



Working to protect the Mississippi River
and its watershed in the Twin Cities area.

101 East Fifth Street
Suite 2000
Saint Paul, MN 55101

651-222-2193
www.fmr.org
info@fmr.org

August 25th, 2017

Larry Gunderson
Minnesota Department of Agriculture
625 Robert Street North
St. Paul, MN 55155
larry.gunderson@mn.state.us

Dear Mr. Gunderson,

I am writing on behalf of Friends of the Mississippi River and our members with our responses to the request for comments on the proposed two-part Nitrogen Fertilizer Rule.

About FMR

Friends of the Mississippi River (FMR) is a non-profit organization founded in 1993 with a mission to protect, preserve and enhance the Mississippi River and its watershed in the Twin Cities metro area and beyond. FMR has long been concerned about agricultural impacts to Minnesota's surface waters and groundwater resources, and has made advancing meaningful progress toward agricultural water quality performance a priority. With more than 3000 members, 19 active board members and 19 staff, FMR is a leading citizen organization working to protect and enhance water quality throughout the Mississippi River watershed.

Nitrate pollution & the Groundwater Protection Act of 1989

The 1989 Groundwater Protection Act established the state goal that "groundwater be maintained in its natural condition, free from any degradation caused by human activities."¹ For agricultural chemicals including nitrogen fertilizer, implementation is directed by the Minnesota Department of Agriculture (MDA).

Despite comprehensive promotion of nitrogen fertilizer BMPs throughout the state since the Act's passage, voluntary BMPs have proven insufficient to prevent surface water and groundwater contamination from agricultural sources across the state.

As demonstrated by the Minnesota Pollution Control Agency's 2013 [report on nitrogen in surface water](#), approximately 73% of nitrate pollution to Minnesota's surface waters is from agricultural pollution. A full 30% of this nitrate contamination is from agricultural pollution to shallow groundwater that eventually makes its way to surface waters.

Approximately 27% of Minnesota streams exceed 10mg/l concentrations for nitrate, and more than 40% exceed 5mg/l. Approximately 211 million pounds of excess nitrate flows downstream through the Mississippi River watershed annually from Minnesota, impacting water quality downstream including

¹ Min. Stat. 103H.001 Degradation Protection Goal. Available at: <https://www.revisor.mn.gov/statutes/?id=103H.001>

in the Gulf of Mexico Hypoxic Zone - which grew to record size in 2017.² The problem is likely to get worse over time. Nitrogen fertilizer sales have increased 15% over just the last 5-6 years in Minnesota³, and new research suggests that changes in precipitation patterns alone will increase nitrate delivery to U.S. surface waters by an average of 19%, and as much as 24% in the corn belt through this century.⁴

The [MPCA's Nutrient Reduction Strategy](#) includes surface water nitrate pollution reduction goals of 20% by 2025 and 45% by 2040. Achieving these goals will require significant changes to on-the-ground agricultural practices across the state, including those influenced by the MDA's proposed Nitrogen Fertilizer Rule.

Groundwater contamination is likewise a serious and growing concern; exceedance of the Health Risk Limit for nitrogen in drinking water is an eminent public health threat in Minnesota. According to the Minnesota Department Health, 537 public water supply wells across the state have nitrate levels above 3 mg/L. In addition, 22% percent of tested private wells are above 3 mg/L levels,⁵ and nearly 10% of private wells in vulnerable areas are already above the Health Risk Limit (HRL) of 10 mg/L, including some townships with 30-40% of private wells unsafe to drink.

Results from comprehensive state groundwater monitoring from 1985-2010 indicate that the rate of detection of nitrate in groundwater is between 50% - 99% of samples in all groundwater regions. Rates of detection and the share of samples in excess of the HRL have increased in 6 of the 7 tested groundwater regions of the state.⁶

Groundwater Region	% Detection			% Above HRL		
	1985-1999	2000-2010	% Increase	1985-1999	2000-2010	% Increase
Region 1 (Northwest)	6	50	44	0	8	+8
Region 4 (Central)	73	97	24	38	62	+24
Region 5 (East Central)	74	93	19	44	50	+6
Region 6 (West Central)	25	56	31	8	17	+9
Region 7 (Southwest)	34	56	22	6	29	+23
Region 8 (South Central)	18	62	44	7	19	+12
Region 9 (Southeast)	83	99	16	35	22	-13

The Groundwater Protection Act clearly states that if voluntary BMP adoption proves insufficient to achieve the goals of the Act, the MDA has authority to adopt mandatory requirements that include “design criteria, standards, operation and maintenance procedures, practices to prevent releases, spills, leaks, and incidents, restrictions on use and practices, and treatment requirements.”⁷

2 Louisiana Universities Marine Consortium. Hypoxia in the Northern Gulf of Mexico. 2017. https://gulfhypoxia.net/research/shelfwide-cruise/?y=2017&p=press_release

3 Minnesota Department of Agriculture. 2017. Working together to address nitrate in groundwater. <http://www.mda.state.mn.us/~media/Files/chemicals/nfmp/nfmpresentation.pdf>

4 Sinha, E, A.M. Michalak, V. Balaji. "Eutrophication will increase during the 21st century as a result of precipitation changes." Science, July 28, 2017, 405-08. Available at: http://www.sciencemaginedigital.org/sciencemagazine/28_july_2017?pg=111#pg111

5 Minnesota Department of Health. 215. "Minnesota Drinking Water Report 2015 – Annual report for 2014." Available at: <http://www.health.state.mn.us/divs/eh/water/com/dwar/report2014.pdf>

6 Minnesota Department of Agriculture. 2015. Nutrient Fertilizer Management Plan. Page 131.

7 Minn. Stat. §§ 103H. 275, subd. 1 (b) and 103H.005, subd.14

Given the state of groundwater contamination in Minnesota, FMR concludes that voluntary BMP adoption has proven ineffective. We strongly support the MDA's decision to establish enhanced regulatory protections against nitrate contamination via the proposed rules.

Comments on the Proposed Nitrogen Fertilizer Rule

The MDA is proposing a two-part Nitrogen Fertilizer Rule:

- Part 1: The first part of the rule will apply to areas of the state overlying vulnerable groundwater. In these vulnerable groundwater areas, nitrogen fertilizer applications either in the fall or to frozen soils will have restrictions. FMR strongly supports this portion of the draft rule.
- Part 2: The second part of the rule will apply to areas where measured nitrate levels in drinking water are elevated and it has been determined that the nitrogen fertilizer Best Management Practices (BMPs) are not being adopted.

FMR respectfully submits the following comments detailing our concerns with Part 2 of the proposed rule, including the following:

- Failure to honor the goals of the 1989 Groundwater Protection Act
- Inappropriate mitigation level criteria
- Unacceptable reliance on profit-based nitrogen fertilizer best management practices (BMPs)
- Unclear agency discretion on township participation
- Slow pace of intervention

We also request clarification on whether the agency would be required to establish an enhanced groundwater monitoring network to supplement private wells in a given township before advancing to Phase 3 or 4 mitigation.

Failure to honor the goals of the Groundwater Protection Act

The MDA's proposed rule fails to achieve the clearly stated non-degradation goal of the Groundwater Protection Act, and unreasonably limits application of the Groundwater Protection Act to drinking water resources instead of applying the law to protect all groundwater as directed by the Act.

- I. **The MDA's proposed rule fails to achieve the clearly stated non-degradation goal of the Groundwater Protection Act.** While the MDA does acknowledge the intent of the Act is to prevent groundwater degradation, the MDA's stated goal for the draft rule is to "...reduce nitrate in groundwater",⁸ and proposes only to deploy Part 2 of the rule once groundwater has become contaminated.

This approach is incompatible with the clearly stated goals of the Act. Mitigation is not synonymous with prevention. The MDA's sole justification for this approach appears to be its interpretation that the Act's "maximum extent practicable" test limits MDA action to activities that will "...provide for the minimum amount of nitrogen fertilizer to be used while still achieving economic profitability."⁹ We find this a troubling and unsatisfactory justification for failing to adhere to the clearly defined intentions of the Act.

8 Minnesota Department of Agriculture. 2017. Draft Nitrogen Fertilizer Rule Presentation. Slide 7. http://www.mda.state.mn.us/chemicals/fertilizers/nutrient-mgmt/nitrogenplan/mitigation/wrpr/wrprprocess/~/_media/Files/chemicals/nfmp/nfrpresentation.pdf
9 Minnesota Department of Agriculture. 2015. Nutrient Fertilizer Management Plan. Page 131.

II. **The MDA's proposed rule unreasonably limits application of the Groundwater Protection Act to drinking water resources instead of applying the law to protect all groundwater as directed by the Act.** The MDA has failed to provide sufficient justification for this interpenetration.

This is of concern to FMR because of the widespread frequency of shallow groundwater contamination across the state. According to the Minnesota Environmental Quality Board, 85% of state shallow groundwater samples have detectable levels of nitrate contamination.¹⁰

Instead of applying the Act to all ground water, the MDA's approach appears to eliminate application of the Act in areas with significant groundwater contamination where shallow groundwater wells are not a source of public or private drinking water.

Were the Act instead called the "*Groundwater Used as Drinking Water Protect Act*", FMR would not object to the MDA's approach. However, that is not the case. FMR feels strongly that the MDA has a responsibility to apply the law based on clearly established legislative intent. The MDA should apply its authority to prevent groundwater contamination regardless of whether or not that groundwater resource is used as a drinking water source.

The MDA's apparent decision to administratively alter the threshold for public intervention to prevent and correct groundwater contamination violates both legislative intent of the Act and the public interest in clean water. The Nitrogen Fertilizer Rule should be re-drafted to address the Groundwater Protection Act's clearly stated goal of protecting all groundwater rather than a subset of groundwater resources.

Inappropriate mitigation level criteria

FMR concludes that the thresholds for level 3 & level 4 mitigation level criteria for private wells are excessively lenient to the detriment of public health, economic growth, and the basic principles of fairness and accountability.

The draft rule, as written, limits the State's ability to deploy regulatory mitigation criteria when profit-derived BMPs are being adopted, even if drinking water contamination levels continue to exceed the Health Risk Limit.

The draft rule states that level 3 & 4 mitigation are only considered when at least 10% of the private wells have nitrate levels greater than the HRL *and* BMP adoption rates are less than 80%.

These mitigation level thresholds are dangerously unwise. The MDA is proposing to hamstring its own ability to deploy regulatory measures in the event of a public health crisis simply because a given percentage of producers have adopted BMPs that **were never intended to prevent drinking water contamination in the first place**¹¹, and which the **MDA acknowledges are not sufficient to meet the goals of the Act**.¹²

10 Minnesota Environmental Quality Board. 2015. EQB Water Policy Report, Beyond the Status Quo, Appendix A: Five-year Assessment of Water Quality Degradation trends and Prevention Efforts. Page 7. Available at:

<https://www.eqb.state.mn.us/sites/default/files/documents/App%20A%20Five-year%20Assessment%20of%20Water%20Qual%28final%29.pdf>

11 Minnesota Department of Agriculture. 2015. Nutrient Fertilizer Management Plan. Page 41. Available at: <http://www.mda.state.mn.us/~media/Files/chemicals/nfmp/nfmp2015.pdf>

12 Minnesota Department of Agriculture. 2015. Nutrient Fertilizer Management Plan. Page 57. Available at: <http://www.mda.state.mn.us/~media/Files/chemicals/nfmp/nfmp2015.pdf>

Thus, the modest local adoption of inherently sub-optimal BMPs deprives the entire community of regulatory relief regardless of water quality conditions. Using self-reported data on adherence to profit-derived fertilizer recommendations as a substitute for quantifying progress toward achieving the goals of the Act is both deeply unwise and profoundly unfair to Minnesotans.

FMR respectfully restates our request that the MDA remove BMP adoption rates as a consideration when considering level 3 and level 4 mitigation criteria. If community and private wells are unsafe for consumption, the MDA has a responsibility to deploy regulatory intervention wherever appropriate.

The rule must be revised to allow for the adoption of Water Resource Protection Requirements (WRPRs) wherever nitrate levels remain elevated, regardless of the level of BMP adoption.

Inappropriate reliance on profit-based nitrogen fertilizer best management practices (BMPs)

The primary flaw of the rule is that the MDA is proposing to use adoption rates of profit-based nitrogen fertilizer use recommendations as a substitute for achieving the goals of the Groundwater Protection Act and securing safe drinking water for all Minnesotans.

The MDA is proposing to prohibit level 3 & level 4 regulatory intervention based on adoption rates of nutrient BMPs that were simply never intended to prevent drinking water contamination in the first place. **The proposed BMPs were instead created to maximize farm profit; even at application rates the state acknowledges lead to extremely high concentrations of nitrate in farm runoff.**

For example, page 3 of the [University of Minnesota Extension Best Management Practices for Nitrogen Use in South-Central Minnesota](#) states that “Maximum Economic Return to N” (MRTN) rates are used to determine economically optimal fertilizer application rates. In the example used, the MRTN rate was found to be spring-applied at 120-lbs./acre.¹³

Table 2 of that same document concludes that the recommended spring application of nitrogen fertilizer at a 120 lbs./acre would yield **nitrate loss at concentrations of 13.7 mg/l** – well above the state’s [Health Risk Limit](#) for nitrate.

As this example suggests, the fertilizer application rates recommended by the University of Minnesota Extension are designed to provide the rate that ensures maximum producer profitability; even at rates that yield high levels of pollution to groundwater and surface waters. The MDA itself has acknowledged as much on several occasions:

The Minnesota Department of Agriculture’s 2015 Nutrient Fertilizer Management Plan (NRMP) notes that these nitrogen BMP recommendations focus on managing the “*agronomic risk*”, and that other risks such as environmental and societal risks are not accounted for.¹⁴

The NFMP also states that “...*in areas with highly vulnerable groundwater, the use of nitrogen fertilizer at the recommended rate, timing, source and placement...may not be enough to decrease the amount of nitrate leaching into groundwater to meet water quality goals.*”¹⁵

13 “Greatest yield and profit with a minimal increase in NO₃-N concentration was found with the spring-applied 120-lb N rate.”

14 Minnesota Department of Agriculture. 2015. Nutrient Fertilizer Management Plan. Page 41. Available at: <http://www.mda.state.mn.us/~media/Files/chemicals/nfmp/nfmp2015.pdf>

15 Minnesota Department of Agriculture. 2015. Nutrient Fertilizer Management Plan. Page 57. Available at: <http://www.mda.state.mn.us/~media/Files/chemicals/nfmp/nfmp2015.pdf>

The MDA has yet to provide any reasonable explanation as to how nitrogen fertilization rates that yield pollution concentrations in runoff that exceed the Health Risk Limit can possibly comply with the goals of the Groundwater Protection Act, let alone adequately protect public health.

This is especially problematic given that the available data shows that many farm operations are already applying fertilizer at UofM recommended rates, even in areas with very high levels of nitrate in surface water and groundwater. For example, the MDA's own 2012 survey indicates that 75% of farm operations (planting corn following corn) applied nitrogen fertilizer within the University of Minnesota recommendations.¹⁶ If most farmers in a region are already following such recommendations, the MDA cannot seriously consider making adherence to said recommendations the hallmark of any credible attempt to achieve the goals of the Groundwater Protection Act.

FMR respectfully re-states our recommendation that the MDA partner with the Minnesota Department of Health, the University of Minnesota and local stakeholders (including public and private well owners) to establish University of Minnesota Extension Sustainable Nitrogen Application Best Management Practices in prioritized communities.

These sustainability-focused BMPs would:

- I. Define the maximum sustainable level of nitrate loss to groundwater and surface water based on local conditions; and
- II. Assign tailored nitrogen fertilization recommendations that are likely to achieve nitrogen losses that do not exceed sustainable nitrogen loss levels or cause impairments to local surface waters or drinking water resources.

In this way, BMP fertilizer application rates are tailored to meet local water resource goals, resulting in fair and efficient achievement of protection and restoration outcomes. In addition, because these BMP rates are based on water quality needs (rather than crop and fertilizer prices), these application rates will not be subject to change based solely on outside market forces as is the case with the current University of Minnesota recommendations.

Unclear agency discretion on township participation

FMR is concerned that access to Part 2 of the rule appears to be based on township inclusion in the MDA's Township Testing Program. We are concerned that participation in this program remains at the discretion of the MDA, with no clear pathway for excluded communities to petition for inclusion. This approach appears to deny many private well owners protection under the rule because their township has not yet been invited to participate in the program.

FMR is not aware of a process by which townships not currently part of the Township Testing Program can petition for inclusion. FMR request that the MDA clarify a process through which such communities can self-select for participation in the program, and account for such a process when administering the program moving forward.

Slow pace of intervention

The rule makes it clear that under the increasingly remote scenario where the MDA would choose to intervene with level 3 & level 4 mitigation, it plans to do so at an alarmingly slow pace. The rule prescribes a lengthy mitigation level evaluation process that takes at least 3 years if not far longer to

16 Minnesota Department of Agriculture. Commercial Nitrogen and Manure Applications on Minnesota's 2012 Corn Crop Compared to the University of Minnesota Nitrogen Guidelines. Page 81. Available at: https://www.mda.state.mn.us/sitecore/shell/Controls/Rich%20Text%20Editor/~/_media/Files/protecting/cwf/2012umnitrocorn.pdf

implement.

Requiring such a time-consuming and expensive multi-step process simply to further encourage farm operations to apply fertilizer at their economically optimal rate is a tremendous waste of time, money, and community goodwill.

FMR does not support the MDA's assumption that Minnesotans who cannot safely drink their water (or who can reasonably anticipate future contamination of their drinking water in excess of the HRL) will be satisfied with the proposed slow-walk approach to rectifying a serious local public health risk.

Request for clarification: groundwater monitoring network

FMR respectfully requests clarification on the differences in language used to describe well testing protocols applicable to different mitigation levels under Part 2 of the rule. Under the proposed rules, mitigation levels 1 and 2 are clearly based on the percentage of private wells that exceed the HRL.

However, 1573.0080 Subp. 1, A (1) states that the commissioner shall prioritize the issuance of WRPRs by considering level 2 nitrate-nitrogen concentrations as determined by a "groundwater monitoring network" or via MDH public well data. Additionally, 1573.0010 Subp. 9 defines "groundwater monitoring network" as "...a network of wells used by the commissioner to monitor and test nitrate-nitrogen concentrations in groundwater...".

FMR requests clarification as to whether or not the reference to "groundwater monitoring network" in the language above is intended to mean the existing well data used to establish level 1 or 2 mitigation, or if this language will/may require establishment of a new or enhanced monitoring before moving to mitigation level 3 or 4.

Conclusion

On behalf of the board, staff, volunteers and members of Friends of the Mississippi River, thank you for the opportunity to provide comments on the MDA's proposed Nitrogen Fertilizer Rule. We look forward to working with the MDA and all water quality stakeholders to revise the current draft to better protect groundwater resources for all Minnesotans as required by the 1989 Groundwater Protection Act.

Sincerely,



Trevor A. Russell
Friends of the Mississippi River
101 East 5th Street, Suite 2000
Saint Paul, MN 55101
P: (651) 222-2193 x18
E: trussell@fmr.org