

# PART 2 OF THE GROUNDWATER PROTECTION RULE

Minnesota's Groundwater Protection Rule went into effect on June 24, 2019. The purpose of the rule is to minimize potential nitrogen fertilizer sources of nitrate pollution to the state's groundwater and protect our drinking water. The rule contains two parts. Each part contains separate criteria and requirements. Depending on where you farm you may be subject to one part of the rule, both parts, or none at all.

Part 1 of the Groundwater Protection Rule restricts the application of nitrogen fertilizer in the fall and on frozen soils. If you farm in 1) an area with vulnerable groundwater or 2) the protected area around a public well with high nitrate you cannot apply nitrogen fertilizer in the fall or on frozen soils. Part 2 of the rule responds to public water supply wells with elevated nitrate.

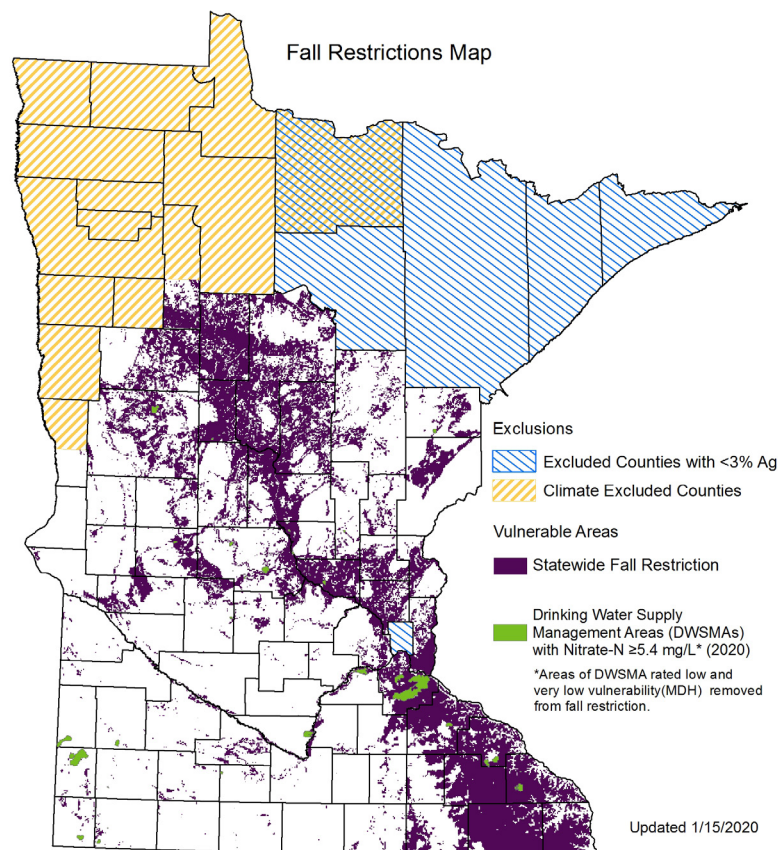
This factsheet provides a summary of Part 2 of the rule. It does not present the Groundwater Protection Rule in its entirety and should not be viewed as comprehensive. A complete copy of the Groundwater Protection Rule is available at: [www.mda.state.mn.us/nfr](http://www.mda.state.mn.us/nfr).

## Why is nitrogen fertilizer a concern?

Nitrate is one of the most common contaminants in Minnesota's groundwater. The majority of Minnesota households have access to safe drinking water supplies. However, in areas vulnerable to groundwater contamination, some public and private wells have nitrate levels that exceed the health risk limit for nitrate. While elevated levels of nitrate in groundwater can result from several factors, a major contributor in rural Minnesota is nitrogen fertilizer that leaches past the crop root zone.

## Nitrogen Fertilizer Management Plan

Much of the rule is based on a process for addressing areas with high nitrate from the state's Nitrogen Fertilizer Management Plan (NFMP). The MDA uses the NFMP as the primary blueprint for preventing and minimizing impacts of nitrogen fertilizer on groundwater. The NFMP promotes the nitrogen fertilizer best management practices (BMPs) developed by the University of Minnesota and was developed using a multi-stakeholder advisory committee and a public review process. It emphasizes involving local farmers and agronomists in problem-solving for local groundwater concerns when nitrate from fertilizer is a key contributor. Authority for the NFMP and rule comes from the Groundwater Protection Act, Minnesota Statute 103H.



Drinking Water Supply Management Area (DWSMA): the surface and subsurface area surrounding a public water supply well, including the wellhead protection area. The DWSMA boundaries are marked by highways, section lines and other well-known features.

## Part 2 – Mitigation efforts in Drinking Water Supply Management Areas (DWSMAs) with elevated levels of nitrate

The rule focuses mitigation efforts on protecting public water supply wells before they exceed the drinking water standard.

This part of the rule is a combination of voluntary and regulatory efforts and is designed to work with local farmers and their agronomists to find solutions that are tailored to their specific situation. There are four mitigation levels in Part 2 of the rule. Levels 1 and 2 are voluntary and Levels 3 and 4 are regulatory. Under Levels 2, 3, and 4 the Commissioner of Agriculture will work with local advisory teams to consider the appropriate recommended and required practices for the respective levels.

### Mitigation Level Determinations

The MDA determines the mitigation levels for the DWSMAs of community supply wells based on monitoring data provided by the Minnesota Department of Health. All areas identified with elevated nitrate begin in a voluntary Mitigation Level (Level 1 or 2), unless the MDA determines there is a point source causing the well to exceed these levels or the MDA delays the determination of a mitigation level decision for good cause. A delay for good cause would allow MDA to collect additional information such as to evaluate a potential point source that may be a significant source of nitrate in the public well.

The process for determining the mitigation level includes conducting a review of the quality of the monitoring data, the condition and vulnerability of the well, the hydrogeology and groundwater flow paths for groundwater flowing into the well, and potential point sources such as an agricultural chemical facility, septic system(s), feedlot(s) or a poorly constructed well that may be contributing significantly to nitrate levels in the well.

View the current list of determinations at:  
[www.mda.state.mn.us/mitigation-level-determination](http://www.mda.state.mn.us/mitigation-level-determination)

View the interactive map at:  
[www.state.mn.us/vulnerableareamap](http://www.state.mn.us/vulnerableareamap)

#### Level One

Community public water supply wells (and their DWSMAs) with monitoring results of 5.4 to less than 8 mg/L nitrate-nitrogen fall under Level 1. At this mitigation level the MDA will encourage the voluntary adoption of the University of Minnesota nitrogen fertilizer BMPs and other practices which can reduce nitrate levels in groundwater such as precision agriculture, perennial crops, forages, cover crops, nitrification inhibitors, new hybrids, or taking

targeted land out of production. These other practices are collectively referred to as alternative management tools or AMTs. Approved AMTs may substitute for nitrogen fertilizer BMPs.

DWSMAs at mitigation Level 1 are subject to Part 1 of the rule but are not subject to Part 2 of the rule.

#### Level Two

Community public water supply wells (and their DWSMAs) with monitoring results at or exceeding 8.0 mg/L nitrate-at any point during the previous 10 years, or projected to exceed the drinking water standard of 10 mg/L nitrate-nitrogen in the next ten years, will be included in Level 2.

For DWSMAs at Level 2, the MDA will work with local farmers to adopt practices that can reduce nitrate levels in groundwater. A local advisory team will be formed to include local farmers, agronomists, and others to help recommend the BMPs and AMTs that should be used. In addition, a local groundwater monitoring well network may be developed. The MDA will promote the implementation of appropriate nitrogen fertilizer BMPs and AMTs. To help facilitate AMT implementation, the MDA has worked with other agencies to make DWSMAs with elevated nitrate among the highest priority areas for state and federal funding.

The MDA will conduct surveys to assess the adoption rates of BMPs and other practices and use computer modeling to estimate the change in nitrate losses over a DWSMA. The modeling will consider the soils, crops, agricultural practices and precipitation in the DWSMA and help local farmers estimate whether changes in practices will improve water quality.

#### Level Three

Level 3 is the first regulatory level. A Level 2 site will progress to Level 3 if one of the following occurs: after not less than 3 growing seasons or the estimated lag time, whichever is longer, the recommended BMPs are not adopted on 80% of the cropland acres (excluding soybean acres); or the nitrate concentrations in groundwater continue to increase; or, after not less than three growing seasons the residual soil nitrate below the root zone increases. The estimated lag time is the time it takes for changes in practices to have an effect on groundwater quality or on the public well with elevated nitrate. This time may vary significantly based on the local soils, hydrogeology and actual precipitation. Computer

modeling and groundwater age estimates can be used to determine the estimated lag time. Residual soil nitrate testing below the root zone is a more difficult process of testing nitrate levels in soil. It is used to determine if nitrate is increasing or decreasing over time and may be used in locations with very long lag times.

The Commissioner of Agriculture – in consultation with a local advisory team – would then require landowners to implement actions such as BMPs, soil testing, record keeping, and educational programs. The Commissioner may delay moving to a regulatory level if computer modeling indicates that the adopted practices are going to be effective in reducing nitrate levels below 8 mg/L.

#### **Level Four**

Level 4 is the second regulatory level. If nitrate-nitrogen in the public water supply well exceeded 9 mg/L for any three samples in the previous 10 years; or after three years

the residual soil nitrate below the root zone increases; or after three years or the estimated lag time, whichever is longer, the nitrate levels continue to increase, then the DWSMA would be given a Level 4 designation. The Commissioner of Agriculture – in consultation with a local advisory team – could require landowners to implement additional practices beyond best management practices. These practices would be determined on a site-specific basis following guidance outlined in MN Statutes Chapter 103H.275 Subd. 2(a). However, they shall not include restrictions on the primary crop or require fertilizer rates below the low end of the University of Minnesota recommended fertilizer rate range.

DWSMAs will be monitored and will move up or down a mitigation level according to changes in water quality. DWSMAs may only move up one mitigation level at a time. For example, a DWSMA will never go from Level 1 to Level 3 in a single cycle.



## **Minnesota Ag Water Quality Certification Program**

An operation that is certified through the Minnesota Agricultural Water Quality Certification Program is deemed to be in compliance with the Groundwater Protection Rule for the duration of the ag producer's water quality certification.