

DEPARTMENT: POLLUTION CONTROL AGENCY

STATE OF MINNESOTA
Office Memorandum

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TO: 3M PFC Settlement Citizen-Business Group and
Government and 3M Working GroupFROM: Kirk Koudelka *KK*
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SUBJECT: 2020 Residential Well Sampling for PFAS Compounds

As specified in Minn. Stat. 115B.171, the Minnesota Pollution Control Agency (MPCA) is providing the following information to the communities in the East Metropolitan area impacted by per- and polyfluoroalkyl substances (PFAS) groundwater contamination.

Since 2003, the MPCA and Minnesota Department of Health (MDH) have coordinated efforts to sample and monitor private residential water supply wells in South Washington County to monitor PFAS impacts and identify wells that exceed MDH drinking water guidance. An exceedance occurs when an individual PFAS is detected at concentrations above the health-based guidance value or when the mixture of PFAS in a sample exceeds a Health Risk Index (HI) value of 1. The HI is a calculated value that allows MDH to evaluate the additive effect of multiple chemicals in drinking water that have similar health effects, but have varying toxicities (which is reflected in their different health-based guidance values). Should MDH issue a drinking water advisory to a homeowner, the MPCA will offer to provide an alternate source of drinking water (bottled water) until a whole-house treatment system can be installed or city water connected to that residence. The MPCA will also maintain treatment filters installed so long as the drinking water advisory remains in effect.

As shown in the attached information broken down by community, 822 residential wells were sampled in 2020 and, of those, 106 were issued well advisories. These values account for approximately 20% of all residential wells sampled (3,648) and 7 % of all advisories issued (1,378) since PFAS sampling began in 2003. A similar number of residential wells are planned for sampling in 2021, although many of the wells to be sampled in 2021 will be “re-samples” to track trends in water quality, evaluate plume movement, and confirm the edges of the plumes.

MDH also samples both public drinking water supply wells, along with non-community water supply wells (i.e. schools, churches, greenhouses) to monitor PFAS impacts to public water supplies. All PFAS samples collected, both from public and private drinking water wells, are analyzed by the MDH Public Health Laboratory.

Major focuses of the 2020 sampling effort included:

- Defining the edges of the PFAS plumes (particularly in West Lakeland Township, Afton, Maplewood, and southwest Woodbury).
- Establishing buffer zones around the plumes where no perfluoro-octanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) are detected.
- Evaluating unexpected areas where wells exceed the health based guidance values (see more below).

- Responding to city sampling requests in Newport. Lake Elmo, Cottage Grove and Woodbury (to evaluate water quality in neighborhoods that may be candidates for city water expansion).
- Re-sampling all wells with HI greater than 0.5.
- Re-sampling wells in West Lakeland Township to begin to evaluate water quality trends.

As noted above, private well sampling detected three small isolated areas where the concentrations of PFAS tend to be higher than the surrounding sampling results and the PFAS “signature” (i.e., the relative concentrations of each of the individual PFAS) were inconsistent with the known sources of PFAS. This may or may not be indicative of small, nearby, but currently unidentified source(s). Two of these areas were identified in northwest Lake Elmo and one in southeast Cottage Grove - south Denmark Township. MPCA and MDH will continue to monitor these areas and evaluate the reasoning of these PFAS detections.

The significant increase in sample numbers over the past 3-4 years is primarily due to the continued response to the lowering of drinking water criteria for several PFAS compounds by MDH in May 2017, and for a further reduction in the criteria for PFOS in April 2019. The lower drinking water PFAS criteria established by MDH not only increased the number of wells to be sampled, but greatly expanded the groundwater area of concern. The East Metro ground water plume area with wells impacted by the 3M PFAS disposal sites and which exceed the current drinking water criteria have now been generally defined.

Some private wells have been routinely monitored since the mid-2000s, particularly those that are closest to the known disposal sites and in areas where many other wells have advisories. In 2020, MDH and MPCA also attempted to re-sample all wells in the East Metro with a Health Risk Index (HI) value greater than 0.5 and also to re-sample all wells in West Lakeland Township that have not been issued an advisory and have only been sampled once (this effort will be completed in spring 2021).

Given that a significant area of impact (eastern Lake Elmo, West Lakeland Township, Afton, Lakeland) was initially sampled in 2018-2020, evaluating long-term trends in PFAS contaminant levels in these areas is not possible at this time. Some wells along the eastern edge of Lake Elmo and the western edge of West Lakeland Township were first sampled between 2014 and 2017 and have been sampled several times since. While this timeframe is still not long enough to provide reliable long-term trend information, these results appear to indicate that PFAS concentrations in this area may be stable.

In those areas of more frequent/historic monitoring, such as in Cottage Grove, Lake Elmo, Woodbury, Maplewood, and Denmark Township, overall concentrations of PFAS compounds detected appear to be stable or declining. However, given the very complex hydrologic conditions in the East Metro, there are some areas in which trends in PFAS levels appear to be slightly increasing, such as parts of Cottage Grove and Lake Elmo.

For example, levels of PFOS appeared to be either stable or trending up in wells located in the River Acres/Langdon area of Cottage Grove. PFOA detected in this same area is increasing in some wells, while decreasing in others. In areas around Goodview/Granada Avenues and the central part of the Pine Coulee neighborhood, levels of PFOA appear to be increasing in some wells. The Granada and River Acres neighborhoods have been connected to city water or will be in 2021 through funding provided to the City under the 3M Settlement.

In Lake Elmo, levels of PFOS and PFOA found in the Stonegate development have indicated a slight increase in some wells, but most are stable or decreasing. In other Lake Elmo developments, such as Torre Pines, Parkview and Cardinal Ridge, there has been a significant decrease in levels of PFOA and PFOS. The Stonegate neighborhood is in the process of being connected to the municipal drinking water supply. The other three neighborhoods have been recommended to be connected to the municipal supply in the Conceptual Drinking Water Supply Plan.

Overall, levels of PFAS in Woodbury residential wells are generally stable, with PFOA found at trace levels.

Improved lab methods have permitted detections of PFOA and PFOS at part per trillion concentrations, which were not detectable previously. In some instances, detection of these very low levels combined with the other PFAS in the samples were enough to result in well advisories due to HI values slightly greater than 1.

In all of the areas mentioned above, and in areas of the county sampled for the first time in 2018-2020, the MPCA and MDH will continue to monitor levels of PFAS compounds in groundwater and evaluate trends in concentrations.

In response to numerous requests from east metro residents in 2018, MDH developed an on-line sample request form for residents to request their residential well be sampled for PFAS compounds. In 2020, due to the corona virus pandemic, MDH modified its sample permission request letters to also have residents reply through this online form rather than returning a form by mail (as staff were not in the office to regularly check the mail). MDH received 509 sample request/permission forms from Washington County residents through the on-line system. MDH and MPCA also received requests for well sampling by other means such as phone calls, e-mails or in-person at various public meetings held in the east metro communities. MDH and MPCA staff prioritized these requests to ensure those in areas of highest priority would be sampled first. A significant majority of requests received were for private wells in areas already planned for sampling in 2020. With a few exceptions (non-responsive well owners) all of these wells have been sampled.

Utilizing the sampling results, the MPCA maintains an on-line interactive map (<https://www.pca.state.mn.us/waste/well-sampling-east-metro-area>) which indicates locations of wells sampled, well advisories issued, and planned sampling areas and provides a link to the online sampling request form.

In 2021, MPCA and MDH plan to focus on the following:

- Establish a long-term monitoring program based on well sampling history, nearby well data, and plume behavior to determine sampling frequencies. (In 2016, the existing long-term monitoring program was disrupted by the need to expand sampling into areas not previously sampled).
- Adjust sampling frequency as needed into areas with low level PFOS and/or PFOA detections to identify the levels of PFAS in wells.
- Establish sentry well system along the edges of the PFAS plumes to provide notice of any expansion of the plumes that would warrant additional well sampling.
- Continue to monitor private wells in neighborhoods, such as Salem Meadows in Woodbury, to help determine if connection to the municipal water supply is may be needed.
- Continue to monitor private wells in areas, such as Afton and Grey Cloud Island, not on a municipal supply to determine if a home treatment may be needed.
- Continue to provide sampling of other wells on request from residents within the PFAS sampling area.

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EAST METRO PFAS RESIDENTIAL WELL SAMPLING -- 2020

Private Wells*

Community	No. Residential Wells Sampled in 2020	Residential Well Advisories Issued in 2020	No. Residential Wells Sampled Since 2003	Residential Well Advisories Issued Since 2003	Total Residential Well Samples since 2003
Afton	80	3	258	44	316
Cottage Grove	103	8	693	215	2658
Denmark Township	14	0	127	1	190
Grey Cloud Island Township	9	0	110	68	373
Hastings (incl. Ninenger Twp)	0	0	10	2	13
Lake Elmo	223	32	843	343	2826
Lake St. Croix Beach	1	0	6	0	7
Lakeland	11	4	118	39	130
Lakeland Shores	0	0	15	9	15
Maplewood	18	2	71	8	107
Newport	42	2	56	4	98
Oakdale	2	1	10	2	17
St. Mary's Point	1	0	5	0	5
St. Paul	19	1	38	1	39
St. Paul Park	0	0	20	11	34
Stillwater	0	0	4	0	4
West Lakeland Twp	210	51	1004	627	1224
Woodbury	89	2	260	4	556
Totals	822	106	3648	1378	8612

*source - Minnesota Department of Health