

January 12, 2022

The Honorable Carrie Ruud
Chair, Senate Environment and Natural
Resources Policy and Legacy Finance Committee
3233 Minnesota Senate Building
95 University Avenue West
St. Paul, MN 55155

The Honorable Patricia Torres Ray
Ranking Minority Member, Senate Environment
and Natural Resources Finance Committee
2225 Minnesota Senate Building
95 University Avenue West
St. Paul, MN 55155

The Honorable Bill Ingebrigtsen
Chair, Senate Environment and Natural
Resources Finance Committee
3207 Minnesota Senate Building
95 University Avenue West
St. Paul, MN 55155

The Honorable Josh Heintzeman
Republican Lead, House Environment and
Natural Resources Finance and Policy Committee
353 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
St. Paul, MN 55155

The Honorable Rick Hansen
Chair, House Environment and Natural
Resources Finance and Policy Committee
407 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
St. Paul, MN 55155

The Honorable Fong Hawj
Ranking Minority Member, Senate Environment
and Natural Resources Policy and Legacy Finance
Committee
2201 Minnesota Senate Building
95 University Avenue West
St. Paul, MN 55155

RE: 2021 Residential Well Sampling for Per- and Polyfluoroalkyl Substances Compounds

Dear Committee Chairs and Ranking Minority Members:

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

During 2021, the MPCA incurred \$223,227 in analytical costs and \$69,899 in contractual costs to collect samples from residential wells. This included first-time sample collection from numerous residences in the East Metro area, ongoing monitoring of residences previously sampled to evaluate trends in contaminant levels, and appropriate quality control samples for data validation.

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Committee Chairs and Ranking Minority Members

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If you have additional questions regarding residential well sampling in the East Metropolitan area, please contact Gary Krueger at gary.krueger@state.mn.us, or at 651-757-2509.

Sincerely,

Alexis Donath

This document has been electronically signed.

Alexis Donath
Legislative Coordinator
Commissioner's Office

AD/GK:mt

Enclosures/Attachments

DEPARTMENT: POLLUTION CONTROL AGENCY

STATE OF MINNESOTA
Office Memorandum

DATE: January 12, 2022

TO: 3M PFC Settlement Citizen-Business Group and
Government and 3M Working GroupFROM: Kirk Koudelka
Assistant Commissioner
Commissioners Office

PHONE: 651-757-2241

SUBJECT: 2021 Residential Well Sampling for Per - and Polyfluoroalkyl Substances 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 a 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 one. 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, 574 residential wells were sampled in 2021 and, of those, 105 were issued well advisories. These values account for approximately 18% of all residential wells sampled (3,860) and 7% of all advisories issued (1,481) since PFAS sampling began in 2003, although many of the wells sampled this year were "re-samples". Wells with an HI >0.5 were re-sampled to evaluate their current risk level and other wells were re-sampled to track trends in water quality, evaluate plume movement, and confirm the edges of the advisory areas. A similar number of residential wells are planned for sampling in 2022, although with the increasing number of residences being connected to city water supplies and the increase in whole-house treatment system installations, it is expected the number of residential wells being sampled each year will slowly decline.

The 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. The MPCA and MDH coordinate the scheduled sampling for these public supply wells, and adjust the timeframe for sampling as needed. An example adjustment was done for Woodbury city wells to evaluate the potential for well advisories to be issued. This enhanced monitoring effort did result in well advisories being issued and the implementation of a temporary carbon treatment system for several Woodbury wells. A temporary carbon treatment system was also constructed for one of Oakdale's city wells, which is in addition to the treatment system that has been in operation since 2006.

In December 2021, MDH established a health-based value (HBV) for perfluorohexanoic acid (PFHxA). At that time, the Health Risk Index (HI) for all samples collected within the previous two years were re-evaluated to determine if any additional well advisories were needed. This two year time frame was established by MPCA and MDH which was

consistent with previous instances in which a new or lowered health criteria was developed. Those wells sampled prior to 2020 will be evaluated as top priority for the next round of sampling. As a result of the PFHxA health-based guidance value, 14 additional well advisories were issued and are reflected in the total number of advisories (105) issued in 2021 described above.

The significant increase in sample numbers over the past five years is primarily due 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 perfluorooctane sulfonate (PFOS) and establishment of an HBV for PFHxS 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 areas where private wells impacted by the 3M PFAS disposal sites and exceed current drinking water criteria have now been generally defined.

Major focuses of the 2021 sampling effort included:

- Further defining the edges of the PFAS advisory areas (particularly in West Lakeland Township, Afton, Maplewood, and southwest Woodbury).
- Establishing buffer zones around the advisory areas where no perfluorooctanoic acid (PFOA) and PFOS are detected.
- Evaluating unexpected areas where wells exceed the health-based guidance values (see “Anomalous Area Sampling” below).
- Responding to city sampling requests 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, especially in West Lakeland Township, Afton, and Lakeland/Lakeland Shores, to evaluate water quality trends.
- Responding to well owner sampling requests (including sampling of filtered water).

Anomalous Area Sampling

As noted above, private well sampling in 2020-2021 identified five relatively small, unexpected, and isolated areas where the concentrations of PFAS tend to be higher than the surrounding sampling results. These anomalous or “hot-spot” areas are located at:

- Lake Elmo (near Ideal Avenue and 38th Street North)
- Lake Elmo (immediately north of Lake Jane)
- Lake Elmo (near the Northwest shore of Lake Elmo)
- Southeastern Cottage Grove (central part of the Pine Coulee development)
- Southeastern Denmark Township (along Highway 10)

The PFAS “signature” (i.e., the relative concentrations of each of the individual PFAS) in the wells in Lake Elmo seem to be inconsistent with the PFAS signature at either the Washington County Landfill or the 3M Oakdale site, the only known sources of PFAS in that area. This may or may not be indicative of nearby, but currently unidentified, PFAS source(s). Additional assessment as to the sources of these anomalous areas will be needed to determine if any additional response actions will be necessary.

The PFAS signatures at the Cottage Grove and Denmark Township anomalous areas are more consistent with the PFAS signature found in wells around the 3M-Woodbury Disposal Site, but they do not appear to be hydrologically connected to that source area and there are several square miles between these hotspots and the disposal site where wells have little or no PFAS. This again suggests there may be a nearby, but currently unidentified, PFAS source(s). As with the Lake Elmo areas, additional assessment as to exact sources will be necessary to determine what, if any, additional response actions may be necessary.

In 2021, MPCA and MDH continued to sample wells in the affected hotspot areas to identify additional impacted residential wells which exceed health-based values, and further refine our understanding of the PFAS signatures in each area.

Evaluating PFAS Concentration Trends

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 wells have advisories. In these areas we can evaluate PFAS concentration trends. In other areas, such as eastern Lake Elmo, West Lakeland Township, Afton, Lakeland, most wells were first sampled in 2017-2022, making long-term trend predictions difficult. Comparing early sample results to recent results is also difficult, as the lab methods have improved dramatically since 2003.

Despite the limitations of the dataset, some general patterns in PFAS concentrations in private residential wells are emerging.

- **Near the known 3M disposal sites** in Oakdale, Lake Elmo, and Woodbury, PFAS concentrations show slow, steady decreases. In parts of southwest Lake Elmo (Torre Pines development) these decreases are significant (as much as 50%), although the PFAS levels are still well above MDH health criteria.
- **Near the downgradient edges of the plumes** as they approach the Mississippi and St. Croix Rivers, PFAS concentrations appear to be slowly increasing. Some examples include west and southwest Woodbury, southeast Maplewood, south Cottage Grove, and Grey Cloud Island Township. In some isolated areas (near the I-94 corridor in West Lakeland, north Afton, and Lakeland) concentration increases may be occurring more rapidly in some aquifers.
- **In the “middle” of the plumes** (most of Lake Elmo, Woodbury, north Newport, and Cottage Grove), concentrations appear to be relatively stable although improved detection limits have allowed for the detection of trace levels of PFOS and PFOA where not previously detected, resulting in higher HI values and giving the appearance of increases. There are some exceptions:
 - Downgradient of the Lake Elmo Park Preserve – including the Stonegate development and Woodbury main city wellfield, where concentrations appear to be slowly trending upward.
 - The “old village” area of Cottage Grove (along and east of Lamar Avenue) where concentrations in some wells has increased.
- The PFAS concentrations near the “hotspots” described above (especially northwest Lake Elmo and southeast Cottage Grove) may be increasing slowly, although more sampling is needed to confirm this (except for the Northwest shore of Lake Elmo and Pine Coulee area of Cottage Grove, where the hotspots were very recently identified).
- Wells in most of Afton (south of 15th Street South), St. Mary’s Point, and most of Denmark Township (aside from the southeast hotspot) appear to be largely unaffected by the PFAS groundwater contamination, but these wells may have low levels of PFBA and PFPeA and, occasionally trace levels of PFOA. The concentrations in most cases are similar to levels seen elsewhere in the Twin Cities metro region, but some are higher and may reflect historic airborne deposition in south Washington County, but there is not sufficient information to confirm this.

In all of the areas mentioned above (if not connected to city water), and in areas of the county sampled for the first time in 2018-2021, 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). In 2021, MDH received 273 sample request/permission forms from Washington County residents through the on-line system. The MDH and MPCA also received requests for well sampling by other means such as phone calls and e-mails. The MDH and MPCA staff prioritized these requests to ensure those in areas of highest priority would be sampled first. A significant number of requests received were for private wells in areas already planned for sampling in 2021. With a few exceptions (non-responsive well owners) all of these wells have been sampled.

Using 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 2022, 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 trends of PFAS levels in wells.
- Establish wells along the edges of well advisory areas to provide notice of any changes in concentrations that would warrant additional residential well sampling.
- Continue to monitor private wells in affected areas to help determine if connection to municipal water or installation of a home treatment system is needed.
- Continue to provide sampling of other wells within the PFAS sampling area, upon request from residents.
- The MPCA will be taking lead role in development of annual residential sampling in the East Metro and continue to coordinate with MDH in determination of drinking water advisories.
- The MPCA will be contacting residences in which PFAS levels exceed the Treatment Threshold, as outlined in the Conceptual Drinking Water Supply Plan to offer the installation and maintenance of GAC systems.

Report contributors:

Ginny Yingling – Minnesota Department of Health
Tim Lockrem – Minnesota Pollution Control Agency
Chris Formby – Minnesota Pollution Control Agency
Gary Krueger – Minnesota Pollution Control Agency

KK/GK:mt

EAST METRO PFAS RESIDENTIAL WELL SAMPLING -- 2021

Private Wells*

Community	Number of Residential Wells Sampled in 2021	Residential Well Advisories Issued in 2021	Number of Residential Wells Sampled Since 2003	Residential Well Advisories Issued Since 2003	Total Residential Well Samples Since 2003
Afton	62	8	299	52	380
Cottage Grove	55	13	700	226	2710
Denmark Township	19	1	138	2	210
Grey Cloud Island Twp	26	1	109	69	400
Hastings (incl. Nenenger Twp)	11	2	17	2	21
Lake Elmo	134	21	890	361	2965
Lake Saint Croix Beach	1	0	8	0	9
Lakeland	37	17	126	57	161
Lakeland Shores	3	3	16	12	18
Maplewood	31	10	74	18	131
Newport	8	0	58	4	106
Oakdale	3	0	13	2	20
Saint Mary's Point	2	0	7	0	7
Saint Paul	10	0	45	1	49
Saint Paul Park	1	0	20	11	35
Stillwater	0	0	4	0	4
West Lakeland Township	129	28	1057	659	1370
Woodbury	42	1	279	5	600
Totals	574	105	3860	1481	9196

*source - Minnesota Department of Health