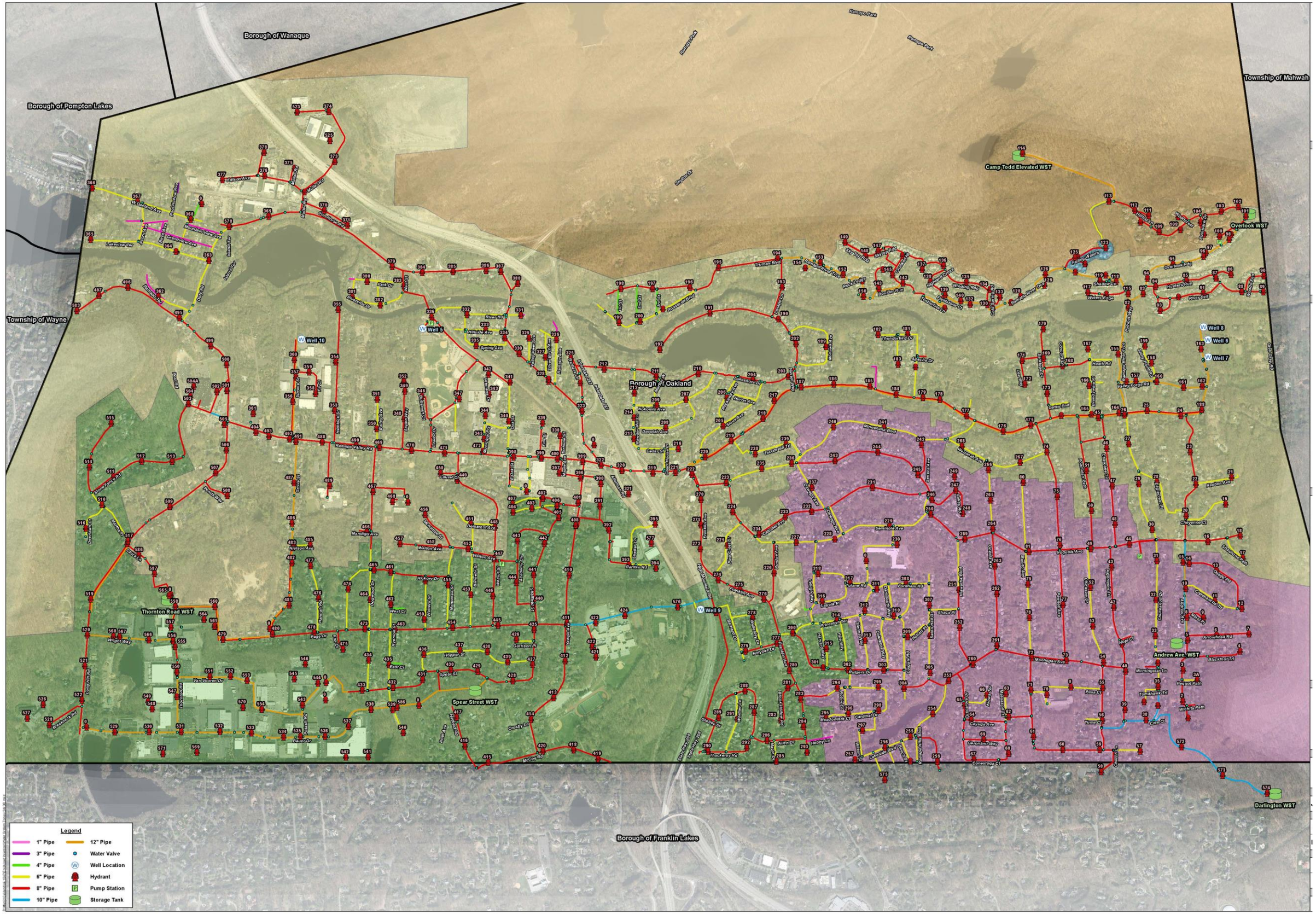
August 29, 2022

Boswell Engineering

WHAT ARE PFAS COMPOUNDS?

- PFAS (per- and polyfluoroalkyl substances) compounds include Perfluoronoanoic Acid (PFNA), Perfluorooctanesulfonic Acid (PFOS) and Perfluorotanoic Acid (PFOA).
- PFAS are manufactured chemicals that do not occur naturally and do not break down in the environment. These man-made chemicals have been used for carpets, clothing, fire fighting foam, consumer products (e.g. cosmetics, dental floss, shampoo), insect repellant, food packaging wrappers and coatings that are resistant to water, grease and/or stains.
- Widespread and extremely persistent in the environment.

OAKLAND WATER SYSTEM



OAKLAND WELL LOCATIONS

WHERE DOES THE WATER COME FROM?

The Oakland Water Department draws groundwater from seven (7) wells throughout the Borough. The system is comprised of:

- 380,000 linear feet of water main, 4 inch to 12 inches
- Six (6) water storage tanks, 4.05 MG storage
- Four (4) pumping stations
- Four (4) pressure zones

Population served ~ 12,972

REGULATORY BACKGROUND

- Safe Drinking Water Act – passed by Congress in 1974 and amended in 1986 and 1996
- Currently, over 90 compounds with Federal (EPA) limits for community water systems, such as Oakland
- The EPA requires monitoring for a list of unregulated compounds approximately every five (5) years for systems with more than 10,000 customers
- These results are used to determine if additional limits are needed
- The New Jersey Department of Environmental Protection (NJDEP) has additional limits for compounds in drinking water

CURRENT REGULATIONS

PFNA Maximum Contaminant Level (MCL) is 13 ppt adopted Sept 4, 2018
Monitoring and testing required 1st Quarter of 2020
PFOA MCL is 14 ppt adopted June 1, 2020
PFOS MCL is 13 ppt adopted June 1, 2020
Monitoring and testing required 1st Quarter of 2021

How are NJ MCLs determined: The NJ PFAS MCLs are based on studies of effects on laboratory animals. These PFAS MCLs are protective both for cancer (for PFOA and PFOS) and non-cancer health effects. Cancer effects are determined based on a one in a million risk from lifetime water consumption.

<u>NEW</u> (2022) EPA health advisory levels for PFOA and PFOS are as follows:

Chemical Health	Advisory (ppt)	Minimum Detection Level (ppt)
PFOA	0.004 (Interim)	2
PFOS	0.02 (Interim)	2

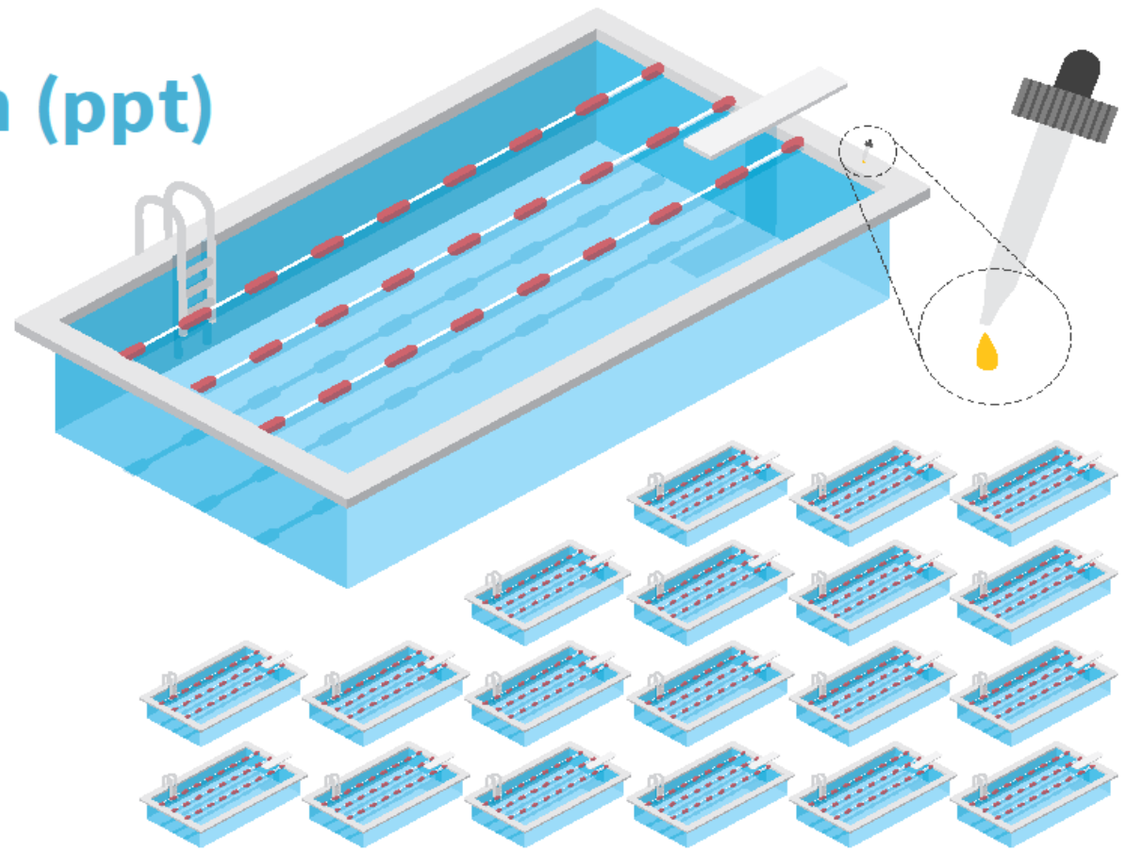
The EPA level is a non-enforceable health advisory.

PFAS COMPOUNDS

1 part per trillion (ppt)

IS EQUIVALENT TO A SINGLE DROP OF WATER IN

20 olympic-sized swimming pools



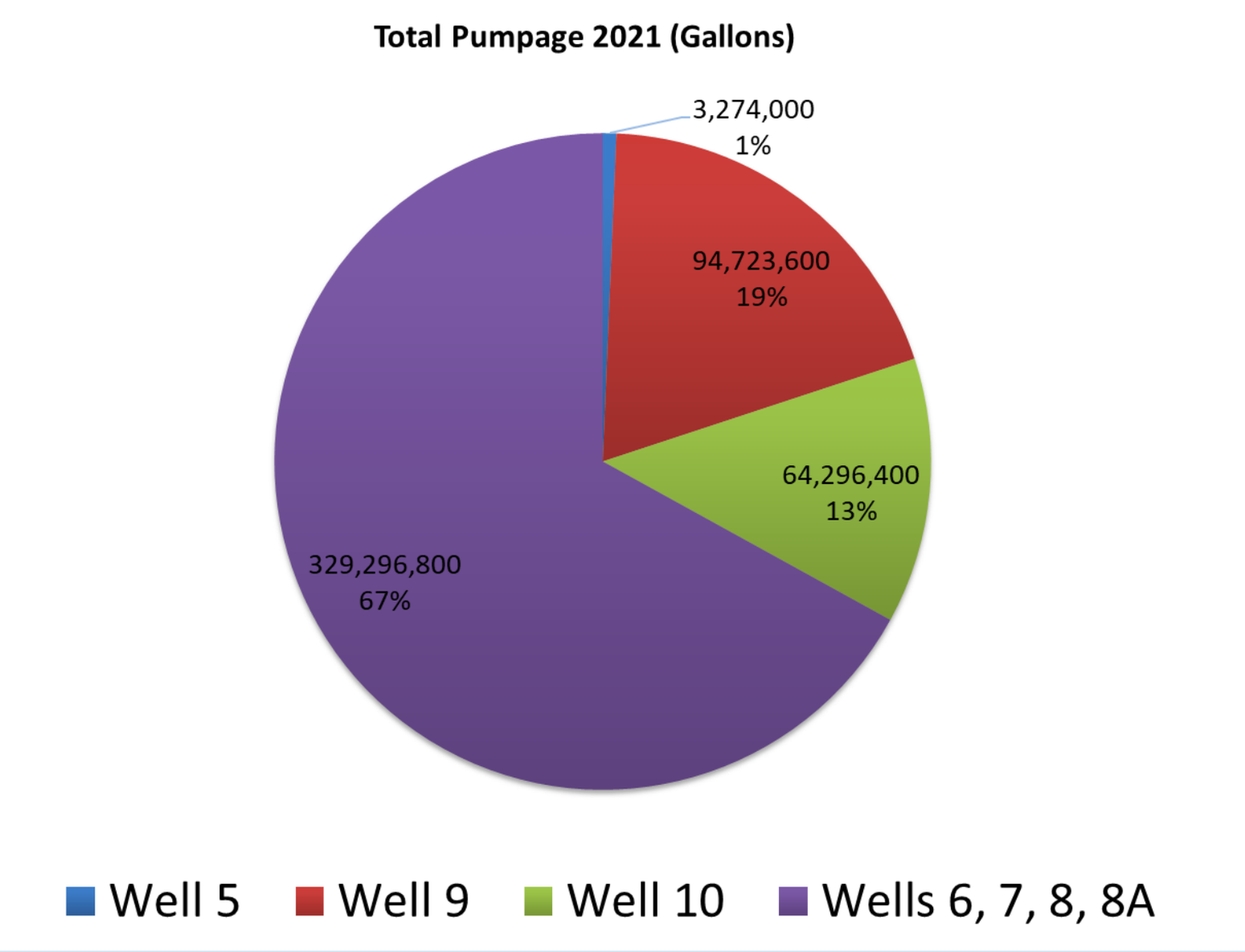
OAKLAND WATER TESTING – ACTIVE WELLS

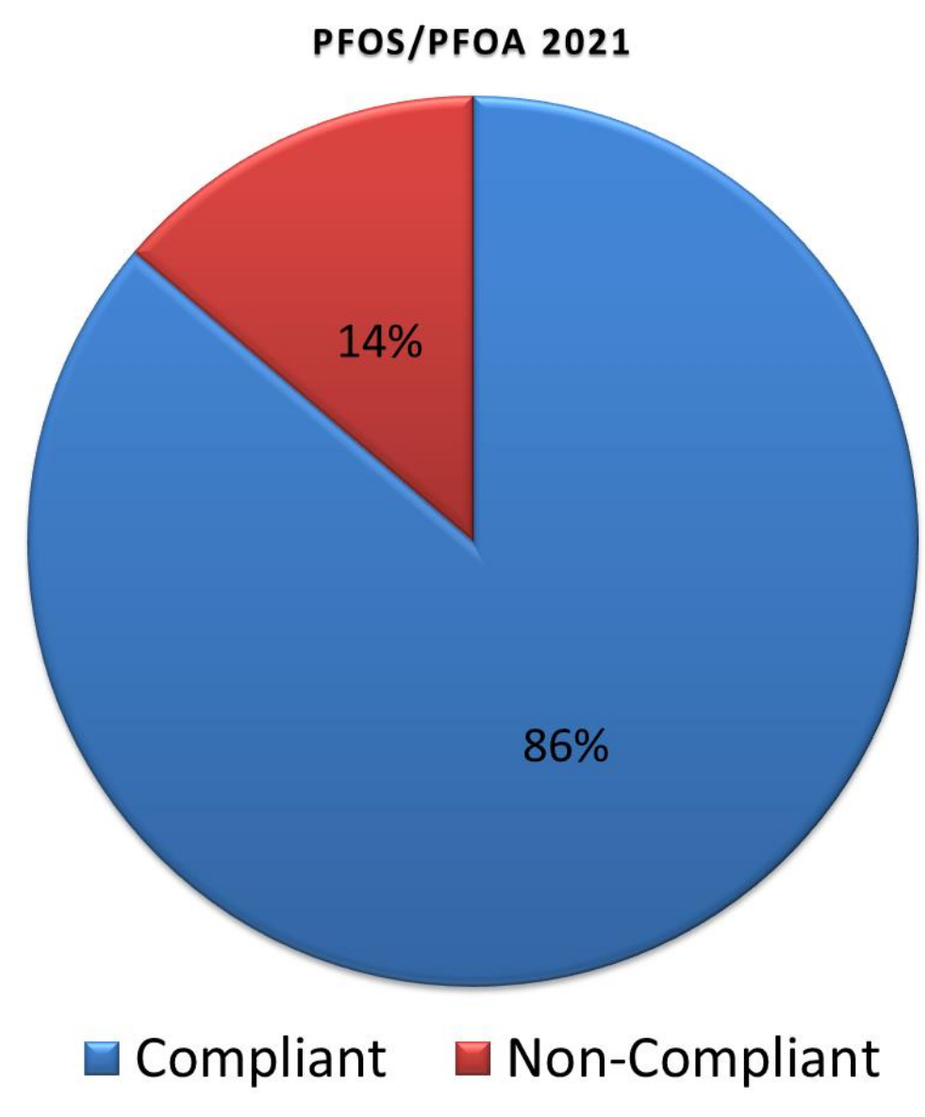
Location		MCL (ppt)	2021 3rd	2021 4th	2022 1st	2022 2nd	RAA
Well #5	PFNA	13	3.08	ND	2.6	ND	1.42
	PFOS	13	9.25	9.19	10.1	6.67	8.80
	PFOA	14	15.6	12.1	15.6	10.2	13.38
Well #10	PFNA	13	2.02	ND	ND	ND	ND
	PFOS	13	23.2	20.1	26.2	16.9	21.6
	PFOA	14	22.2	19	22.8	15.6	19.9
Well #6, 7, 8, 8A	PFNA	13	ND	ND	ND	ND	ND
	PFOS	13	5.96	5.41	4.76	3.23	4.84
	PFOA	14	8.54	8.07	6.02	4.26	6.72
Well #9	PFNA	13	ND	ND	ND	ND	ND
	PFOS	13	7.59	7.47	8.16	5.41	7.94
	PFOA	14	14.4	13.4	13.9	9.27	12.74

Note: values in red indicate above MCL.

PFAS is not an acute contaminant and this is not a do not drink order by NJDEP

PFAS BY WATER SOURCE





NJ DEPT OF HEALTH / EPA

According to the NJ Department of Heath:

- Some studies of the general population, communities with PFAS contaminated drinking water, and exposed workers indicate that exposure to PFAS increases the risk of a number of health effects. Health effects from PFAS are observed within the general population without exposure to PFAS from contaminated drinking water.
- According to the NJ Drinking Water Facts, updated July 2022, “Some studies have demonstrated up to 50% removal of PFAS when using either pitcher or refrigerator filters and some were able to reduce levels below detection.”
- EPA website states “Individuals concerned about levels of PFAS found in their drinking water should consider actions that may reduce exposure, including installing a home or point of use filter”
- Anyone concerned about their health should consult with their personal healthcare provider.
- For more information on health effects refer to: https://www.nj.gov/health/ceohs/documents/pfas_drinking%20water.pdf

TREATMENT OPTIONS

- Granular Activated Carbon
- Ion Exchange Treatment
- High pressure Membranes – Nanofiltration or Reverse Osmosis

TREATMENT OPTIONS

Granular Activated Carbon

Activated carbon is an effective adsorbent and provides a large surface area to which contaminants may adsorb.

PFAS in Water

PFAS – free water

TREATMENT OPTIONS

Ion Exchange Resins

Small beads (called resins) which are made of highly porous material work like magnets. The chemicals stick to the beads and contaminants are removed as the water passes through.

PFAS in Water

PFAS – free water

TREATMENT OPTIONS

High pressure Membranes – Nanofiltration or Reverse Osmosis

A process where water is pushed through a membrane with small pores. The membrane acts like a wall that can stop chemicals and particles from passing into drinking water.

PFAS in Water

PFAS – free water

ACTION PLAN

1. Continue quarterly testing of all the wells - ongoing
2. Distribute quarterly notices, as required by NJDEP; notices required even if the Running Annual Average is currently below under MCL. This is due to initial exceedance.
3. Analysis of treatment options – Completed Spring 2022
4. Design/submit permit of selected treatment option – Submission to NJDEP Water Supply 05/04/22
5. Review and approval of design by NJDEP Water Supply – pending; expected by Fall 2022
6. Award of construction of treatment system - Winter 2022/2023
7. Installation of Treatment System - End of 2023
8. Monitor/report water quality test results to verify successful treatment implementation

RESOURCES

New Jersey Department of Environmental Protection
https://www.state.nj.us/dep/watersupply/pfas/
United States Environmental Protection Agency
https://www.epa.gov/pfas
New Jersey Department of Health
https://www.nj.gov/health/ceohs/documents/pfas_drinking%20water.pdf
Borough of Oakland Website
https://www.oakland-nj.org/public-works/pages/water-utility

QUESTIONS?