



Per- and Polyfluoroalkyl Substances (PFAS)

March 19, 2024



Summary



- PFAS are everywhere and pose a health risk.
- The EPA began monitoring PFAS as an unregulated contaminant in 2013
- OHA and EPA have established health advisory levels.
- The EPA is poised to adopt a new, much lower standard that will be legally enforceable.
- PFAS detected in three monitoring wells in 2023 and PFOS presence detected in two UCMR5 samples
 - Below OHA health advisory levels, but above new EPA proposed standard
- Milwaukie is taking this seriously and getting prepared.

Per- and Polyfluoroalkyl Substances (PFAS)



- PFAS are synthetic chemicals that have been manufactured and used by a broad range of industries since the 1940s.
 - Most commonly known - PFOS & PFOA
- PFAS are used in many applications because of their unique physical properties such as resistance to high and low temperatures, resistance to degradation, and nonstick characteristics.
 - used in firefighting foam, electronics manufacturing, chrome-plating, paper manufacturing, and other consumer and industrial uses.
- PFAS' have been detected worldwide in the air, soil, and water.
- Persistent, bioaccumulative, and associated health impacts
- There is evidence that continued exposure above specific levels to certain PFAS may cause adverse health effects.

PFAS Regulation



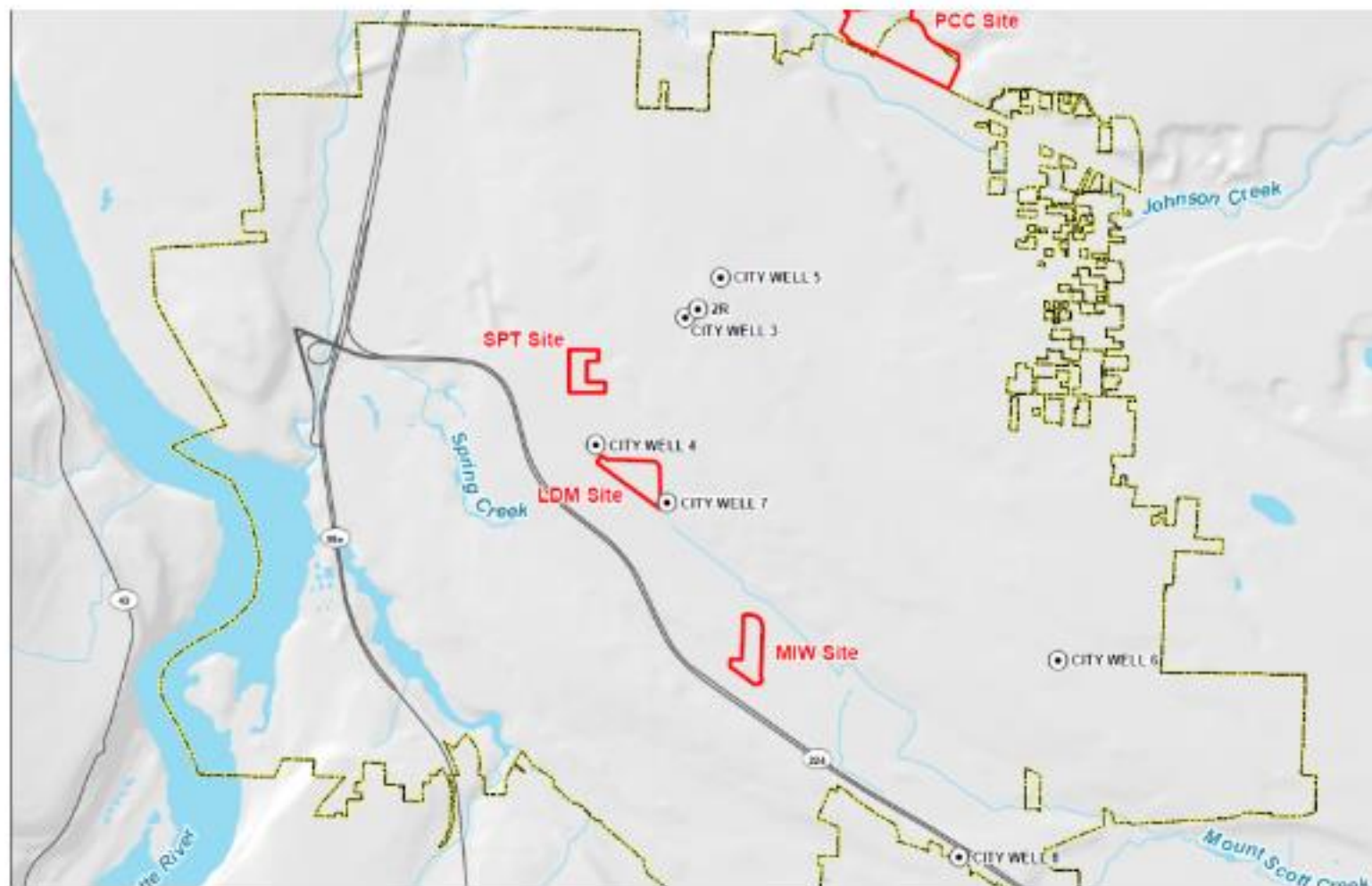
- Six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFBS) were monitored under the United States Environmental Protection Agency's (EPA) third Unregulated Contaminant Monitoring Rule (UCMR3).
 - Milwaukie sampled in 2013
 - Results from testing in Milwaukie in 2013 produced no detections.
 - The minimum reporting limit is the smallest measured concentration of a substance that can be reliably measured by using a given analytical method.
- EPA's Fifth Unregulated Contaminant Monitoring Rule (UCMR5) requires sample collection and analysis for 29 PFAS compounds
 - Milwaukie took its initial samples to meet this requirement in February 2024. Sample results are expected in late March or early April.
 - Subsequent samples will be taken in August 2024.
- OHA has established drinking water health advisory levels (HALs) for four PFAS compounds most commonly found in humans.
 - These health advisory levels for PFOS, PFOA, PFNA, and PFHxS
 - These HALs are set to 30 ppt.
 - Oregon's drinking water PFAS HALs are non-regulatory and do not mandate a required action

PFAS Regulation



- EPA has developed drinking water HALs for four PFAS chemicals
 - PFOA (0.004 ppt), PFOS (0.02 ppt), HFPO-DA (commonly referred to as GenX chemicals) (10 ppt), and PFBS (2000 ppt).
 - EPA's HALs are non-enforceable and non-regulatory. These HALs are below the levels at which current analytical methods can measure PFOA and PFOS. The minimum reporting limit for PFOA (4 ppt), PFOS (4 ppt), GenX Chemicals (5 ppt), and PFBS (3 ppt).
- EPA released a proposed National Primary Drinking Water Regulation (NPDWR) for six PFAS chemicals in 2023.
 - EPA is proposing to set a Maximum Contaminant Level (MCL) of 4.0 ppt for PFOA and PFOS and a hazard index-based regulation method for four additional PFAS compounds: PFNA, PFHxS, PFBS, and HFPO-DA commonly referred to as GenX chemicals.
 - These chemicals are not currently regulated.
 - Once final (2024), both the MCL and hazard index will be legally enforceable levels
 - If exceeded, water systems would be responsible for installing treatment or providing an alternate source of drinking water.

City of Milwaukie Groundwater Wells



- Six active wells
- Depths of ~300 to ~400 feet
- Completed in alluvial material that is not hydraulically isolated from surficial activities

PFAS and Milwaukee



- Unregulated Contaminant Monitoring Rule (UCMR) 3 Sampling
 - 2013 – Sampled at Treatment Plants, Well 6 and Well 8
 - Not Detected
 - Higher reporting limit 20ppt to 40 ppt
- 2023 PFAS Susceptibility Analysis
 - Identify potential risks
 - Sample Monitoring wells
- Summer 2023 Sample Monitoring Well (PMW-4)
 - PFAS Detected in monitoring well
 - Below OHA HALs
 - Above EPA proposed limits
 - Depth -189.5 ft

Sampling Results at PMW-4

Table 1. PFAS Concentrations in Monitoring Well PMW-4.
City of Milwaukie, Oregon.

Method			EPA 533 (ppt)				
Screening Criteria			PFOA	PFOS	PFBS	PFHxS	PFHxA
OHA-HALs			30	30	--	--	--
EPA Proposed MCL			4	4	--	--	--
Sample ID	Sample Date	Sample Type					
PMW-4-20230720	7/20/2023	Primary	4.7	9.03	7.06	5.4	ND U
PMW-4-FD-20230720	7/20/2023	Field Duplicate	4.7	8.67	7.64	5.71	3.08

Notes

Orange highlight = Result exceeds the referenced OHA-HAL

Yellow highlight = Result exceeds the referenced proposed MCL

BOLD: Detection

EPA: Environmental Protection Agency

MCL: Maximum Contaminant Level

OHA-HAL: Oregon Health Authority Health Advisory Level

ND = Not Detected

U = Result not detected above the referenced laboratory detection limit

-- = Not analyzed or not applicable

ppt = parts per trillion

PFAS and Milwaukie

- Retest and expand sampling to additional Monitoring wells
 - Sampled in January 2024 –Detected
 - Depths PMW- 1(118ft), PMW-2 (142 FT) and PMW-4 (189.5 ft)

Table 2. PFAS Concentrations in Monitoring Wells PMW-1, PMW-2, and PMW-4.
City of Milwaukie, Oregon.

Method			EPA 533 (ppt)							
Screening Criteria			PFOA	PFOS	PFBS	PFBA	PFHxS	PFHxA	PFHpA	PFPeA
OHA-HALs			30	30	--	--	--	--	--	--
EPA Proposed MCL			4	4	--	--	--	--	--	--
Sample ID	Sample Date	Sample Type								
PMW-1-20240201	2/1/2024	Primary	4.72	9.90	7.83	5.66	6.67	4.57	2.87	7.35
PMW-1-FD-20240201	2/1/2024	Field Duplicate	5.02	9.78	7.70	6.53	6.50	4.98	2.89	8.31
PMW-2-20240201	2/1/2024	Primary	5.18	12.5	5.10	ND U	4.38	3.16	2.01	3.81
PMW-4-20240201	2/1/2024	Primary	3.50	8.82	8.82	ND U	5.47	2.78	ND U	3.02

Notes

Orange highlight = Result exceeds the referenced OHA-HAL

Yellow highlight = Result exceeds the referenced proposed MCL

BOLD: Detection

EPA: Environmental Protection Agency

MCL: Maximum Contaminant Level

OHA-HAL: Oregon Health Authority Health Advisory Level

-- = Not analyzed or not applicable

ppt = parts per trillion

ND = Not Detected

U = Result not detected above the referenced laboratory detection limit

Next Steps



- UCMR 5 Sampling – February 2024
 - Results received March 18th
 - PFOS present in two samples above proposed EPA but below OHA HAL
- Engagement with DEQ and OHA
- Feasibility Study

PFAS

Thank you!

Questions?

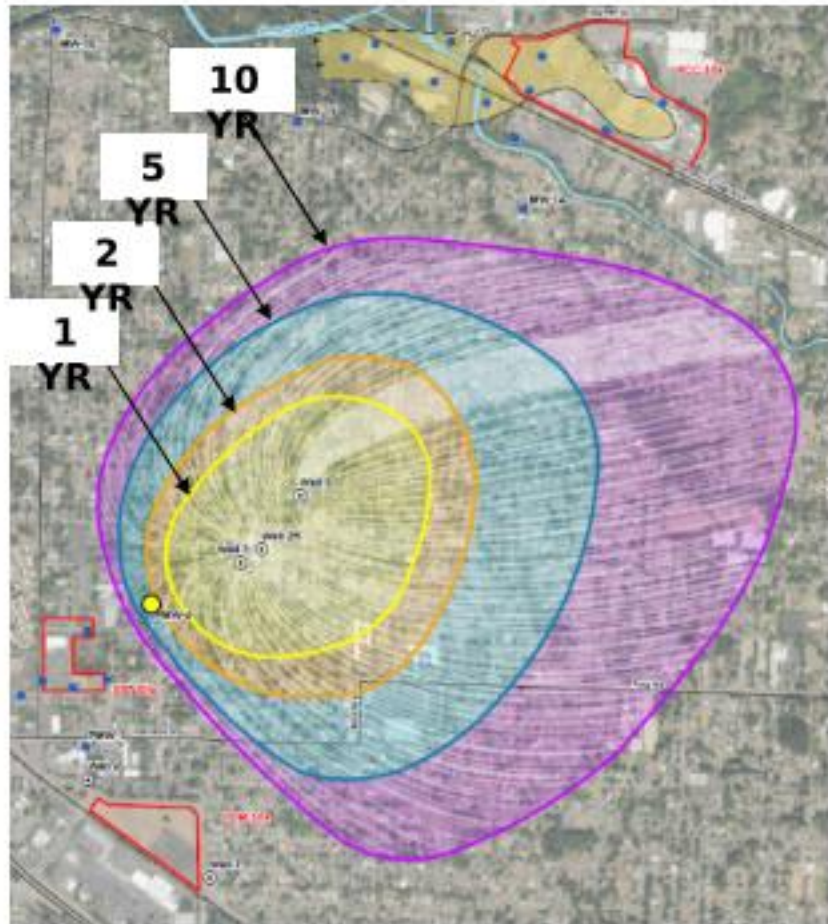
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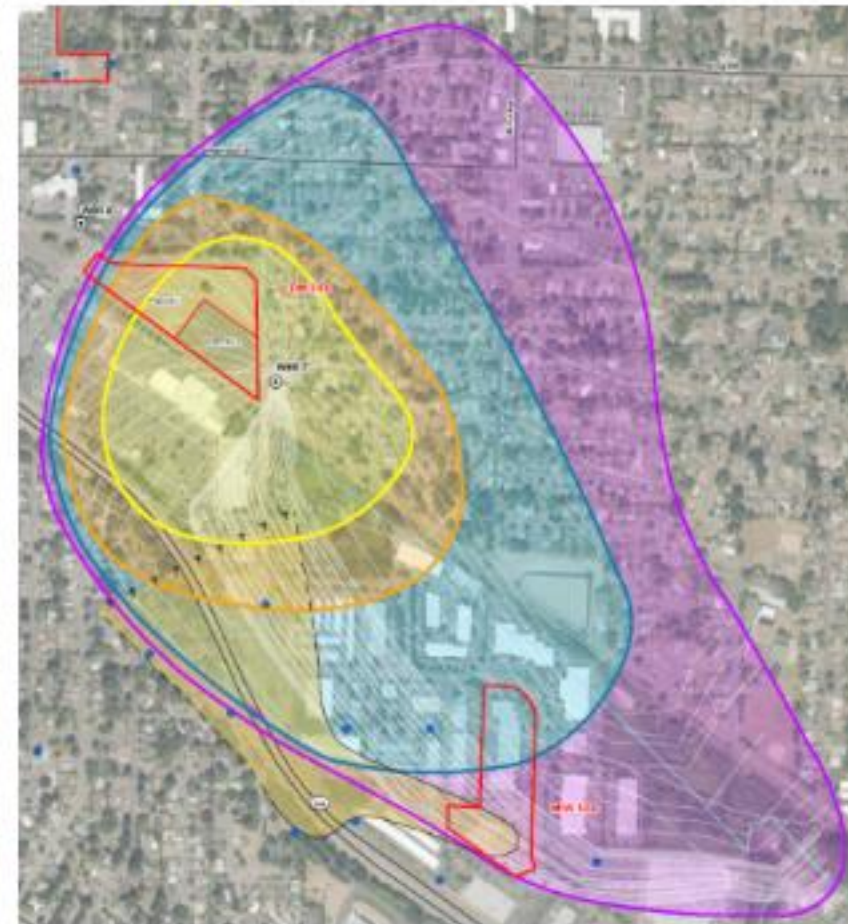
City of Milwaukie Capture Zones



Well 2R, Well 3, Well 5



Well 4



Well 7

Well Susceptibility Analysis

- Identify potential sources within the 10 year time-of-travel of each City well based on:
 - EDR Report (88 potential PFAS sources)
 - Historically unsewered areas
 - Fire station locations
- Applied a scoring system to identify relative risk of potential impact

Table 2. Relative Potential for PFAS Impacts

City Production Well Name	Total Sites	(1) Total Weighted Score	(2) Potential Maximum Score	(3) Normalized Score
Well 8	28	69	202	34.2%
Wells 2R, 3, and 5	16	40	118	33.9%
Well 7	28	53	202	26.2%
Well 4	15	26	111	23.4%
Well 6	1	3	13	23.1%