

COMMENTS OF THE CLEAN WATER ORGANIZATIONS
to
MINNESOTA POLLUTION CONTROL AGENCY
REGARDING THE 3M COTTAGE GROVE FACILITY WASTEWATER PERMIT

August 30, 2024

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INTRODUCTION

Minnesota Center for Environmental Advocacy (“MCEA”) and the undersigned organizations (collectively, the “Clean Water Organizations”) appreciate the opportunity to provide comment on the Minnesota Pollution Control Agency’s (“MPCA”) draft wastewater permit for 3M Chemical Operations in Cottage Grove (“the Draft Permit”). MCEA is a Minnesota non-profit organization whose mission is to use the law, science, and research to preserve and protect Minnesota’s natural resources, its wildlife, and the health of its people. For fifty years, MCEA has worked with citizens and government decision-makers to protect and improve the quality of Minnesota’s environment. The Clean Water Organizations are environmental organizations whose missions include the protection of Minnesota’s water resources and local government units impacted by relevant contamination. These comments are informed by the expert review of the Draft Permit by staff from MCEA and the undersigned organizations as well as consultants Ginny Yingling¹ and Gary Krueger.²

This comment responds to the inclusion of numeric discharge and intervention limits for six per-and-polyfluoroalkyl substances (“PFAS”) compounds in the Draft Permit, as well as requirements to monitor over 100 other PFAS chemicals in the facility’s discharge. This is the first industrial wastewater permit in the state to incorporate numeric limits for PFAS and, therefore, sets important signals and precedents in the work to regulate the risks of these persistent chemicals to public health, wildlife, and the environment. The Draft Permit is also the latest in a series of

¹ Ginny Yingling is a former hydrogeologist for the state of Minnesota. From 2003 to 2022, she was the lead investigator of PFAS contaminated sites for the Minnesota Department of Health. She also co-chaired the Interstate Technology and Regulatory Council (ITRC) PFAS team which authored a PFAS "state of the science" report and supporting factsheets and training modules.

² Gary Krueger was former MPCA Superfund Project Manager and Supervisor of the East Metro Unit, whose responsibilities included oversight of 3M actions under the 2007 SACO and implementation of projects funded under the 2018 NRDA Settlement Agreement.

regulatory actions by state and federal agencies to hold the 3M corporation accountable for decades of undisclosed contamination of surface waters and groundwater in the East Metro region of the Twin Cities with PFAS. These regulatory actions include a Superfund Consent Order for soil/sediment removal and groundwater treatment for public and private water supplies, multiple settlement requirements that stem from a lawsuit filed by Minnesota's Attorney General against 3M in 2010, and additional state enforcement actions for hazardous waste violations. As public water systems face astronomical costs to clean up PFAS from municipal water supplies under new federal health limits, it is of paramount importance that 3M is required to pay for the full cost of the contamination it has caused.

The Clean Water Organizations strongly support the proposed Water Quality Based Effluent Limits ("WQBELs") for PFOS, PFOA, and PFHxS, as well as the requirements on 3M to monitor for over 100 other PFAS chemicals in the facility's discharge. As MPCA determined, applicable regulations require strict discharge standards at near non-detect levels for PFOS, PFOA, and PFHxS and we support inclusion of these limits in the Draft Permit. However, the Draft Permit allows for the discharge of potentially large volumes of PFBA, PFBS, and PFHxA (up to 441,285 kg of PFBS, 1,577,420 kg of PFBA, and 646,960 kg of PFHxA over the 5-year permit period). And the Draft Permit fails to establish limits for other PFAS (notably HFPO-DA and PFNA) that have been detected in the 3M facility wastewater and are regulated at the federal and state level for drinking water.

The environmental persistence of these chemicals, the importance of the Mississippi River as a national and state resource, the number of people who live along the river downstream of the 3M facility, and the mounting evidence from toxicological research of greater potential harm from these chemicals than previously suspected provide a strong case for stricter limits. Based on our

review of the Draft Permit, we submit that the permit and the site-specific criteria that inform it be strengthened with the following amendments or additions:

- a) Amend the Site-Specific Criteria Hazard Index for the Mississippi River Miles 820 to 812 to include PFHxS based on the thyroid/endocrine toxicological endpoint and a second Hazard Index for PFOS, PFOA, PFHxA, PFHxS, and PFBA for the liver toxicological endpoint.
- b) Develop and include site-specific Technology Based Effluent Limits (“TBELs”) as well as WQBELs for PFAS. Specifically, replace the WQBELs for PFHxA, PFBS, and PFBA with site-specific TBELs that represent the technological capability of the proposed advanced wastewater treatment system to remove these shorter-chained compounds to near non-detect levels, and develop site-specific TBELs for HFPO-DA and PFNA, which are regulated through federal Maximum Contaminant Levels (“MCLs”) and statewide Water Quality Standards (“WQS”) for Class 1 waters.³
- c) Require stringent monitoring and data collection throughout the 5-year term of the permit and add an annual review of PFAS intervention and discharge limits based on the latest toxicological information.
- d) Clarify/expand many of the monitoring provisions for PFAS.
- e) Add additional requirements for data reporting and the Annual Community Meeting to ensure both are accessible to the public.

³ Minn. R. 7050.0221 subp. 1(B) explains that federal MCLs are adopted and incorporated by reference as surface and groundwater standards for Class 1A, 1B, and 1C waters. This takes place on the date the MCLs are published in the Federal Register. On June 25, 2024, the EPA published final MCLs of 10 ng/L for HFPO-DA and PFNA.

I. SUMMARY OF FACTUAL BACKGROUND

A. 3M discharged PFAS chemicals to the environment for decades without disclosure to state or federal regulators

PFAS are the emergent contaminants of our time. Known colloquially as “forever chemicals,” PFAS are a family of over 1,000 synthetic chemicals that have been used for decades in products such as fire-fighting foams, raincoats, cookware, dental floss, carpets, medical devices, mascara, and thousands more consumer products. PFAS compounds replace the common carbon-hydrogen bond with a carbon-fluorine bond—one of the strongest bonds in organic chemistry—which makes them resistant to heat, water, and oil.⁴ One of the largest corporate manufacturers of these chemicals, 3M, is based here in Minnesota, and since the 1950s, 3M has been at the epicenter of the production and global circulation of these substances. Today, PFAS are ubiquitous in our environment and have been detected at dangerous levels in water, soils, and wildlife across the world. PFAS dissolve in water and bioaccumulate, which means that they build up in humans, fish, and animals over time.⁵ Elevated levels of PFAS have been correlated with human health impacts such as adverse birth outcomes, thyroid disease, various forms of cancer, and more.

3M is one of the world’s largest manufacturers of PFAS, which accounts for \$1.3 billion in annual sales revenue. Major PFAS manufacturers like 3M and Dupont have been aware of the serious health risks PFAS poses to humans and animals but have obfuscated that information for decades. In 2019, one publication compiled an exhaustive list of studies and internal documents

⁴ Waste 360, *The Science of PFAS: Finding Strength in the Single Bond* (May 13, 2021), <https://www.waste360.com/pfas-pfoas/the-science-of-pfas-finding-strength-in-the-single-bond>.

⁵ National Institute of Health, *Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)* (August 27, 2024), <https://www.niehs.nih.gov/health/topics/agents/pfc/index.cfm>.

that make this obfuscation clear.⁶ For example, in the 1950s, Stanford researchers found that PFAS binds to proteins in human blood, bioaccumulates in bodies, and could pose health risks.⁷ In 1975, 3M was informed that PFAS builds up in human blood samples and that exposure to PFAS can lead to liver damage.⁸ It wasn't until 1978 that 3M made a statement that PFOS and PFOA "should be regarded as toxic."⁹ In 1981, both 3M and Dupont reassigned female employees after PFAS animal studies showed damage to developing fetuses,¹⁰ and in 1989, 3M found elevated cancer rates among PFAS workers.¹¹ In March of 1999, a 3M scientist resigned and noted that his resignation was prompted by a "profound disappointment in 3M's handling of the environmental risks associated with the manufacture and use of perfluorinated sulfonates."¹²

For over seventy years, the unregulated discharge of PFOA and many other PFAS chemicals by 3M at the Cottage Grove site was never disclosed to state and federal agencies or the general public, despite 3M's knowledge of the impacts of certain PFAS on animal and human health.¹³ It wasn't until 2002 that 3M informed MPCA that PFOS and PFOA had been detected in water supply wells at the Cottage Grove facility, and in 2003 PFAS was detected in groundwater

⁶ Hayes, Jared, *For decades, polluters knew PFAS chemicals were dangerous but hid risks from public*, Environmental Working Group (Aug. 29, 2019), <https://www.ewg.org/research/decades-polluters-knew-pfas-chemicals-were-dangerous-hid-risks-public>.

⁷ Nordby, Gordon L. and J. Murray Luck, *Perfluorooctanoic acid interactions with human serum albumin*, *Journal of Biological Chemistry* 1956, 219: 399-404.

⁸ *3M Interoffice Correspondence on Fluorocarbons in Human Blood Plasma* (Aug. 20, 1975), (Attachment 1).

⁹ *3M Interoffice Correspondence on Review of Animal Studies* (May 17, 1978), (Attachment 2).

¹⁰ *3M Standby Press Statement* (Apr. 15, 1981), (Attachment 3), and *3M Internal Correspondence on Phone Conversation from Dr. McKusick – DuPont* (Dec. 14, 1981) (Attachment 4).

¹¹ Mandel, Jack S., *Correspondence to Larry Zobel, 3M Staff Physician, University of Minnesota Division of Environmental and Occupational Health* (Apr. 6, 1989), (Attachment 5).

¹² Purdy, Richard, *Letter of Resignation from 3M* (Mar. 28, 1999), (Attachment 6).

¹³ Hayes, Jared, *For decades, polluters knew PFAS chemicals were dangerous but hid risks from public*, Environmental Working Group (Aug. 29, 2019) <https://www.ewg.org/research/decades-polluters-knew-pfas-chemicals-were-dangerous-hid-risks-public>.

at 3M waste disposal sites in Oakdale and Woodbury. As part of a facility-wide assessment of PFAS contamination sources, 3M found that the highest PFAS concentrations were at the D1, D2, and D9 waste disposal locations at the Cottage Grove site and in sediment in the East Cove, where wastewater from the facility flows before it is discharged to the Mississippi River.¹⁴ Finally, in 2004 PFAS that had leached into groundwater from 3M waste disposal sites at Cottage Grove, Oakdale, and Woodbury were detected in drinking water in parts of Washington County.¹⁵ Groundwater in the vicinity of the Washington County Landfill was also impacted by PFAS from 3M waste disposal at that facility.

B. It is well documented that PFAS are ubiquitous in the environment and pose a danger to human health

After decades of the commercial production of PFAS chemicals for profit by corporations like 3M, PFAS are now known to be ubiquitous throughout our environment and even in our bloodstreams.¹⁶ A 2023 study released by the United States Geological Survey found that PFAS were present in at least 45% of drinking water systems within the U.S, and the most frequently detected PFAS substances included PFBS, PFHxS, and PFOA.¹⁷ As of December 2022, 3M has been named as a defendant in over 3,500 cases related to PFAS chemicals. Most have been consolidated in federal multidistrict litigation. 3M and other PFAS manufacturers have also been

¹⁴ Gary Krueger, *Personal communication regarding timeline of 3M actions regarding PFAS releases and superfund enforcement* (Aug. 2024), (Attachment 7).

¹⁵ Minnesota Pollution Control Agency, *Cottage Grove 3M Chemical Operations*, <https://www.pca.state.mn.us/local-sites-and-projects/cottage-grove-3m-chemical-operations>.

¹⁶ Ryan C. Lewis, Lauren E. Johns & John D. Meeker, *Serum Biomarkers of Exposure to Perfluoroalkyl Substances in Relation to Serum Testosterone and Measures of Thyroid Function Among Adults and Adolescents from NHANES 2011-2012*, 12 INT’L J.

¹⁷ *Tap Water Study Detects PFAS ‘Forever Chemicals’ Across the U.S.*, U.S. Geological Surv. (Jul. 5, 2023), <https://www.usgs.gov/news/national-news-release/tap-water-study-detects-pfas-forever-chemicals-across-us>.

named in lawsuits by several states, including Minnesota, for continuing to make PFAS products despite knowing of the dangers associated with them for decades. On December 20, 2022, 3M announced it would discontinue the manufacture of long-chain PFAS by the end of 2025. However, the production of short-chain PFAS compounds continues at sites like the 3M Cottage Grove facility.

PFAS is now subject to both federal and state regulation because of its known health effects on human populations. Studies have shown PFAS exposure is associated with: reduced immune function; thyroid disease; liver disease; lipid and insulin dysregulation; high cholesterol; kidney disease; renal disease; reproductive dysfunction such as reduced fertility, menstrual disruption, and pregnancy induced hypertension and preeclampsia; low birth weight and developmental interruptions; and various cancers.¹⁸ In a recent rulemaking, the United States Environmental Protection Agency (“EPA”) determined that two of the most common PFAS compounds, PFOA and PFOS, are “likely to be carcinogenic” to humans and set federal MCLs for six PFAS chemicals, with safe levels measured in shockingly small amounts of parts per trillion.¹⁹ As of June 25, 2024, these standards have been incorporated as statewide WQS for Class 1 waters used for drinking consumption in the State of Minnesota (see Section III for further discussion). In addition, MPCA’s “PFAS Blueprint” identifies the need to limit PFAS exposure through all consumption pathways and to increase requirements to test and monitor for these substances in discharges from landfills, wastewater treatment plants, and other point sources.²⁰

¹⁸ Suzanne E. Fenton et al. *Per- and Polyfluoroalkyl Substance Toxicity and Human Health Review: Current State of Knowledge and Strategies for Informing Future Research*, 40 *Environmental Toxicology & Chemistry* 606-630 (2021).

¹⁹ PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 60, 18638 (Mar. 29, 2023) (codified at 40 C.F.R. pts. 141, 142).

²⁰ Sophie Greene & Catherine Neuschler, *Minnesota’s PFAS Blueprint*, Minnesota Pollution Control Agency (Feb. 2021), <https://www.pca.state.mn.us/sites/default/files/p-gen1-22.pdf>.

PFAS water pollution leads to the accumulation of PFAS in the bodies of fish and other aquatic organisms.²¹ Because of the ability of PFAS chemicals to bioaccumulate, over time fish tissue often contains much greater concentrations of PFAS than background water levels.²² PFAS concentrations—particularly PFOS and PFOA—are so elevated in fish that even infrequent consumption of these fish can significantly increase PFAS levels in humans.²³ For example, a 2023 study estimated that eating one serving of freshwater fish with elevated PFOS fish tissue concentrations is equivalent to drinking water with elevated levels of PFOS for a month.²⁴

The human health (and ecological) risks of shorter-chain and other “replacement” PFAS, such as PFBA, PFBS, PFHxA, HFPO-DA (GenX), are not as well understood and an area of active research. It was initially assumed, based on serum concentration measurements, that short-chain PFAS are less bioaccumulative and therefore less risky than long-chain PFAS like PFOS and PFOA. However, recent studies have noted that while these chemicals may not accumulate in blood serum, they do sequester in various organs.²⁵ Perez, et al. (2013) found that PFHxA was the most commonly detected PFAS and had the highest median concentrations in liver and brain tissue. PFHxA was also commonly detected in lung tissue at the second highest median concentration. PFBA was the most commonly detected and had the highest median concentrations in kidney and

²¹ *PFAS in fish*, Minnesota Pollution Control Agency, <https://www.pca.state.mn.us/air-water-land-climate/pfas-in-fish>.

²² *Id.*

²³ ‘Forever chemicals’ in freshwater fish: Mapping a growing environmental justice problem, Environmental Working Group (Jan. 17, 2023) <https://www.ewg.org/news-insights/news/2023/01/forever-chemicals-freshwater-fish-mapping-growing-environmental-justice>.

²⁴ Nadia Barbo, et al., *Locally caught freshwater fish across the United States are likely a significant source of exposure to PFOS and other perfluorinated compounds*, 220 ENV’T RESEARCH 1, 6 (2023) (estimating that eating one freshwater fish with median PFOS levels—8,410 ng/kg according to EPA testing between 2013 and 2015—is equivalent to drinking water with 48 parts per trillion PFOS—2,400 times EPA health advisory levels).

²⁵ Perez F, Nadal M, Navarro-Ortega A, et al., *Accumulation of perfluoroalkyl substances in human tissues*, *Environment International* (2013); 59:354–62. pmid:23892228. (Attachment 8).

lung tissue. Gomis, et al. (2018) also noted that when differences in PFAS distribution and elimination kinetics are taken into account, GenX has greater “toxic potency” than PFOA and that PFBA and PFHxA have toxic potencies in the liver similar to that of PFOA.²⁶

Grandjean, et al. (2020) found that higher serum PFBA concentrations correlated with greater severity of COVID-19.²⁷ They suggest that PFBA’s tendency to accumulate in lung tissue, and the known immunotoxicity of this and other PFAS may account for these outcomes. Studies of short-chain PFAS toxicity in various cell types have noted that PFBS and PFHxA, in particular, can trigger reactive oxygen species (ROS) generation, which can compromise antioxidant defense.²⁸ This is significant as Wielsøe et al. (2015) suggested that PFAS carcinogenic potential appears to be due to their ability to induce cellular oxidative stress.²⁹ GenX has also been shown to interfere with metabolic pathways, induce fibroinflammatory changes in human liver cells, and increased the concentration of a liver-related tumor indicator even in the environmental concentration, suggesting that it too may be carcinogenic.³⁰

²⁶ Melissa I. Gomis, Robin Vestergren, Daniel Borg, Ian T. Cousins, *Comparing the toxic potency in vivo of long-chain perfluoroalkyl acids and fluorinated alternatives*, Environment International, Vol. 113 (Apr. 2018) at pages 1-9, <https://www.sciencedirect.com/science/article/abs/pii/S0160412017320020>.

²⁷ Grandjean, P., Timmermann, C.A.G., Kruse, M., Nielsen, F., Vinholt, P.J., Boding, L., Heilmann, C., Mølbak, K., *Severity of COVID-19 at elevated exposure to perfluorinated alkylates* (Dec. 31, 2020) PLoS ONE 15(12): e0244815, <https://doi.org/10.1371/journal.pone.0244815>, (Attachment 9).

²⁸ Megan E. Solan, Camryn P. Koperski, Sanjana Senthilkumar, Ramon Lavado *Short-chain per- and polyfluoroalkyl substances (PFAS) effects on oxidative stress biomarkers in human liver, kidney, muscle, and microglia cell lines*, Environmental Research, Vol. 223 (Apr. 15, 2023), <https://doi.org/10.1016/j.envres.2023.115424>, (Attachment 10).

²⁹ Maria Wielsøe, Manhai Long, Mandana Ghisari, Eva C. Bonefeld-Jørgensen, *Perfluoroalkylated substances (PFAS) affect oxidative stress biomarkers in vitro*, Chemosphere, Vol. 129 (June 2015) pp 239-245, <https://doi.org/10.1016/j.chemosphere.2014.10.014>, (Attachment 11).

³⁰ Dakota R. Robarts, Kaitlyn K. Venneman, Sumedha Gunewardena, Udayan Apte *GenX induces fibroinflammatory gene expression in primary human hepatocytes*, Toxicology, Vol. 447 (June 2022), <https://doi.org/10.1016/j.tox.2022.153259>; *See also* Guojun Wan, Zengli Zhang, Jingsi Chen, Mei Li, Jiafu Li (2024) *GenX caused liver injury and potential hepatocellular*

This is not intended as an exhaustive review of recent short-chain PFAS toxicity. Rather, these studies and many others raise real concerns that our toxicological grasp of these chemicals is far from settled and the assumption that shorter-chain PFAS are less toxic than their long-chain analogs is premature and unwarranted.

As a cautionary example, research on the toxicity of PFOS and PFOA led to dramatic revisions to state health-based guidance values in Minnesota. In 2002, the Minnesota Department of Health (MDH) established its first Health Based Values (“HBVs”) for two types of PFAS—PFOS and PFOA. HBVs are the “concentration of a chemical (or a mixture of chemicals) that is likely to pose little or no risk to human health” and are issued to provide guidance to public water providers in the state.³¹ Based on the scientific data available at the time, MDH set the initial HBVs at 1,000 parts per trillion (“ppt”)³² of PFOS and 7,000 ppt of PFOA. Five years later in 2007, MDH released updated HBVs that dramatically reduced the concentration levels to 300 ppt for both substances. In 2017, the HBVs were reduced to 27 ppt for PFOS and 35 ppt for PFOA, and a year later the limits for PFOS were dropped to 15 ppt.³³ And just this year, MDH updated its HBV to 0.0079 ppt for PFOA and 2.3 ppt for PFOS.³⁴ This equates to more than a 99% decrease from the first HBVs in a span of twenty years, and is further reinforced by the federal MCLs and statewide

carcinoma of mice via drinking water even at environmental concentration, Environmental Pollution, Vol. 346 (Apr. 1, 2024), <https://doi.org/10.1016/j.envpol.2024.123574>.

³¹ *Health-Based Values and Risk Assessment Advice for Water*, Minnesota Department of Health, (Oct. 3, 2022) https://www.health.state.mn.us/communities/environment/risk/guidance/hbvraa_water.html.

³² PPT is the equivalent of ng/L, which is the measurement used for the proposed intervention and discharge limits in the Draft Permit.

³³ *Toxicological Summary for Perfluorooctane Sulfonate*, Minnesota Department of Health (Aug. 2020), <https://www.health.state.mn.us/communities/environment/risk/docs/guidance/gw/pfos.pdf>, *Toxicological Summary for Perfluorooctanoate*, Minnesota Department of Health (Mar. 2022), <https://www.health.state.mn.us/communities/environment/risk/docs/guidance/gw/pfoa2022.pdf>.

³⁴ *PFAS and Health*, Minnesota Department of Health (Aug. 22, 2024), <https://www.health.state.mn.us/communities/environment/hazardous/topics/pfashealth.html>, (Attachment 12).

Class 1 WQS for PFOS and PFOA, which are set at 4 ppt with a Maximum Contaminant Level Goal (MCLG) of 0 ppt. These drastic actions reveal the rapid increase in epidemiological knowledge of the serious threats that PFAS chemicals pose to human health and underscore the importance of decisive regulatory action to reduce exposure pathways.

As toxicological research focus shifts to the shorter-chain PFAS, it is reasonable to assume that demonstrated environmental and human health impacts from these shorter chain chemicals will similarly demand very low standards and strict limits on their discharge. The environmental persistence of short-chain PFAS, their increased use (and release) with the phase-out of longer-chain PFAS, the large volume of PFAS-contaminated surface water and groundwater that currently discharge to the Mississippi and St. Croix rivers, and the body burden of PFAS in many Minnesotans who live near the 3M Cottage Grove facility and recreate on the Mississippi River, argues for a very conservative approach for any permitted PFAS discharges from that facility.

C. PFAS poses a threat to aquatic life and wildlife

The ubiquity and persistence of PFAS in the environment also poses a significant risk to wildlife and other natural resources. Less evidence currently exists on the health impacts of PFAS on fish.³⁵ However, PFAS exposure has been shown to reduce their survival rates.³⁶ Additionally, studies suggest that PFAS exposure triggers a multitude of health conditions in fish and a variety of other wildlife species—such as immune suppression, liver damage, developmental and reproductive issues, nervous and endocrine system impacts, and gut microbiome/bowel disease.³⁷

³⁵ *Id.* at 9.

³⁶ *Id.* at 9.

³⁷ Sharon Guynup, *PFAS 'forever chemicals' harming wildlife the world over: Study*, Mongabay Features, (Sept. 26, 2023) <https://news.mongabay.com/2023/09/pfas-forever-chemicals-harming-wildlife-the-world-over-study>.

Our understanding of PFAS toxic effects in fish and other wildlife lags well behind that of human health studies, and this is particularly true of the short-chain PFAS which tend to be less commonly detected. As with human studies, the commonly accepted knowledge is that short-chain PFAS are much less bioaccumulative than their longer-chain analogs. However, recent studies have demonstrated bioaccumulation of HFPO-DA (GenX) in fish and impacts to immune and liver function.³⁸

Zhuo, et al. (2021) conducted multi- and trans-generational studies of *C. elegans* (a nematode commonly used as a model for other animal and human health effects) that demonstrated that PFBS and PFHxS can cause epigenetic disturbances of lipid metabolism.³⁹ As they note, lipid metabolism is essential in development, reproduction, and neurodevelopment. It is already well established that longer-chain PFAS cause similar multi- and trans-generational effects. This study suggests potential long-term, potentially irreversible, harm to aquatic organism populations if exposed to large volumes of short-chain PFAS.

As with human health, the environmental persistence of short-chain PFAS, their increased use (and release) with the phase-out of longer-chain PFAS, the large volume of PFAS-contaminated surface water and groundwater that currently discharge to the Mississippi and St. Croix rivers, and our limited understanding of the potential harm to aquatic organisms and other

³⁸ T.C. Guillette et al., *Elevated levels of per- and polyfluoroalkyl substances in Cape Fear River Striped Bass (*Morone saxatilis*) are associated with biomarkers of altered immune and liver function*, Environment International, Vol. 136 (Mar. 2020), <https://doi.org/10.1016/j.envint.2019.105358>.

³⁹ Zhuo Li, Zhenyang Yu, Daqiang Yin *Multi- and trans-generational disturbances of per-fluorobutane sulfonate and perfluorohexane sulfonate on lipid metabolism in *Caenorhabditis elegans**, Chemosphere, Vol. 280 (Oct. 2021), <https://doi.org/10.1016/j.chemosphere.2021.130666>, (Attachment 13).

animals in the food chain, argues for taking a very conservative approach regarding any permitted PFAS discharges from that facility.

D. The 3M Cottage Grove facility discharges to Pool 2 of the Mississippi River, which is contaminated with elevated levels of PFAS that pose a threat to aquatic life and human health

The 3M Cottage Grove facility is located on the banks of the Mississippi River in Cottage Grove, Minnesota and discharges approximately 5 to 6 million gallons of treated wastewater a day into a creek that flows into Pool 2 of the Mississippi River. The Draft Permit would increase the authorized discharge from the facility from 12.1 to 15.2 million gallons of treated water a day, which would include stormwater runoff, wastewater from industrial processes, and groundwater from the Woodbury disposal site, 3M Cottage Grove campus, and SKB landfill leachate.⁴⁰ The previously authorized discharge volume of 12.1 million gallons a day, as outlined in the expired 2003 wastewater permit that the facility continues to operate under today, did not include stormwater runoff.

⁴⁰ Minnesota Pollution Control Agency, *Draft wastewater permit for 3M Cottage Grove presentation* (Jul. 2024), (Attachment 14).

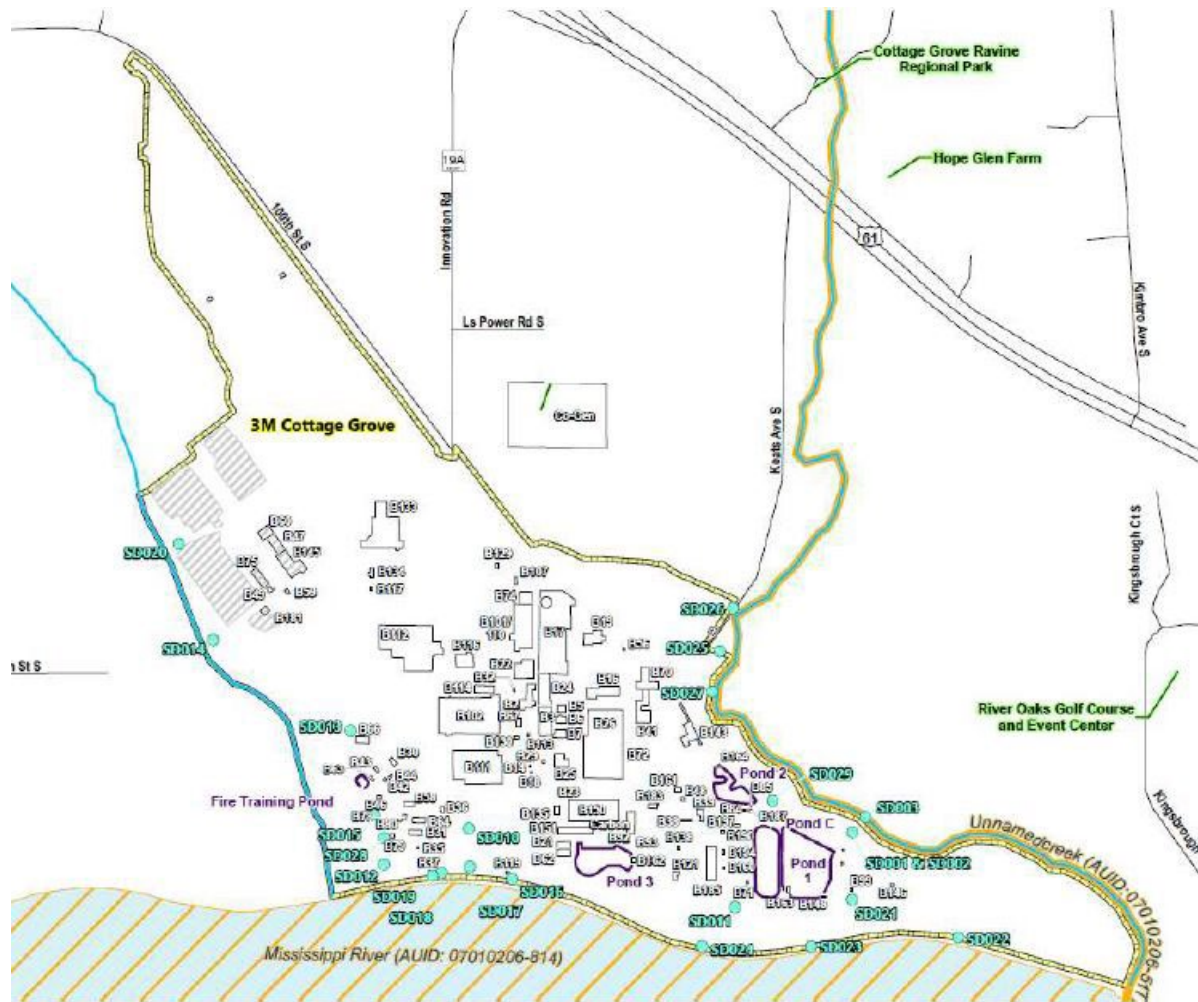


Figure 2: 3M Cottage Grove facility discharge locations. Source: MPCA Draft wastewater permit for 3M Cottage Grove PowerPoint presentation, July 2024.

This facility discharges to a waterbody named Unnamed Creek that flows into Pool 2 of the Mississippi River, which describes the portion of the Upper Mississippi River that is impounded by Lock & Dam 2. Pool 2 extends from Lock & Dam 2 near Hastings, Minnesota upstream to the Ford Dam in St. Paul, Minnesota. It is a prized aquatic resource in the Twin Cities region with one of the best populations of walleye and sauger in the area as well as bass, bluegill, and catfish.⁴¹ More broadly, the Mississippi River is one of the most iconic waterways in the

⁴¹ Minnesota Department of Natural Resources, *Mississippi River Pool 2*, <https://www.dnr.state.mn.us/areas/fisheries/eastmetro/rivers/pool2.html>.

United States and a critical source of commerce, recreation, drinking water, wildlife habitat and biodiversity.

The 3M Cottage Grove facility discharges to the portion of the Mississippi River between River Miles 820 to 812 and is a direct source of PFAS contamination to the river. In large part because of discharges from the Cottage Grove facility, Pool 2 has elevated PFAS concentrations in the water column and in fish tissue at levels that threaten human health. A technical support document from MPCA notes “several PFAS that are indicative of 3M production... are all detected in fish and water collected in this segment of the river.”⁴² A report prepared by 3M in June 2023 as part of an MPCA investigation, *Instream PFAS Characterization Study Final Report, Mississippi River, Cottage Grove, Minnesota*, represents the most recent and comprehensive PFAS data for this portion of the river.⁴³ The data provides clear evidence that 3M discharges significantly increase PFAS levels in Unnamed Creek and the Mississippi River downstream of the discharge points. For example, upstream of the SD001 and SD002 discharge points, surface water values for PFBS in Unnamed Creek were approximately 16 ng/L, and downstream of the discharge points they were approximately 4,200 ng/L.⁴⁴ Furthermore, the highest PFBS value in the Mississippi River was measured at the confluence of Unnamed Creek with the Mississippi River.⁴⁵ The study also reported the incidence of several key PFAS compounds in fish tissue as PFOS (100%), PFNA (67%), PFHxS (56%), PFBA (48%), PFBS (32%), PFOA (26%), PFHxA

⁴² Minnesota Pollution Control Agency, *Human Health Protective Water Quality Criteria for Per- and-Polyfluoroalkyl Substances (PFAS) in Mississippi River, Miles 820 to 812*, (May 2024), 4, (Attachment 15).

⁴³ See Weston Solutions, *In Stream PFAS Characterization Study Final Report, Mississippi River, Cottage Grove, Minnesota* 81 (2023).

⁴⁴ Dann White and Scott Kyser, *MN0001449 Toxics Review SD001*, Minnesota Pollution Control Agency (May 22, 2024), (Attachment 16).

⁴⁵ *Id.*

(26%), HFPO-DA (5%), where 100% means PFOS was found in 100% of fish tissue sampled.⁴⁶ The study reveals fish tissue concentration ranges, in parts per billion (ppb), of: 1.7 to 751 for PFOS, 0.0237 to 5.66 for PFNA, 0.0236 to 15.2 for PFHxS, 0.0489 to 8.21 for PFBA, 0.0466 to 1.28 for PFBS, 0.047 to 56.1 for PFOA, 0.0487 to 14.4 for PFHxA, and 0.0607 to 2.88 for HFPO-DA.⁴⁷

Biomonitoring by the Minnesota Department of Health (MDH) has also documented serum levels of PFOS, PFOA, PFHxS in south Washington County that are well above national averages and reflect the higher rates of PFAS exposure for those Minnesotans.⁴⁸ Many of those residents are also likely recreational users of the Mississippi River in the area of river miles 820-812, including consumption of fish from the river. Due to these elevated levels of PFAS in fish tissue in Pool 2, the Minnesota Department of Health (MDH) recommends that sensitive populations—including people who are pregnant, people who are breastfeeding, and children under age 15—avoid eating fish caught from this area.⁴⁹ MDH recommends that non-sensitive groups consume a maximum of just one serving per month.⁵⁰

From 2020 to 2024, the Minnesota Pollution Control Agency issued site specific water quality criteria (“SSC”) for six different PFAS compounds for Pool 2. A SSC is a site-specific value established for a specific toxic pollutant that has been detected in surface water, fish, or effluents but does not have a numeric standard in rule (See Legal Background Section for further

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ Minnesota Department of Health, *PFAS Biomonitoring in the East Metro* (Jul. 30, 2024), <https://www.health.state.mn.us/communities/environment/biomonitoring/projects/pfas.html>, (Attachment 17).

⁴⁹ Minnesota Department of Health, *Waterbody Specific Safe-Eating Guidelines – Mississippi River Pools 2, 3, and 4* (March 2024), <https://www.health.state.mn.us/communities/environment/fish/specificwaters.html>, (Attachment 18).

⁵⁰ *Id.*

discussion).⁵¹ PFAS are categorized as toxic pollutants and are now regulated at the state and federal level for domestic consumption, but do not currently have numeric water quality standards for Class 2 waters in Minnesota. Therefore, the MPCA derived SSC for Pool 2 that are protective of human health from exposure through recreation or fish consumption.⁵²

Three sets of site-specific water quality criteria for PFAS chemicals have been established for Pool 2 by the MPCA over the last four years: in December 2020, human health protective water quality criteria were established for PFOS in Pool 2; in January 2023 human health protective water quality criteria were established for PFOA, PFHxA, PFBA, PFHxS, and PFBS in Pool 2; and finally in May 2024 human health protective water quality criteria were established for PFOS, PFOA, PFHxA, PFBA, PFHxS, and PFBS in portions of Pool 2 and Pool 3 of the Mississippi River that correspond to river miles 820 to 812 [hereinafter “SSC for River Miles 820 to 812”].⁵³ The SSC for River Miles 820 to 812 include chronic criteria for 30-day average water concentration levels as well as for fish tissue concentrations, and were developed to protect humans from additive risk for various types of cancer, thyroid and liver disease, reduced immune function, and developmental issues in infants and children.⁵⁴ In addition, there is an Health Risk Index for mixtures that contain two or more of the chemicals PFBA, PFBS, and PFHxA for their additive risk to impair thyroid function.

⁵¹ Minnesota Pollution Control Agency, *Human Health Protective Water Quality Criteria for Per- and-Polyfluoroalkyl Substances (PFAS) in Mississippi River, Miles 820 to 812* (May 2024), (Attachment 15).

⁵² *Id.*, p. 2.

⁵³ Minnesota Pollution Control Agency, *Site-specific water quality criteria*, <https://www.pca.state.mn.us/business-with-us/site-specific-water-quality-criteria>.

⁵⁴ Minnesota Department of Health 2024 a/b, 2023 a/b/c, 2018.

E. The 3M facility has operated pursuant to an expired, administratively continued permit for more than 20 years

Until this current Draft Permit, PFAS effluent limits have not been included as part of wastewater discharge limits at the Cottage Grove facility. In 2003 MPCA re-issued the 3M Cottage Grove facility's National Pollutant Discharge Elimination System ("NPDES") wastewater permit, which did not include any numerical effluent limitations for PFAS chemicals in the facility's discharge but did include provisions which required 3M to monitor for a subset of the chemicals in its discharge. In 2011, MPCA began to work on a new wastewater permit for the 3M Cottage Grove facility that did include a proposed limit for PFOS, but the permit was never issued.⁵⁵ MCEA commented on the 2011 draft wastewater permit and advocated for a stricter PFOS limit at that time.⁵⁶

The 2003 requirements for 3M to monitor for PFAS in wastewater and stormwater at the Cottage Grove facility has led to a comprehensive facility-wide assessment of surface water impacts at the Cottage Grove site. A review of Discharge Monitoring Reports ("DMRs") issued between July 2018 and August 2023 definitively establishes that the 3M facility has consistently contributed elevated PFAS levels in the Mississippi River Miles 820 to 812. Furthermore, these DMRs provide evidence that the facility has a reasonable potential to cause or contribute to an exceedance of the site-specific water quality criteria for six PFAS compounds that were established in May 2024.

The DMRs document the presence of the six PFAS compounds with federal MCLs (PFOA, PFOS, PFNA, PFHxS, HFPO-DA, and PFBS) as well as those with Mississippi River Pool 2 site

⁵⁵ Minnesota Pollution Control Agency, *Cottage Grove 3M Chemical Operations*, <https://www.pca.state.mn.us/local-sites-and-projects/cottage-grove-3m-chemical-operations>.

⁵⁶ MCEA, *Comment to MPCA Re: Draft NPDES Permit No. MN0001449, 3M Cottage Grove Center Comments of Minnesota Center for Environmental Advocacy* (Feb. 3, 2011), (Attachment 19).

specific water quality criteria (PFBA, PFHxA, PFBS, and PFHS). PFOS and PFOA both have a federal MCL goal of zero, because the latest science shows that there is no level of exposure to these two PFAS without risk of health impacts, and an MCL of 4 ng/L.⁵⁷ However, in the past six years, the DMRs for the 3M Cottage Grove facility show that treated effluent discharged at SD001 to Unnamed Creek had detected concentrations as high as 1150 ng/L PFOA and 396 ng/L PFOS.⁵⁸ Cooling water at SD002 had detected concentrations as high as 6000 ng/L PFOA and 1470 ng/L PFOS.⁵⁹ Furthermore, shorter-chain compounds like HFPO-DA and PFNA have an MCL of 10 ng/L and have been detected in the Cottage Grove facility discharges at concentrations as high as 770 ng/L HFPO-DA at SD001 and 37.2 ng/L PFNA at SD002.⁶⁰ Despite this, the Draft Permit does not include discharge limits for either HFPO-DA or PFNA, which MPCA attributes to a lack of sufficient data from Pool 2 of the Mississippi River to calculate a bioaccumulation factor.⁶¹

Beginning in the early 2000's MPCA has taken various steps and enforcement actions to address the unregulated release of PFAS and other toxic chemicals at the Cottage Grove facility. Those actions demonstrate the need for a strong new discharge permit with strict limits and requirements that will force 3M to engage in transparency, thorough monitoring, testing, and innovation to control the dangerous pollutants it manufactures and puts into the environment.

⁵⁷ Environmental Protection Agency Office of Water, *Final PFAS National Primary Drinking Water Regulation PowerPoint Presentation*, https://www.epa.gov/system/files/documents/2024-04/pfas-npdwr-presentation_4.9.24_overview.pdf. A federal MCL Goal is a non-enforceable health-based goal that informs the development of enforceable MCLs. See Sections II and III for further discussion.

⁵⁸ 3M Cottage Grove facility Discharge Monitoring Reports, August 2019 and September 2018.

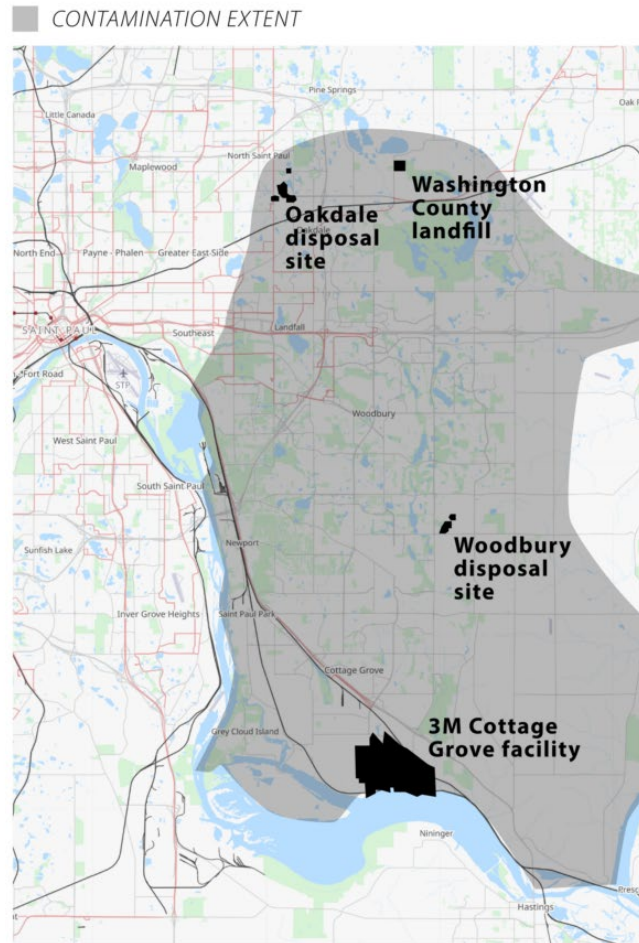
⁵⁹ 3M Cottage Grove facility Discharge Monitoring Reports, September 2019 and December 2019.

⁶⁰ 3M Cottage Grove facility Discharge Monitoring Reports, April 2021 and September 2019.

⁶¹ Letter from Courtney Ahlers-Nelson, Industrial Division Director, Minnesota Pollution Control Agency to Minnesota Center for Environmental Advocacy regarding Questions on the Draft NPDES/SDS Permit Reissuance for the 3M Cottage Grove Center (Jul. 19, 2024), (Attachment 20).

A plume of PFCs

3M waste disposal sites and approximate area of groundwater contamination in St. Paul



Source: Lawsuit documents prepared by David L. Sunding
Map data via OpenStreetMap

Minnesota Reformer

Figure 2: A plume of PFCs – 3M waste disposal sites and approximate area of groundwater contamination in St. Paul. Source: Deena Winter.⁶²

In 2007 MPCA issued a Settlement Agreement and Consent Order under Superfund (“2007 SACO”) that required 3M complete remediation measures for PFAS releases at its Cottage Grove, Oakdale, and Woodbury PFAS disposal sites and public/private drinking water protection for impacted communities in Washington County. The 2007 SACO remains in place today, as

⁶² Deena Winter, *There must be something in the water*, Minnesota Reformer (Dec. 14, 2022), <https://minnesotareformer.com/2022/12/24/there-must-be-something-in-the-water>.

groundwater impacts from 3M PFAS-contaminated waste disposal continue to threaten human health in the East Metro Region.

Under the terms of the 2007 SACO, 3M was required to implement MPCA-approved response actions at each of the 3M PFAS disposal sites. These actions included excavation of PFAS impacted soils/sediment at each 3M site and off-site disposal at the SKB landfill in Rosemount. 3M funded the construction of a special cell at the SKB Landfill to contain the PFAS-impacted material and collect the leachate, which is returned to the 3M Cottage Grove facility wastewater treatment system to process.

3M was also required to improve, operate, and maintain the groundwater control systems at each site to control migration of PFAS-impacted groundwater off-site. At Cottage Grove, 3M was required to construct a granular activated carbon (“GAC”) treatment system to treat PFAS contaminated groundwater from Cottage Grove groundwater control pump-out and facility production wells, along with pump-out groundwater from the 3M Woodbury site. This GAC system (Building 92) treats the PFAS-impacted groundwater from both sites prior to use for 3M Cottage Grove facility operations.⁶³

Under the terms of the 2007 SACO, 3M is required to implement additional response actions determined to be necessary by the MPCA. These include additional pump-out wells at the Cottage Grove facility site to control the migration of PFAS-contaminated groundwater to the Mississippi River through pore water, and the investigation of PFAS levels in the surface waters, pore water, and sediment at the site.⁶⁴

⁶³ Gary Krueger, *Personal communication* (Aug. 2024), (Attachment 7).

⁶⁴ Weston Solutions, *In Stream PFAS Characterization Study Final Report, Mississippi River, Cottage Grove, Minnesota* 81 (2023).

While not under the terms of the 2007 SACO, at MPCA’s request, 3M has begun to conduct groundwater investigations to determine if releases of PFAS from the 3M Cottage Grove facility have contaminated the Hastings drinking water supply.⁶⁵ Informed by this investigation, MPCA notified 3M on August 9, 2024 that discharges from the Cottage Grove facility have likely contributed to (and continue to contribute to) PFAS impacts in municipal wells for the City of Hastings.⁶⁶ Further, MPCA said that 3M must work with the City to design and install a treatment system to ensure the concentrations of PFAS in treated drinking water comply with risk-based values for drinking water established by the EPA.⁶⁷

In 2010, the State of Minnesota filed a lawsuit against 3M that sought payment for natural resource damages caused by 3M’s disposal of PFAS waste in the East Metro area. In 2018 the parties entered into a \$850 million Settlement Agreement (“2018 Settlement”) that outlined priorities for the use of settlement funds. The 2018 Settlement left the 2007 Consent Order in place, outlined requirements for 3M to fund up to \$40 million in temporary treatment systems for PFAS-contaminated public water supplies in the East Metro, and required 3M to continue to monitor and conduct any response actions necessary to address PFAS releases at the Cottage Grove facility along with the Oakdale and Woodbury 3M PFAS waste disposal sites.⁶⁸ Should funds from the 2018 Settlement become fully exhausted, 3M will still be responsible to address PFAS-impacted drinking water contaminated by PFAS releases from one of the 3M PFAS disposal sites under the terms of the 2007 SACO.

⁶⁵ Minnesota Pollution Control Agency, *Letter to 3M regarding additional investigation near Hastings* (Oct. 2, 2023), (Attachment 21).

⁶⁶ Minnesota Pollution Control Agency, *Letter to 3M regarding Hastings Municipal Well 5, Cooperative Responsible Party Invitation* (Aug. 9, 2024) (Attachment 22).

⁶⁷ *Id.*, p. 3.

⁶⁸ Gary Krueger, *Personal communication* (Aug. 2024), (Attachment 7).

Over the past several years, enforcement actions against 3M for its negligence of the environment and public health have continued. In 2018, MPCA opened an investigation into hazardous waste disposal at the 3M Cottage Grove facility, and in 2021 the agency issued an enforcement action and \$80,000 in civil penalties for the company's failure to properly store hazardous waste containers in permitted hazardous waste storage areas. The investigation found that over 900 hazardous waste containers had been improperly stored and led to "excessive and abnormal unpermitted emission[s]" of hydrofluoric acid that endangered human health.⁶⁹

In 2020, MPCA opened a new investigation of the 3M Cottage Grove facility that is ongoing. In 2022, MPCA issued a second enforcement action for hazardous waste violations that date back to 1996 and fined the company \$2.8 million in civil penalties. The violations were egregious and included inaccurately identified hazardous waste sent to the Cottage Grove incinerator as non-hazardous waste; failure to conduct verification on more than 1,800 waste stream profiles for mercury, lead, nickel, cadmium, arsenic, and other hazardous materials to ensure the waste did not exceed limits; and approximately 1,300 containers of hazardous waste that were stored in unapproved areas.⁷⁰ 3M has since discontinued use of the hazardous waste incinerator at the Cottage Grove facility, and is still in the midst of the process to decommission it with oversight from MPCA staff. Additional site investigations are underway under 3M's Resource Conservation Recovery Act permit closure requirements. In February 2024, 3M was fined a \$4,165 penalty and subject to further corrective actions for hazardous waste violations.

⁶⁹ Minnesota Pollution Control Agency, *Two-year investigation finds 3M failed to manage hazardous waste at Cottage Grove facility* (May 12, 2021), <https://www.pca.state.mn.us/news-and-stories/two-year-investigation-finds-3m-failed-to-manage-hazardous-waste-at-cottage-grove-facility>.

⁷⁰ Minnesota Pollution Control Agency, *MPCA investigation: 3M mismanages waste at Cottage Grove facility dating back to 1996* (May 26, 2022), <https://www.pca.state.mn.us/news-and-stories/mpca-investigation-3m-mismanages-waste-at-cottage-grove-facility-dating-back-to-1996>.

In sum, this Draft Permit presents a very important opportunity for MPCA and for the public to address a known public health and environmental threat and to hold the party responsible for that threat accountable. 3M has a demonstrated record of negligence and disregard for the human health and environmental impacts of its actions. The Clean Water Act is designed to rein in those industries that seek to profit at the expense of our shared resources and our health. This Draft Permit is one of the most important mechanisms the Act provides for this purpose, and MPCA must take this opportunity to impose strict requirements that account for existing contamination, address on-going contamination, and prevent future contamination in order to avoid compounding or repeating the catastrophic pollution problem 3M has created in our state.

II. Summary of Clean Water Act concepts applicable to the draft permit

The Clean Water Act (CWA), 33 U.S.C. §1251 et seq. (1972), provides the basic structure for establishing water quality standards and regulating discharges of pollutants into the waters of the United States. The objective of the CWA is the restoration and maintenance of the chemical, physical and biological integrity of the country's water. The goal is often described as achieving water quality that is both "fishable" and "swimmable" (protection and propagation of fish, shellfish, and wildlife and recreation in and on the water).

Section 303(d) of the CWA requires states to identify waters where current pollution control technologies alone cannot meet the water quality standards set for that waterbody. Every two years, states are required to submit a list of impaired waters plus any that may soon become impaired to EPA for approval. The impaired waters are prioritized based on the severity of the pollution and the designated use of the waterbody (e.g., fish propagation or human recreation). States must establish the Total Maximum Daily Load(s) ("TMDLs") of the pollutant(s) for each impaired water

on their list. Pool 2 of the Mississippi River is listed as an impaired water for PFOS in fish tissue and in the water column.⁷¹

MPCA is the state agency responsible for setting WQS and criteria under the CWA. WQS are used to:

- Protect water resources for uses such as drinking water, fishing, swimming and other aquatic recreation, and sustaining healthy communities of fish, bugs, plants, and other aquatic life.
- Identify polluted waters in need of restoration or healthy waters in need of additional protection.
- Guide the limits set on what regulated entities can discharge to surface water. Minnesota's WQS are promulgated in Minn. R. ch. 7050 (Waters of the State), and 7052 (Lake Superior Basin Water Standards).

Details on how WQS are implemented in point-source discharge permitting are contained in Minn. R. ch. 7053 (State Waters Discharge Restrictions), and parts of chapter 7052. WQS are the fundamental regulatory and policy foundation to preserve and restore the quality of all waters of the state. They consist of three elements:

1. Water use classifications (beneficial uses) that identify how people, aquatic communities, and wildlife use our waters.
2. Narrative and numeric standards to protect those uses by designating specific amounts of pollutants allowed in a body of water or making statements of unacceptable conditions in and on the water.

⁷¹ Minnesota Pollution Control Agency, *2024 Impaired Waters List*, <https://www.pca.state.mn.us/air-water-land-climate/minnesotas-impaired-waters-list>.

3. Antidegradation policies to maintain existing uses, protect high quality waters, and preserve waters of outstanding value.

WQS provide the minimum conditions for waters of the state to meet their designated beneficial uses. Numeric standards are a key foundation for ensuring that the regulatory goals of Minnesota's water quality statutes and rules and the CWA are met.

The MPCA has authority to develop and implement site-specific water quality criteria ("SSC"), as described in Minn. R. 7050.0217-0219, when generally applicable water quality standards do not provide numeric criteria sufficient to protect the environment and human health.⁷² Site-specific water quality criteria are developed when a pollutant in surface water is a special local or regional concern, or in situations where a regulatory limit is needed for permitting or remediation purposes. To date, MPCA has used this authority to develop site specific water quality criteria for six types of PFAS found in portions of the Mississippi River, St. Croix River, and other East Metro waterbodies. Water quality criteria were first developed for PFOS and PFOA in 2020. Four additional PFAS were added in 2023. New data allowed for additional water quality criteria to be developed for eight miles of the Mississippi River between mile 812 and 820 in 2024 (a subset of Pool 2 that the Cottage Grove facility discharges to, in dark green in the map below). The

⁷² Minnesota Chamber of Com. v. Minnesota Pollution Control Agency, 469 N.W.2d 100, 105 (Minn. Ct. App. 1991).

SSC are applied as Chronic Criteria that specify the limits on exposure through fish consumption or recreation necessary to protect human health.

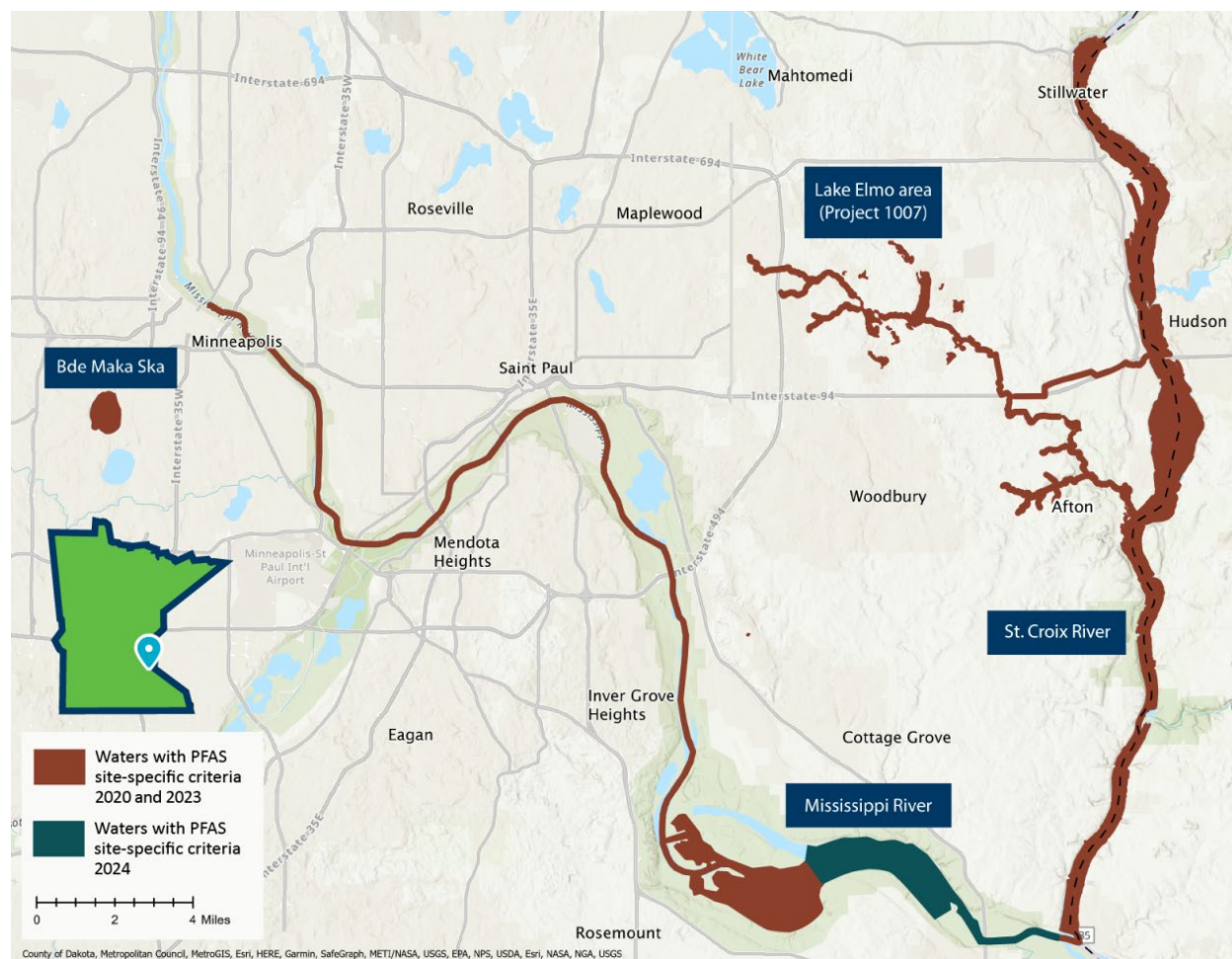


Figure 3: Surface waters with PFAS site-specific criteria. Source: MPCA⁷³

The CWA contemplates making “reasonable further progress toward the national goal of eliminating the discharge of all pollutants” by requiring discharge prohibitions and limitation in NPDES permits. Under the NPDES program, point source discharges are limited both based on the capabilities of the technologies available to control those discharges and by additional limitations that may be required to protect specific receiving waters.

⁷³ Minnesota Pollution Control Agency, *Developing water quality criteria for PFAS*, <https://www.pca.state.mn.us/air-water-land-climate/developing-water-quality-criteria-for-pfas>.

TBELs aim to prevent pollution by requiring a minimum level of effluent quality that is attainable using demonstrated technologies for reducing discharges of pollutants or pollution into the waters of the United States. TBELs are developed independently of the potential impact of a discharge on the receiving water. The NPDES regulations at Title 40 of the Code of Federal Regulations (CFR) 125.3(a) require NPDES permit writers to develop TBELs, consistent with CWA section 301(b), that represent the minimum level of control that must be imposed in a permit.

WQBELs are additional requirements that apply when a discharge has the potential to cause or contribute to a violation of a water quality standard in the receiving water. CFR § 125.3 indicates that permit writers must include in permits additional or more stringent effluent limitations and conditions, including those necessary to protect water quality.

III. Summary of applicable concepts from the Safe Drinking Water Act

On June 25, 2024, the EPA issued MCLs under the Safe Drinking Water Act for six PFAS compounds: PFOA, PFOS, PFBS, PFHxS, HFPO-DA, and PFNA.⁷⁴ Under Minnesota regulations, these MCLs have been incorporated by reference and now apply to Class 1 waters of the State.⁷⁵ While the Clean Water Organizations recognize that the 3M Cottage Grove facility discharges into Class 2 waters, and the MCLs are therefore not directly applicable to this draft NPDES permit, the permit conditions employed by MPCA will affect downstream municipalities' ability to meet MCLs and Class 1 water quality standards.⁷⁶

⁷⁴ PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18638 (Mar. 29, 2023) (to be codified at 40 C.F.R. pts. 141, 142).

⁷⁵ Minn. R. 7050.0221, subp. 1(B).

⁷⁶ Minnesota regulations require consideration of downstream users' ability to meet water quality standards, including downstream users in other states. Minn. R. 7050.0155.

While Pool 2 of the Mississippi River is not a Class 1 water, a recent MPCA investigation indicates that releases from the 3M Cottage Grove Facility have likely contributed (and continue to contribute) to the “occurrence and sources of... PFAS impacts observed in the municipal wells for the city of Hastings.”⁷⁷ The municipal wells for the city of Hastings are sourced from groundwater rather than the Mississippi River; however, a mapped fault in the Dakota County Geologic Atlas provides a “potential preferential pathway from the Mississippi River...to Well 5.”⁷⁸ This hypothesis was corroborated by an analysis of surface and groundwater samples collected from the 3M Cottage Grove Facility, Lake Rebecca, and the Mississippi River in 2023.⁷⁹ The concentrations of PFAS in Well 5 currently exceed the EPA’s MCLs for PFAS, and 3M was notified that they must “work with the City of Hastings to design and install a treatment system and work with all appropriate state and federal agencies to ensure the concentrations of PFAS in treated drinking water from Well 5 are in compliance with risk-based values established for drinking water for PFAS.”⁸⁰

The recently established connection between the 3M Cottage Grove facility and municipal wells for the city of Hastings make it imperative that the Draft Permit address all PFAS compounds that are regulated under federal MCLs and statewide Class 1 WQS as of June 25, 2024. Once the MCLs become enforceable in five years, Hastings and other communities that exceed the drinking water standard for PFAS will have to treat or dilute their water to ensure it is safe for human consumption. The costs to provide clean drinking water should be borne by the polluter, here 3M, and not the municipality. Accordingly, MPCA should set lower or preferably limits to non-detect

⁷⁷ Minnesota Pollution Control Agency, *Letter to 3M regarding Hastings Municipal Well 5, Cooperative Responsible Party Invitation* (Aug. 9, 2024), (Attachment 22), p. 1.

⁷⁸ *Id.*, p. 2.

⁷⁹ *Id.*, p. 2.

⁸⁰ *Id.*, p. 3.

levels in the Draft Permit, not just for long-chain PFAS but also for short-chain PFAS with known health impacts, so the discharge from the facility will not jeopardize a downstream municipality's ability to provide clean, safe drinking water.

As EPA developed its record on these six compounds, it relied on extensive toxicological data and literature review.⁸¹ This data remains a part of the record and is available for MPCA to rely upon in providing justification for any site-specific TBELs for PFNA and HFPO-DA—two compounds that have no effluent limitations in the draft NPDES permit. EPA made extensive analysis of these two substances in its proposed rulemaking for the MCLs. Rather than simply placing monitoring conditions on these short-chain compounds, both can have discharge limits by using site-specific TBELs, given the treatment train 3M will be implementing and anticipated removal of shorter-chain PFAS compounds to near non-detect levels.⁸²

Because of the pervasiveness and ubiquity of PFAS compounds, the permit conditions that MPCA places on 3M do not operate in a silo. Nor do the harms that 3M has inflicted throughout the world by enabling the wide-spread contamination of the environment with these substances. As MPCA finalizes this permit, it must consider the financial effects its terms have on downstream communities. Municipalities and taxpayers should not bear the cost of cleanup when ensuring that they are in compliance with federal and state drinking water standards.⁸³ As the agency is aware,

⁸¹ PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18638 (Mar. 29, 2023) (to be codified at 40 C.F.R. pts. 141, 142) (including 2, 125 supporting documents relied upon in rulemaking).

⁸² Letter from Courtney Ahlers-Nelson, Industrial Division Director, Minnesota Pollution Control Agency to Minnesota Center for Environmental Advocacy (Jul. 19, 2024), (Attachment 20).

⁸³ Miles Scully & Brian Ledger, *PFAS Settlements: Future of PFAS Litigation Landscape to be Determined by Upcoming Decision*, Reuters (Aug. 31, 2023), <https://www.reuters.com/legal/legalindustry/pfas-settlements-future-pfas-litigation-landscape-be-determined-by-upcoming-2023-08-31/> (discussing the ever-growing breadth of multidistrict litigation suits filed against PFAS producers, including 3M, by public water suppliers).

the estimated costs that will be borne on municipalities to provide clean drinking water to its citizens will be large.⁸⁴ In anticipation of this, MPCA should avail itself to all of the mechanisms it can under the CWA to ensure that polluters are responsible for PFAS contamination, not taxpayers.

III. MPCA should amend the draft permit

The Clean Water Organizations submit that the Draft Permit and the site-specific water quality criteria that inform it should be amended in several ways that will bring additional transparency and accountability and result in better protections for the environment and human health. Based on 3M's history of obfuscation when it comes to PFAS pollution, the elevated levels of PFAS that have been extensively documented at the Cottage Grove facility site and in the surface waters and fish tissue of Pool 2 of the Mississippi River where it discharges, newly enacted federal and state regulations for PFAS because of its impacts to human health, and the various other regulatory actions the State of Minnesota has had to take against 3M to hold it accountable for its pollution, the Clean Water Organizations make the below recommendations.

A. Amend the Site-Specific Criteria Hazard Index for the Mississippi River Miles 820 to 812 to include PFHxS based on the thyroid/endocrine toxicological endpoint and a second Hazard Index for PFOS, PFOA, PFHxA, PFHxS, and PFBA for the liver toxicological endpoint

The Clean Water Organizations strongly support the proposed SSC for the Mississippi River Miles 820 to 812 as necessary to protect human health from PFAS exposure through fish consumption and recreation. We recognize that the most recently available toxicological reference

⁸⁴ *Groundbreaking Study Shows Unaffordable Costs of PFAS Cleanup from Wastewater*, Minnesota Pollution Control Agency (June 6, 2023), <https://www.pca.state.mn.us/news-and-stories/groundbreaking-study-shows-unaffordable-costs-of-pfas-cleanup-from-wastewater>.

doses from the EPA suggest that PFHxA, PFBS, and PFBA are less bioaccumulative than PFOS, PFOA, and PFHxS and therefore have significantly higher SSC. However, toxicological information about PFAS chemicals continues to rapidly evolve—for some chemicals like PFOS and PFOA, we have seen unprecedented decreases in health protective guidance values over the last 20 years. Additionally, it is well known that many PFAS share similar toxicological endpoints. For this reason, MDH calculates a Hazard Index (“HI”) value for drinking water where two or more PFAS are present.

MPCA’s technical support document for the SSC for River Miles 820 to 812 sets out a very limited application of the HI for discharges where PFBA, PFBS, and PFHxA are present, based on the thyroid (endocrine) endpoint.⁸⁵ However, PFHxS also has thyroid (endocrine) as an endpoint and should be included in any HI calculation. Similarly, PFOS, PFOA, PFHxA, PFHxS, and PFBA all share a liver endpoint and a HI limit of <1 should also be set for when two or more of those compounds are present.

B. Develop and include site-specific TBELs as well as WQBELs for PFAS

1. EPA guidance counsels to use site-specific TBELs to control PFAS

MPCA attributes the difference between how the longer- and shorter-chain PFAS are managed under the permit to the higher reference dose values for PFBA, PFBS, and PFHxA and the lack of sufficient sampling data in River Miles 820 to 812 to calculate bioaccumulation factors for HFPO-DA and PFNA.⁸⁶ MPCA should amend the permit to include TBELs based on the

⁸⁵ Minnesota Pollution Control Agency, *Human Health Protective Water Quality Criteria for Per- and Polyfluoroalkyl Substances (PFAS) in Mississippi River, Miles 820 to 812* (May 2024), (Attachment 15).

⁸⁶ Letter from Courtney Ahlers-Nelson, Industrial Division Director, Minnesota Pollution Control Agency to Minnesota Center for Environmental Advocacy (Jul. 29, 2024), (Attachment 20).

control capability of the advanced treatment train 3M has proposed to operate at the facility for the shorter-chained compounds PFBS, PFBA, PFHxA, HFPO-DA and PFNA. Inclusion of TBELs for these pollutants is consistent with EPA’s guidance for controlling PFAS in NPDES permits and is arguably required by the Minnesota Environmental Policy Act (“MEPA”) and Minnesota Environmental Rights Act (“MERA”).

The CWA employs effluent limitations on point source industrial dischargers through setting technology based or water quality based effluent limitations (TBELs and WQBELs, respectively).⁸⁷ TBELs allow for the categorization of industrial dischargers so that effluent limitations from point sources are reflective of what technology is available and feasible to make pollutant load and concentration reductions.⁸⁸ Where TBELs are insufficient to meet the reduction needs of a receiving water body, WQBELs are set. WQBELs are often utilized as a more stringent tool in reducing pollutant discharge concentrations because they are established to consider the water quality criteria of the receiving water body.⁸⁹ TBELs factors, on the other hand, consider what technology is available to the industrial category at large to make those reductions, and explicitly considers feasibility and cost to the permitted industry. Whichever of the two effluent limitations is the most stringent must control the permit conditions.⁹⁰

Where data is insufficient to support the use of WQBELs, or where the best available technology can reduce PFAS discharges to levels below WQBEL calculations, TBELs can be used to reduce PFAS concentrations in a discharge. While there are currently no federally promulgated

⁸⁷ 33 U.S.C. § 1311(b)(1)-(3).

⁸⁸ 3M is subject to multiple industrial discharger category effluent limitation guidelines. *See* 3M Draft Permit, Fact sheet at 53-56 (identifying industrial TBEL categories for SD 001 subject to 40 C.F.R. pts. 414, 428, 463).

⁸⁹ 3M Draft Permit, Fact Sheet at 53-56, 89 (showing that while TBELs have been implemented for other substances, no TBELs have been issued for any PFAS compounds).

⁹⁰ 33 U.S.C. § 1311(b)(1).

TBELs for PFAS, the EPA has endorsed the use of “site-specific” TBELs to address discharges of PFAS. In a guidance memo dated December 5, 2022, EPA states that “[s]ite-specific technology-based effluent limits (TBELs) for PFAS discharges developed on a best professional judgment (BPJ) basis may be appropriate for facilities for which there are no applicable effluent guidelines (see 40 CFR 122.44(a), 125.3).”⁹¹ EPA’s guidance instructs states to implement available measures to reduce PFAS discharges “to the fullest extent available under state and local law.”⁹²

Because of the anticipated success rate of capturing both short and long-chained PFAS compounds,⁹³ 3M’s advanced treatment train can be built into the permit to meet reduction goals for compounds that are not limited in the Draft Permit or where TBELs can set more stringent limits than WQBELs. Here, MPCA should employ best professional judgment to determine limits consistent with the pollutant removal capabilities of 3M’s proposed treatment system and establish those TBELs in the permit.

Although it contains no TBELs for PFAS compounds in SD 001 or SD 002, the draft permit does include WQBELs for six PFAS compounds in SD 001 (with PFH1S and PFHS treated as a class with PFHxS) and five compounds in SD 002.⁹⁴ Based on analytical review, MPCA has set WQBELs for six PFAS compounds at SD 001: PFBA, PFBS, PFHxA, PFHxS/PFH1S/PFHS, PFOA, and PFOS. There is no WQBEL for PFBA at SD 002 but there are WQBELs for the other PFAS compounds listed above.⁹⁵ The agency has additionally set compliance limits for PFHxS,

⁹¹ Memorandum to EPA Regional Water Division Directors, *Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs*, Radhika Fox, Assistant Administrator (Dec. 5, 2002), p. 3. (Attachment 23).

⁹² *Id.*, p. 2.

⁹³ Letter from Courtney Ahlers-Nelson, Industrial Division Director, Minnesota Pollution Control Agency to Minnesota Center for Environmental Advocacy (Jul. 19, 2024), (Attachment 20).

⁹⁴ 3M Draft Permit, Fact Sheet at 57-58, 90.

⁹⁵ 3M Draft Permit, Fact Sheet at 90.

PFOS, and PFOA, because the WQBELs are below the analytical capability of available technologies to detect them.⁹⁶ The proposed WQBELs for the shorter-chain compounds of PFBS, PFBA, and PFHxA are dramatically higher than those for PFHxS, PFOS, and PFOA, and would allow for up to 441,285 kg of PFBS, 1,577,420 kg of PFBA, and 646,960 kg of PFHxA to be discharged from the Cottage Grove facility into the Mississippi River over the 5-year permit period.

While the Clean Water Organizations applaud the employment of WQBELs for these substances, there remains additional levers that the agency can use to set effluent limitations on PFAS compounds. Given the advanced treatment train that 3M will use to treat its wastewater, TBELs are an appropriate mechanism for placing discharge limits on additional PFAS compounds, such as HFPO-DA and PFNA at SD 001 and SD 002. TBELs can also be used as a more stringent, and therefore controlling, means of setting effluent limitations for those PFAS compounds where WQBELs are higher than those with compliance limits, i.e. PFBS, PFBA, and PFHxA. For these substances, TBELs would better reflect the intended effectiveness of the advanced treatment train system to reduce short and long chain PFAS compounds to near non-detect levels.

As part of establishing TBELs under the CWA, industrial dischargers are categorized by their production types.⁹⁷ Dependent on the industrial category, those facilities already in existence are required to meet a certain level of pollution reduction given the best available technology that can be employed to meet those effluent limitations.⁹⁸ MPCA has identified that Best Available Technology (“BAT”) standards apply for the TBELs in place (for pollutants other than PFAS) at

⁹⁶ 3M Draft Permit, Fact Sheet at 58, 90.

⁹⁷ 33 U.S.C. §§ 1314(b)(1)-(4).

⁹⁸ 33 U.S.C. §§ 1314(b)(1)-(4).

SD 001.⁹⁹ BAT standards consider costs, age of equipment, and environmental impacts.¹⁰⁰ However, at the 3M Cottage Grove facility, MPCA has the opportunity to include New Source Performance Standards (“NSPS”) for PFAS.¹⁰¹ NSPS are employed as TBELs when construction of a new facility, source, or equipment at the facility has begun after the standards for the specific industry and pollutant have already been promulgated at the federal level. NSPS must reflect the “best available demonstrated control technology” possible and are intended to ensure that as treatment systems expand, so does the technology used to treat discharge.

The Cottage Grove facility presents a prime opportunity to address PFAS with the application of these two effluent limitations strategies: WQBELs and site-specific TBELs. Conventionally, 3M’s PFAS TBELs would be set at levels that consider what representative technology is available to the industry (BAT) and could be employed to reduce PFAS discharges into the Mississippi River.¹⁰² However, at the Cottage Grove facility, 3M will be employing a treatment train that is on the cutting edge of PFAS removal technology, comprised of granular activated carbon (GAC), reverse osmosis (RO), and anion exchange filtration (AIX).¹⁰³ This treatment train is designed to be one of the most effective systems contemplated for the removal of PFAS from waste streams once it is fully functional and attains compliance in 2026.¹⁰⁴

MPCA should recognize this technological advancement and take full advantage of its PFAS reduction benefits by setting site-specific NSPS TBELs for short-chained PFAS compounds

⁹⁹ 3M Draft Permit, Fact sheet at 54-56. No TBELs have been issued at SD 002. *See* 3M Draft Permit, Fact sheet at 89.

¹⁰⁰ 33 U.S.C. § 1314(b)(2).

¹⁰¹ New source performance standards must reflect the “best available demonstrated control technology.” 33 U.S.C. § 1316(a)(1).

¹⁰² 33 U.S.C. § 1311(b)(2)(A).

¹⁰³ 3M Draft Permit, Fact Sheet at 10-11.

¹⁰⁴ 3M Draft Permit, Fact Sheet at 53, 130.

known to be within the facility’s waste stream and where the treatment train can remove PFAS to levels far below the calculated WQBELs. The justification for NSPS TBELs can be used to support more stringency in effluent limitations for compounds where the data is not statistically sound enough to support WQBELs. There are currently no federally promulgated NSPS for PFAS, and this treatment train began construction after the issuance of NSPS for other pollutants where MPCA uses BAT standards at this facility. Therefore, the requirements of the NSPS regulation apply and MPCA must evaluate the effectiveness of the new treatment technology on these pollutants.¹⁰⁵ The CWA provides that where a new source has been constructed, TBELs can be implemented to reflect technological advancements.¹⁰⁶ 3M’s new treatment train qualifies as new source.¹⁰⁷ It is a newly constructed treatment facility which is substantially independent of existing treatment facilities, such as Building 92, used to treat the discharge of wastewater.¹⁰⁸

As a new source, the 3M treatment train is at the forefront of PFAS removal technology.¹⁰⁹ Because of this, the treatment capabilities at the facility can reduce higher levels of both long and short-chain PFAS compounds.¹¹⁰ This could set the stage for other facilities in implementing similar treatment trains as we begin to address PFAS contamination throughout the world. Setting TBELs for these compounds carries an additional benefit: by incorporating TBELs into the draft permit, MPCA can ensure that the medium used in the treatment train is more frequently replaced.

¹⁰⁵ *Nat. Res. Def. Couns. v. Env’t Prot. Agency*, 822 F.2d 104 (D.C. Cir. 1987) (discussing that construction must be commenced 120 days after the promulgation of new source performance standards for the industrial category).

¹⁰⁶ 33 U.S.C. §§ 1311(b), 1314(b).

¹⁰⁷ 40 C.F.R. § 122.2 (defining new source as “any building, structure, facility, or installation from which there is or may be a ‘discharge of pollutants,’ the construction of which commenced after promulgation” of § 306 CWA performance standards for the industry); 33 U.S.C. § 1316(a)(3).

¹⁰⁸ 40 C.F.R. § 122.29(b)(iii).

¹⁰⁹ 33 U.S.C. § 1316.

¹¹⁰ Letter from Courtney Ahlers-Nelson, Industrial Division Director, Minnesota Pollution Control Agency to Minnesota Center for Environmental Advocacy (Jul. 19, 2024), (Attachment 20).

This will have the secondary effect of preventing the breakthrough of small-chained compounds known to be in the facility's waste stream, but not subject to any effluent limitations.

Clean Water Organizations urge MPCA to issue site-specific TBELs for PFBS, PFHxA, PFBA, PFNA, and HFPO-DA, through the application of BAT or NSPS based on the capabilities of the advanced treatment train system.¹¹¹ TBELs for PFBS, PFHxA, and PFBA will allow MPCA to incorporate much more stringent effluent limitations for these shorter-chained compounds in the permit, far below the WQBELs calculations in this instance. This would incorporate a precautionary principle that ensures that 3M maintains the effectiveness of the treatment train for both long and short-chain compounds, as we continue to learn more about the human health risks in short-chain compounds. Similarly, the TBELs would allow MPCA to incorporate limits for PFNA and HFPO-DA, compounds that are regulated through the recently promulgated federal MCLs at 10 ng/L but for which there was not sufficient paired water and fish tissue data in this section of the Mississippi River (Miles 820-812) for MPCA to set site specific water quality criteria.

2. More stringent limits on these pollutants are required by state law

In addition to the CWA, MPCA's permit is governed by MEPA and MERA. MEPA and MERA are described together to form a "coherent legislative policy" with the goal to protect Minnesota's environmental resources.¹¹² Central to MEPA/MERA is the concept that the

¹¹¹ While not as extensive as NSPS, a BAT standard at a minimum will still work to ensure that the treatment train carbon filtration medium is more frequently replaced, thereby creating less probability that short-chain PFAS compounds are able to break through.

¹¹² State by Smart Growth Minneapolis v. City of Minneapolis, 954 N.W.2d 584, 590 (Minn. 2021).

government – MPCA – cannot permit an activity that will degrade the environment or harm public health where there is an alternative. For example, MEPA states:

No state action significantly affecting the quality of the environment shall be allowed . . . where such action . . . is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative . . . Economic considerations alone shall not justify such conduct.¹¹³

Likewise, MERA provides a mechanism to challenge a permit that is inadequate to protect the state’s resources from pollution, impairment or destruction.¹¹⁴

The Draft Permit’s failure to incorporate site-specific TBELs for PFBS, PFBA, PFHxA, HFPO-DA and PFNA runs afoul of MEPA/MERA’s mandate. These pollutants are known to be in 3M’s discharge and are known to “likely cause pollution, impairment or destruction” of Minnesota’s surface- and groundwater resources. MPCA has the ability, through application of its best professional judgment, to place limits on these pollutants based on what 3M’s proposed treatment train, which is a new source, can achieve. For those pollutants limited only by a WQBEL, the TBEL would likely be more protective. For those pollutants with no limit at all in the Draft Permit, a TBEL is clearly required. The MPCA cannot issue a permit to discharge unlimited amounts of a substance that will pollute, impair or destroy the surface and groundwater quality where there is a feasible and prudent alternative. Here, the alternative is calculation of a TBEL based on the proposed treatment train.

3. Determining and imposing TBELs for short-chain compounds now will pay off in the future

As noted throughout this comment, the conditions set forth in the 3M Cottage Grove NPDES permit will have effects outside of just the facility. When the federal MCLs were

¹¹³ Minn. Stat. § 116D.04, subd. 6.

¹¹⁴ Minn. Stat. § 116B.10.

promulgated, WQS for six PFAS compounds were simultaneously set for Class 1 waters in Minnesota.¹¹⁵ While the direct receiving surface waters of 3M’s discharge are not currently classified as Class 1 waters, its surface discharges as well as discharge through groundwater and sediment pore water contamination, and ambient environmental contamination will continue to influence surrounding waters—as through the recently-established connection of the Mississippi River where the Cottage Grove facility discharges to Well 5 in the City of Hastings. Under section 303(d) of the CWA, MPCA will be required to identify which water bodies will be unable to meet the Class 1 WQS for PFAS or site-specific water quality criteria for specific water bodies in Pool 2 of the Mississippi River.¹¹⁶ That will in turn affect future TMDLs.

Under its CWA delegation, MPCA is required to identify water bodies throughout the State that do not meet WQS for these six PFAS compounds.¹¹⁷ Pool 2 of the Mississippi River is already impaired for PFOS in fish tissue and the water column, and based on the site-specific criteria for other PFAS compounds it is anticipated that listed impairments for other PFAS compounds will likely follow in 2026. For listed impairments, the agency will need to begin the process of issuing and ranking TMDLs for the pollutants in the impaired segments.¹¹⁸ TMDLs are “the sum of the individual [waste load allocations] for point sources and [load allocations] for nonpoint sources and natural background.”¹¹⁹ In making these impaired waters assessments, MPCA will need to consider the TBELs, WQBELs, and other pollution controls that it has put in place to reduce PFAS contamination from point sources like the 3M Cottage Grove facility.¹²⁰ Because there are many

¹¹⁵ Minn. R. 7050.0221, subp. 1(B).

¹¹⁶ 33 U.S.C. § 1313(d).

¹¹⁷ 33 U.S.C. § 1313(d)(1).

¹¹⁸ 33 U.S.C. § 1313(d); 40 C.F.R. §§ 130.7, 130.10.

¹¹⁹ 40 C.F.R. § 130.2(i).

¹²⁰ 40 C.F.R. §§ 130.7(b), 130.10(b).

other point and non-point sources through which PFAS are released into the Mississippi River and its tributaries, downstream NPDES permits will be affected, and this Draft Permit will also affect those TMDL calculations. MPCA will need to address this by incorporating waste load allocations into each NPDES permit through TBELs and WQBELs in future permitting issuances.¹²¹

One way to get ahead of this is to include TBELs based on NSPS for those PFAS compounds and discharge points as discussed above. By setting more stringent effluent limitations now, MPCA will be well positioned to assist downstream municipalities in their PFAS contamination reductions. Given that we are still addressing the full scope of PFAS contamination, especially with respect to non-point sources, strict controls for known discharges at point sources are imperative to addressing TMDLs for future impaired waters and the costs of public water utilities to comply with federal MCLs and statewide Class 1 WQS. Nonpoint sources of PFAS discharge remain a major challenge for impaired waters. For example, various PFAS compounds are found in high concentrations in biosolids. When biosolids are land applied,¹²² PFAS compounds can be released into water systems during precipitation events, causing non-point source discharges and contributing to impairment. PFAS enter our water systems through construction sites and associated permits that do not contain PFAS limits. The substances leach into water systems from pesticides used in agriculture, private residences, and businesses across the State.¹²³ Given that MPCA is instituting the first industrial wastewater permit to contain

¹²¹ 40 C.F.R. § 122.44.

¹²² See Carly Griffith et al., *Forever Chemicals in Our Wastewater; How Minnesotans Can Build on the PFAS Source Reduction Laws Passed in 2023*, Minnesota Center for Environmental Advocacy, 10, 13 (2023), <https://www.mncenter.org/sites/default/files/permalinks/PFAS-report-MCEA-11-7-2023-final.pdf> (Attachment 24), showing maps of known PFAS dischargers and biosolids land application sites along the Mississippi River and associated tributaries.

¹²³ *New Study Finds Alarming Rise in Persistent 'Forever Chemicals' in Pesticides*, Environmental Working Group (Jul. 2024), <https://www.ewg.org/news-insights/news-release/2024/07/new-study-finds-alarming-rise-persistent-forever-chemicals>.

numeric PFAS limits in Minnesota, the agency will need to be cognizant of a whole host of point and non-point pathways where these compounds enter our water systems.

In fact, Minnesota regulations require this consideration, not just for downstream users, but for waters of other states.¹²⁴ In consideration of this mandate and the knowledge that this NPDES permit may need to be reopened to address waste load allocations,¹²⁵ the Clean Water Organizations urge MPCA to implement site-specific TBELs and WQBELs now. TBELs are appropriate for those short chain compounds included in the federal MCLs (PFNA and HFPO-DA) as well as those with SSC for Pool 2. Including TBELs from the onset is just one of the many ways Minnesota can continue to be a protector of water quality for not only its own citizens, but for those states downstream. This is even more salient when combined with EPA's acknowledgement that states will have up to five years to come into compliance with the federal PFAS MCLs.¹²⁶ As a leader in addressing PFAS, this is yet another opportunity for MPCA to take a proactive and precautionary step to ensure that known harms are addressed.

C. Require stringent monitoring and data collection throughout the 5-year term of the permit and add an annual review of PFAS intervention and discharge limits based on the latest toxicological information

Currently, the draft permit includes some opportunity for 3M to reduce its monitoring schedule, fish tissue and age sampling, and Instream PFAS Characterization Study

¹²⁴ Minn. R. 7050.0155 (stating that “all waters *must* maintain a level of water quality that provides for the attainment and maintenance of the water quality standards of downstream waters, including the waters of another state”) (emphasis added).

¹²⁵ 3M Draft Permit, Fact Sheet at 124.

¹²⁶ Environmental Protection Agency, *PFAS National Primary Drinking Water Regulation FAQs for Drinking Water Primacy Agencies*, https://www.epa.gov/system/files/documents/2024-04/pfas_npwdr_faqsstates_4.8.24.pdf.

methodology.¹²⁷ MPCA should amend the permit to require 3M to provide monitoring data throughout the permit's 5-year term without modification.

As MPCA indicates, the monitoring schedule required in this permit is designed to further collect fish sample data, ensure that PFAS concentrations in the facility's discharges are reduced over time, and to inform impaired waters and fish consumption guidelines in the future.¹²⁸ MPCA has indicated that one of the reasons it was unable to develop site-specific water quality criteria for PFNA and HFPO-DA was due to insufficient paired data to calculate a bioaccumulation factor.¹²⁹ These calculations required sufficient data for PFAS concentrations from surface water and fish tissue, which were unavailable to MPCA at the time of the drafting. By requiring 3M to continue all contemplated monitoring schedules in the draft permit without opportunity for reduction, MPCA will be able to attain a holistic understanding of this data to inform future regulation of PFAS chemicals at this facility as toxicological research progresses. Rigorous data collection and retention will ensure that adequate information is available not only to characterize PFAS levels in the facility's discharge but also to inform future assessment for impaired waters lists, TMDLs, and site-specific water quality criteria.¹³⁰ A reduction in sampling schedules should not be contemplated for the duration of this NPDES permit, especially given 3M's decades-long history of undisclosed contamination to surface and groundwater in the East Metro region.

¹²⁷ See Minn. Pollution Control Agency, Draft NPDES/SDS Permit No. MN0001449 – 3M Cottage Grove Center (2024), Appendix A at 412-13.

¹²⁸ 3M Draft Permit, Appendix A at 410.

¹²⁹ Letter from Courtney Ahlers-Nelson, Industrial Division Director, Minnesota Pollution Control Agency to Minnesota Center for Environmental Advocacy (Jul. 19, 2024), (Attachment 20).

¹³⁰ A reduction in monitoring for all PFAS compounds currently included in the Draft NPDES permit would also impact MPCA's special conditions included in the permit. See 3M Draft Permit, Fact sheet at 35-40.

MPCA's basis for allowing monitoring flexibility is the advanced treatment train's ability to reduce the concentration of a whole host of PFAS compounds to levels barely detectable levels.¹³¹ If the treatment train performs as anticipated, this could not only shift how TBELs are instituted for various industries, but also be a model treatment system that could be used worldwide. Because of this, data collection is critical. Accountability is also critical. 3M has a long history of shrouding PFAS data from agencies and the general public.¹³² This should not be yet another opportunity to do so. Requiring monitoring and reporting of any PFAS compounds found in the waste stream or discharge for the 5-year term of the permit will help keep this permit true to its intent. It is also an incredible opportunity for large-scale data collection, on both the efficiency of the treatment train system and the response in the surrounding environment. This will allow MPCA to have the necessary historical data for any new compounds requiring regulation as toxicology studies develop on this class of chemicals.

As such, the Clean Water Organizations request that any opportunity for re-opening the permit¹³³ be limited to increasing stringency on intervention and discharge limits, incorporating TMDL wasteload and load allocation requirements for the 3M facility, and broadening the scope of PFAS compounds subject to monitoring, reporting, or effluent limits. After decades of polluting our waters, air, sediment, and bodies with these substances, 3M should not be afforded an "out" in this permit. Therefore, any re-opening of the permit to change conditions or terms should only be done to increase the stringency of monitoring and reporting or the strengthening of discharge and

¹³¹ Letter from Courtney Ahlers-Nelson, Industrial Division Director, Minnesota Pollution Control Agency to Minnesota Center for Environmental Advocacy (Jul. 19, 2024), (Attachment 20).

¹³² *See supra* Section I.B.

¹³³ The draft NPDES permit includes various opportunities for MPCA to reopen the permit to change conditions dependent on compound concentration levels. *See e.g.*, 3M Draft Permit, Appendix A at 412-413; Fact Sheet at 37, 124.

intervention limits in light of new toxicological information. The Clean Water Organizations further recommend that MPCA conduct an annual review of the permit's intervention and discharge limits informed by the monitoring data and the most up-to-date toxicological information to determine whether the intervention and discharge limits, especially those for shorter-chained compounds, are adequately protective. Throughout the course of the five-year span of this permit, research will only accelerate in toxicity studies, bioaccumulation analysis factors, and the expansiveness of PFAS compounds being studied. We have already seen such an acceleration for long chain PFAS compounds (See Section I).¹³⁴

D. Clarify/expand many of the monitoring provisions for PFAS

The draft 3M NPDES permit provides an extensive monitoring framework for the treatment and discharge stream, particularly for PFOA, PFOS, and PFHxS and other non-PFAS contaminants. However, given the concerns noted above regarding short-chain PFAS, we recommend the following modifications.

There are a large number of monitoring wells already present on the 3M facility property, some in locations suitable to provide information regarding any release from any of the ponds and basins where wastewater will be contained prior to treatment. Any contaminants released from these ponds or basins to the groundwater will ultimately enter the river on the facility's southern boundary. The Clean Water Organizations recommend that monitoring data from these wells be included in 3M's quarterly monitoring reports.

The Draft Permit says that non-targeted PFAS analysis will be conducted at least once during the 5-year period of the permit but does not specify when this will happen. It is our

¹³⁴ See *supra* Section I.B.

understanding from MPCA staff that this issue is part of an on-going non-public investigation and may not be something that can be addressed immediately. However, we recommend that the non-targeted PFAS analysis be completed as soon as possible to inform decisions regarding the location and frequency of future monitoring. Furthermore, to better inform the public and MPCA's non-targeted PFAS analysis whenever it does occur, Total Organic Fluorine (TOF)¹³⁵ test results should be required for all discharge points in monthly eDMR reporting. Requiring the monitoring and reporting of TOF will help MPCA and the public to know the full amount of un-accounted-for fluorinated chemicals being discharged, which will help in estimating whether PFAS chemicals are being sufficiently caught by the PFAS-chemical-specific monitoring under the permit. Making this TOF data publicly available with DMRs is important so that there can be some community confidence in the accuracy and timeliness of the non-targeted PFAS analysis planned by MPCA.

Finally, in Table 5 of the draft permit (specifically sections 5.69.90 and 5.69.115) there are requirements for monitoring of various environmental media (surface water, sediment, and fish tissue) in the Mississippi River. Based on conversations with MPCA staff, we understand that “surface water” is meant to include both the surface micro-layer and pore water within the river bottom sediments. We recommend that the permit explicitly state that the surface micro-layer and pore water are included in these monitoring and reporting requirements. This is important because

¹³⁵ TOF testing is relatively inexpensive and easy to access through existing labs such as Eurofins, should the permittee have any difficulty accessing the necessary laboratory technology. *See* Eurofins, PFAS testing (Per- and Polyfluoroalkyl Substances), <https://sustainabilityservices.eurofins.com/services/pfas-testing-per-and-polyfluoroalkyl-substances/> (“Eurofins offers quantitative Total Fluorine (TF) and Total Organic Fluorine (TOF) testing services for a wide variety of matrices, including consumer products, which can be used to screen for the presence of all PFAS in your matrix. As PFAS chemicals contain organic fluorine, if the detected level of TOF is greater than the regulated limit of PFAS in your matrix (e.g. > 50ppm, or > 100ppm for many consumer products), further analysis such as targeted PFAS testing can be used to determine which PFAS is present to help you cleanse your supply chain.”)

the surface micro-layer is where PFAS tend to accumulate in surface waters and the nearshore pore water along the shoreline of the 3M property have had extremely high PFAS concentrations in the past, due to upwelling of contaminated groundwater from the facility property to the river. Pore water concentrations provide a better indication of any ongoing uncontrolled release of PFAS from the facility than other environmental media and therefore must be explicitly included in the required monitoring scheme.

E. Add additional requirements for data reporting and the Annual Community Meetings to ensure both are accessible to the public

The Clean Water Organizations additionally request that MPCA expand condition 5.69.94 and 6.20.22 of the Draft Permit to include an explicit oversight role for MPCA in the Annual Community Meetings and to ensure accessible data distribution to the public.¹³⁶ The Clean Water Organizations applaud MPCA's requirements for 3M to host annual meetings to "disclose factual information to the community regarding facility operations, changes made or planned to reduce pollutants in discharges, and management of hazardous materials and compliance with environmental permits and regulations."¹³⁷ However, MPCA should have an explicit role in the Annual Meetings to ensure that the presented information is not only accountable to 3M's shareholders, but also to the citizens and residents of the East Metro region. Towards that end, 3M should only be allowed to present information that has been approved by the MPCA, and MPCA staff should be present to share additional information and answer questions from the public as needed. This will increase public trust in the transparency of the process and ensure the accuracy of the information that is presented.

¹³⁶ 3M Draft Permit at 47, 92.

¹³⁷ *Id.*

There should also be additional requirements on 3M to provide specific data disclosure requirements as part of these meetings, again with oversight from MPCA. Draft Permit conditions 5.69.94 and 6.20.22 should be amended to include easily understandable charts, graphs, and data points displaying each of the PFAS compounds and concentrations monitored at the Cottage Grove facility over the past five years, which would align with the previous permit period if this facility didn't still operate on an expired 2003 permit. The publicly accessible data presented at these Annual Meetings should also include monitoring data for each additional monitoring year leading up to the scheduled community meeting, to show how the permit's discharge and intervention limits have impacted PFAS levels in the facility's discharges.

MPCA is already requiring 3M to maintain and report this data through "an Electronic Data Deliverable (EDD) digital format so that it can easily be stored [and] shared . . ." ¹³⁸ It is incumbent on 3M to make this data just as readily accessible in a digital platform for the public's review throughout the duration of the permit's existence. Given the history of 3M, MPCA must make the permit's requirements for the accessible public disclosure of information explicit in these Annual Meetings. By ensuring that 3M maintain a digital, interactive platform that allows the public to access historical and evolving PFAS concentrations in the Cottage Grove facility discharges, MPCA can assist the public in understanding the full picture of PFAS contamination and remediation, as well as demonstrate the effectiveness of the advanced treatment train system.

Minnesotans have been at the forefront of PFAS exposure. They have simultaneously been left in the dark about 3M's historical discharges and the contaminant levels of PFAS affecting their communities. By including accessible and understandable data, 3M can begin to build back its

¹³⁸ 3M Draft Permit, Appendix A at 410.

relationship with the community through transparency. MPCA can ensure this by putting these conditions into the Draft Permit.

CONCLUSION

The Clean Water Organizations commend MPCA for the extensive technical work that informed the site-specific criterion for six PFAS chemicals in River Miles 820-812 as well as the effluent limits for PFAS in the 3M Cottage Grove draft wastewater permit. We recognize that this Draft Permit marks a major milestone for PFAS regulation in Minnesota as the first industrial wastewater permit in the state to incorporate numerical limits for “forever chemicals.” The requests outlined in this comment are intended to further strengthen these regulatory tools considering 3M’s record of obfuscation when it comes to dangerous PFAS pollution, and to set a model for PFAS regulations in future municipal and industrial wastewater permits. Our requests are reiterated below:

- a. Amend the Site-Specific Criteria Hazard Index for the Mississippi River Miles 820 to 812 to include PFHxS based on the thyroid/endocrine toxicological endpoint and a second Hazard Index for PFOS, PFOA, PFHxA, PFHxS, and PFBA for the liver toxicological endpoint.
- b. Develop and include site-specific TBELs as well as WQBELs for PFAS. Specifically, replace the WQBELs for PFHxA, PFBS, and PFBA with site-specific TBELs that represent the technological capability of the proposed advanced wastewater treatment system to remove these shorter-chained compounds to near non-detect levels, and develop site-specific TBELs for HFPO-DA and PFNA, which are regulated through federal MCLs and statewide WQS for Class 1 waters.

- c. Require stringent monitoring and data collection throughout the 5-year term of the permit and add an annual review of PFAS intervention and discharge limits based on the latest toxicological information.
- d. Clarify/expand many of the monitoring provisions for PFAS.
- e. Add additional requirements for data reporting and the Annual Community Meeting to ensure both are accessible to the public.

Thank you,

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ON BEHALF OF

City of Newport

Clean Water Action Minnesota

CURE

Environment America

Environment Minnesota

Minnesota Center for Environmental Advocacy

Roots Return Heritage Farm LLC

South Washington Watershed District