Report to the Minnesota State Legislature: Additional Tools to Implement Groundwater Sustainability Requirements

Minnesota Department of Natural Resources

15 January 2014

This report was prepared in response to Laws 2013, chapter 114, article 4:
sec. 102. GROUNDWATER SUSTAINABILITY RECOMMENDATIONS.
The commissioner of natural resources shall develop recommendations on additional tools needed to fully implement the groundwater sustainability requirements of Minnesota Statutes, section 103G.287, subdivisions 3 and 5. The recommendations shall be submitted to the chairs of the environment and natural resources policy and finance committees by January 15, 2014, and shall include draft legislative language to implement the recommendations.

103G.287 GROUNDWATER APPROPRIATIONS.
subd. 3. Protection of groundwater supplies. The commissioner may establish water appropriation limits to protect groundwater resources. When establishing water appropriation limits to protect groundwater resources, the commissioner must consider the sustainability of the groundwater resource, including the current and projected water levels, water quality, whether the use protects ecosystems, and the ability of future generations to meet their own needs.
subd. 5. Sustainability Standard. The commissioner may issue water use permits for appropriation from groundwater only if the commissioner determines that the groundwater use is sustainable to supply the needs of future generations and the proposed use will not harm ecosystems, degrade water, or reduce water levels beyond the reach of public water supply and private domestic wells constructed according to Minnesota Rules, chapter 4725.

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Estimated cost of preparing this report (as required by Minn. Stat. § 3.197) was $24,700.

EXECUTIVE SUMMARY

This report was prepared in response to Laws 2013, chapter 114, article 4: section 102, which required the Department of Natural Resources (DNR) to develop recommendations on additional tools needed to fully implement the groundwater sustainability requirements of Minnesota Statutes, section 103G.287, subdivisions 3 and 5.

Minnesota's statutes and rules have gradually changed over time in response to new information about water resources, and as problems of overuse and contamination were identified. In 2010, the legislature passed new sustainability provisions for groundwater and surface water appropriations and authority for the DNR commissioner to establish groundwater management areas. In 2013, the legislature passed provisions for preliminary well construction approval[1] and the authority to require general permits for small appropriations[2] (those less than 10,000 gallons per day or 1,000,000 gallons per year) within groundwater management areas.

The DNR has an important role in supporting sustainable groundwater use through its permit programs, information collection and analysis activities, law enforcement responsibilities, education and technical assistance. In 2013, the DNR identified seven core strategies to ensure groundwater resources are used sustainably. The seven strategies include:

- Heightening the priority given to groundwater management;
- Improving information available for groundwater management decisions;
- Improving management of groundwater appropriation permits;
- Improving compliance with groundwater appropriation regulations;
- Improving communication and education about groundwater resources;
- Effectively addressing groundwater management in areas of high use; and
- Promoting the wise use of groundwater and implementation of water conservation practices.

The DNR has reviewed its statutory authority and responsibilities and has recommended statutory changes that would further refine and strengthen the state's groundwater management policies. These recommendations are grouped into four categories as follows:

1) IMPROVE THE INFORMATION AVAILABLE FOR GROUNDWATER MANAGEMENT DECISIONS

- Require tamper-proof flow meters for all permitted water users, provide DNR the authority to investigate, monitor and review measuring devices and records, to assess penalties for non-compliant reporting and to assess penalties for not paying fees.

[1] 103G.287, subd. 1 (c)
[2] 103G.287, subd. 4 (b)

2) IMPROVE COMPLIANCE WITH GROUNDWATER APPROPRIATION REGULATIONS

- Provide DNR authority for administrative penalty orders as an option for addressing water appropriation violations.
- Increase after-the-fact penalties for individuals who appropriate water without a permit.
- Amend statutory authority to investigate water appropriation activities affecting waters of the state conducted with or without a permit.

3) PROMOTE WISE USE OF GROUNDWATER AND WATER CONSERVATION PRACTICES

- Provide DNR authority to waive fees for appropriating water from stormwater management systems that meet certain criteria.
- Prohibit the issuance of appropriation permits for new open loop geothermal groundwater systems.
- Executive branch agencies should evaluate statutes and rules to support water reuse and aquifer recharge.

4) IMPROVE MANAGEMENT OF APPROPRIATION PERMITS

- The legislature should clarify protection goals regarding ground water quality.

Introduction

The DNR and other agencies in the executive branch have adopted a three-pronged approach to sustainable water resource management. This approach involves mapping, monitoring and managing adaptively over time.

A variety of recent reports described many of the challenges and difficulties of sustainable water management, including:

- Managing for Water Sustainability: Report of the EQB Water Availability Project 2008;
- Evaluation of Models and Tools for Assessing Groundwater Availability and Sustainability 2010;
- Long-Term Protection of the State's Surface Water and Groundwater Resources 2010;
- 2010 Minnesota Water Plan; and the
- Minnesota Water Sustainability Framework 2011.

In this report the DNR is recommending specific revisions to statutes to improve information on water use, to improve compliance, to support conservation and wise use of water, and to improve management of permits. The DNR is also recommending that the legislature clarify protection goals for ground water quality.

Finally, the DNR intends to revisit statutes and rules periodically as new information is developed, as we gain experience with groundwater management areas and through the application of new sustainability provisions.

The following sections provide important background on investments in information as well as recent statute changes that are stimulating continued improvement in the state's management of groundwater.

Information

The legislature has recently provided strong financial support to improve information collection and distribution. Funding has accelerated mapping through the county geologic atlases, and expansion of the DNR's water level monitoring network, improvements to the County Well Index program at the Minnesota Department of Health (MDH) and other hydrogeological studies. These efforts have been instrumental in gaining a better understanding of our groundwater systems. Increased funding is helping the DNR improve an inadequate groundwater monitoring network by expanding the number of sites and improving the quality of data and data management. The DNR works with the Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Agriculture (MDA) to effectively share monitoring sites, resources, and data where appropriate. The agencies also collaborate on data management. Continued investment in these foundational systems is necessary to support and inform sustainable groundwater management decisions.

Over the past two years with funding from the Clean Water Fund, the DNR developed a new online system, the Minnesota DNR Permitting and Reporting System (MPARS). This online system for water appropriation, public waters work, and dam safety permitting and water use reporting significantly improves communication with applicants and provides them with easy access to their permit files. It

includes an interactive mapping tool and expedites notifications to other agencies and government units about the opportunity to review a permit application. This new online permitting system will allow DNR to link monitoring data from aquifers to resource protection thresholds and enable us to communicate with water users about necessary adjustments in their water use.

Statutes

In 2010, the legislature passed new sustainability provisions for groundwater and surface water appropriations[3], and provided the DNR commissioner with authority to establish groundwater management areas[4]. In 2013, the legislature passed provisions for preliminary well construction approval[5] and the authority to require general permits for small appropriations (those less than 10,000 gallons per day or 1,000,000 gallons per year) within groundwater management areas.

The authority to adopt rules prescribing standards and criteria for issuing and denying permits for water use permits is provided in 103G.315, subd. 15. In addition, Minnesota Statutes, section 103G.261 directs the commissioner to adopt rules for allocation of waters based on priorities for the consumptive appropriation and use of water as described.

[3] 103G.287, subd. 2, 3 and 5
[4] 103G.287, subd. 4
[5] 103G.287, subd. 1

1. RECOMMENDATIONS TO IMPROVE THE INFORMATION AVAILABLE FOR GROUNDWATER MANAGEMENT DECISIONS

Minnesota's permitted water users move in excess of 475 billion gallons per year. Accurate pumping and use data are necessary to determine whether the use is sustainable and meets statutory and rule requirements. Accurate use information is also important for investigations of well interference and other conflicts. Currently there is no mechanism for DNR to verify the accuracy of reported volumes of water used and there are no monetary penalties for non-compliant reporting. The following recommendations will significantly improve the accuracy and timeliness of information needed to effectively manage groundwater resources.

1A. Require tamper-proof flow meters for all permitted water users, provide DNR the authority to investigate, monitor and review measuring devices and records, and to assess penalties for non-compliant reporting.

- Based on reported water use, about 28% of permittees use a flow metering device and about 49% estimate their use based on time and pumping rate. The other 23% did not indicate the method, estimated the amount, or used an alternative method. Given the large volumes of water used and concerns about overuse, inaccurate information poses significant challenges to sustainable water management.
- Timing devices or other methods do not consistently provide reliable and verifiable measurement needed for managing water. The ability to verify reported water use is needed to ensure accurate information.
- Flow meter technology has improved to deal with sand and other issues that historically posed problems with wear and reliability.
- Tamper-proof flow meters are proven technologies that are required in other states with similar water uses and applications.
- Flow meters can vary in cost between $1,000 and $5,000 depending on the size needed.
- Permit holders pay water use permitting fees based on how much they report using, which provides a financial incentive to underreport.
- Our review of water use reports suggests that we are receiving some systematically inaccurate information. For example, some permittees report exactly the same amount of use for each month; some permittees report the same exact use each year.
- Each year 5-10% of the state's permit holders (i.e., 400-800 permits) do not report until two or more months after the due date of February 15th.
- DNR sends notifications and calls permit holders to remind them to report their water use as a condition of their permit, which requires a considerable amount of staff time and expense.
- Late reporting slows down analysis and permit reviews and pushes the timelines into the next growing season.
- The current penalty for late reporting is 2% of the fee per month. This adds $2.80 per month to a typical $140 fee.

Proposed Statutory Language

103G.281, subd. 1. Measuring and records required.
(a) The state, a political subdivision of the state, a person, partnership, public or private corporation, or association may not appropriate or use waters of the state without measuring and keeping a record of the quantity of water used or appropriated as provided in section 103G.271 or 103G.275.
(b) The records required under this section must be available for inspection at reasonable times by the commissioner and must be preserved and available for seven years.

103G.281, subd. 2. Measuring equipment required. By January 1, 2017 an ~~An~~ installation for appropriating or using water that is conveyed through a pipe must be equipped with a tamper-proof flow meter, as approved by the commissioner, to measure the quantity of water appropriated within the degree of accuracy required by rule. Measuring devices are subject to inspection by the commissioner. For other installations, ~~T~~the commissioner ~~can~~ may determine other methods to be used for measuring water quantity based on the quantity of water appropriated or used, the source of water, the method of appropriating or using water, and any other facts supplied to the commissioner.

103G.281 subd. 4. Penalties for non-compliant reporting.
(a) The commissioner may assess penalties for non-compliant reporting of water use information as provided in this Section. The penalty shall be a $300 or 2% of the annual water use permit processing fee, whichever is greater.
(b) A person with three or more non-compliant reporting incidents under this subdivision within a five-year period shall have the applicable water appropriation permit terminated. After 365 days from date of termination the applicant may apply for reinstatement of the permit, subject to the permit application fee. Termination under this subdivision is exempt from 103G.271 subd. 3.

103G.271, subd. 6 (e) Failure to pay the fee is sufficient cause for revoking a permit. A penalty of $150 per month or two percent per month, whichever is higher, calculated from the original due date must be imposed on the unpaid balance of fees remaining 30 days after the sending of a second notice of fees due. A fee may not be imposed on an agency, as defined in section 16B.01, subdivision 2, or federal governmental agency holding a water appropriation permit.

2. RECOMMENDATIONS TO IMPROVE COMPLIANCE WITH GROUNDWATER APPROPRIATION REGULATIONS

Compliance with the State's regulatory programs helps to ensure the best use of our water resources for economic, environmental and social interests. Lack of compliance with water appropriation permit requirements is relatively common, indicating that better compliance incentives may be needed. As Minnesota experiences more situations of scarcity, well interferences and conflicts, the need to investigate violations also increases.

Increased compliance provides:

- Equity and fairness among water users;
- The best information to be used to inform permit decisions; and
- Better protection for water quantity, quality and ecological benefits.

The previous section recommended increased penalties for non-compliant water use reporting and for late payment of permit processing fees. While those proposed changes will lead to better and more timely information on water use, the DNR also needs a more effective means to address egregious or repeat violators of water laws. Under the existing penalty structure appropriating water without a permit or in violation of an existing permit is a misdemeanor. Additionally, illegal water users can be issued a "cease and desist order" and failure to comply with this order is also a misdemeanor[6]. However, there is no civil process that can be used to encourage compliance as there is with public water permit violations. Utilizing the traditional methods of enforcing water law violations, the DNR has little or no leverage to encourage a determined law-breaker to desist from their illegal water use.

A recent example from 2013 illustrates this challenge. In one case, eight citations were issued for pumping without a water appropriation permit. The party involved simply paid the citations and continued to appropriate water illegally because the total cost was minimal ($3,100) relative to the financial benefit of using the water. Without a change to the current enforcement structure, we expect this type of action will continue to occur and possibly increase due to the significant financial benefits gained from water use.

When confronted by similar enforcement issues, other state agencies can use what has proven to be an effective tool to persuade the most blatant violators to abate or remedy their illegal activities. The Administrative Penalty Order (APO) has been successfully adopted and administered by the Minnesota Department of Health and the Minnesota Pollution Control Agency to expedite their efforts to enforce laws protecting our natural resources and public health.

[6] M.S. 103G.2372

2A. Provide DNR authority for administrative penalty orders as an option for addressing water appropriation violations.

- Under existing authorities[7] appropriating water without a permit or in violation of an existing permit is a misdemeanor.
- Misdemeanors are prosecuted by the county attorney[8] with fines ranging from $50 to $1,000. Time-consuming and thorough investigations often result in minimal fines, and have not proven effective in achieving compliance.

Proposed Statutory Language

The DNR anticipates presenting a bill to the legislature for consideration in the 2014 legislative session.

[7] M.S. 103G.141
[8] M.S. 103G.105

2B. Increase after-the-fact permit penalties for individuals who appropriate water without a permit.

- Applications for an after-the-fact permit require the applicant to pay an application fee, and the applicable water use permit processing fees for up to seven calendar years for each year they appropriated[9].
- Identifying and verifying non-compliance requires considerable time reviewing well information, aerial photos, reviewing past DNR and MDH records, contacting the individual involved (sometimes multiple times), preparing records of the activities, drafting communications, coordinating with enforcement officers, creating invoices and following up on payment of fees.
- In 2012 and 2013 DNR staff systematically reviewed wells, water appropriations and aerial photos to identify non permitted appropriations. These efforts found that between 2% and 20% of agricultural irrigation systems in some parts of Minnesota were operating without a permit.
- The amount of time spent identifying and verifying non-compliance far exceeds the fee, therefore the costs are currently subsidized by other water users.

Proposed Statutory Language

103G.301, subd. 2 Permit application and notification fees.

(d) A penalty of $300 shall be assessed for each calendar year in which an unauthorized appropriation occurred, up to seven years. A penalty may not be imposed on an agency, as defined in section 16B.01, subdivision 2, or federal governmental agency holding a water appropriation permit. This penalty is in addition to any other fee or penalty assessed.

2C. Amend statutory authority to investigate water appropriation activities affecting waters of the state conducted with or without a permit.

- Minnesota Statutes, section 103G.251 provides authority for investigating activities without a permit. However, in some cases the landowner(s) have a permit, but may not be following specific conditions of the permit.

Proposed Statutory Language

103G.251 INVESTIGATION OF ACTIVITIES AFFECTING WATERS OF THE STATE WITH OR WITHOUT PERMIT.
subd. 1. Investigations. If the commissioner determines that an investigation is in the public interest, the commissioner may investigate and monitor activities being conducted with or without a permit that may affect waters of the state.

[9] 103G.271 subd. 6a

subd. 2. Findings and order. (a) With or without a public hearing, the commissioner may make findings and issue orders related to activities being conducted with or without a permit that affect waters of the state as otherwise authorized under this chapter.

3. RECOMMENDATIONS TO PROMOTE WISE USE OF GROUNDWATER AND WATER CONSERVATION PRACTICES

Some key strategies to reduce the use of groundwater are to find suitable alternatives that offset the need for groundwater, or using water more efficiently, or use the same water for more than one purpose. One potential alternative is to use stormwater runoff from impervious surfaces. The current water appropriation permit fee structure does not distinguish among sources of water, which may serve as a disincentive to using alternative sources. Municipalities and other water users have suggested that it would make sense to waive or significantly reduce the fee for appropriating stormwater that is captured and treated as part of the MPCA's permit program.

3A. Provide DNR authority to waive fees for stormwater management systems that meet certain criteria.

- As a water of the state, the use of stormwater runoff from impervious surfaces that is collected and conveyed through a system requires an appropriation permit if the amount is more than 10,000 gallons per day or 1 million gallons per year.
- Some businesses and municipalities are using stormwater to offset the need for pumping groundwater.
- Municipalities and other users have suggested that it would make sense to eliminate or significantly reduce the fee for appropriating stormwater that is captured and treated as part of the MPCA's permit program.
- Treated stormwater is part of the hydrologic cycle and may be an important source of water for streams and wetlands; as such not all stormwater can be diverted without adverse impacts.

Proposed Statutory Language

103G.271, subd. 6. Water use permit processing fee.

(a) Except as described in paragraphs (b) to (f) and (h), a water use permit processing fee must be prescribed by the commissioner in accordance with the schedule of fees in this subdivision for each water use permit in force at any time during the year. Fees collected under this paragraph are credited to the water management account in the natural resources fund. The schedule is as follows, with the stated fee in each clause applied the total amount appropriated:

(h) The commissioner may waive the water use permit processing fee for installations that use stormwater runoff from impervious surfaces. The commissioner shall consider the following criteria in determining whether to waive the fee: the extent to which the proposed use directly offsets the use of groundwater; the extent to which the use does not adversely impact surface waters; the extent to which the proposed use is consistent with other local watershed and water management plans or permits; and the extent to which the proposed use implements measures to minimize the volume of water used.

3B. Prohibit the issuance of appropriation permits for new open loop geothermal groundwater systems.

- Open loop geothermal groundwater systems discharge groundwater after only a single pass through the system and, in some cases, degrade surface water quality or wetlands at the discharge point.
- Open loop geothermal systems are promoted as green energy and are gaining popularity, however we do not have reliable estimates of how many of these systems exist or the rate of new installations.
- Many of the systems designed for homeowners are using over a million gallons of groundwater a year, which requires an appropriation permit.
- Most of the systems owners are not aware they need a permit. And probably have not factored in the annual cost of a permit, which is $420 per one million gallons[10].
- Permits for new large-scale once-through systems using more than 5 million gallons per year have been prohibited since 1989[11]; all large scale (>5 MGY) systems were required to be phased out by 2010.
- Closed loop systems are a viable alternative. The State can set clear expectations for efficient use of water by prohibiting new open loop systems.

3C. Executive branch agencies should evaluate statutes and rules to support reuse and aquifer recharge.

- There is an increasing interest and demand to implement water reuse strategies including harvested rainwater (from roofs), storm water reuse, and reuse of gray water and reclaimed municipal wastewater.
- The state needs to position itself to be able to respond as the demand for water reuse grows. The need for agency coordination regarding these applications has been outlined in the Minnesota Water Sustainability Framework and the Water Governance Evaluation project.
- Artificial aquifer recharge through direct injection of treated water is a practice used in other parts of the country, particularly coastal areas and southwestern states. Direct injection of treated water to the groundwater may be a viable way to maintain aquifer levels and recycle water within a geographic area. Minnesota Rules, part 4725.2050, currently prohibits direct injection.
- The inclusion of water reuse applications in national and local codes, stormwater management guidance and wastewater grant programs is further evidence of the need for coordination.

[10] M.S. 103G.271 subd. 6, item (11), part (b)
[11] M.S. 103G.271 subd. 5

- The Environmental Quality Board could be charged with leading an interagency workgroup on water reuse to identify barriers to reuse, jurisdictional conflicts, analysis of statutes and rules and development of recommendations to support reuse and aquifer recharge.

4. RECOMMENDATIONS TO IMPROVE MANAGEMENT OF APPROPRIATION PERMITS

The DNR recommends that the legislature clarify protection goals regarding ground water quality. The current statutory framework provides that:

- The Minnesota Department of Agriculture (MDA) is responsible for management of agricultural chemicals and fertilizers, the Minnesota Pollution Control Agency (MPCA) is responsible for designating use classifications and developing standards to protect uses[12] and the DNR is responsible for management of water use.
- Minnesota Rules Chapter 7050 and 7060 designates uses for water s of the state and includes numeric and narrative criteria to protect those uses. In accordance with chapter 7050, all groundwater in Minnesota is designated as an actual or potential drinking water source (Class 1).
- Minnesota Statutes, section 103H outlines a process for responding to non-point source contamination for the commissioner of agriculture for agricultural chemicals and the commissioner of the pollution control agency for all other contaminants. This process includes the development and promotion of best management practices (BMPs) and, if the BMPs are proven ineffective, potentially the adoption by rule of water resource protection requirements that are consistent with the goal of section 103H.001 to prevent and minimize the pollution to the extent practicable and to prevent the pollution from exceeding the health risk limits[13].
- Minnesota Statutes, section 103H.001 describes the degradation prevention goal of the state, and recognizes that for some human activities this degradation prevention goal cannot be practicably achieved; and M.S., section 103H.005 subd. 6. Defines degradation as “means changing groundwater from its natural condition by human activities”.
- The sustainability provisions in M.S., section 103G.287, subd. 3 and the sustainability standard in M.S., section 103G.287, subd. 5 direct the commissioner of natural resources to issue permits only if the commissioner determines that the groundwater use is sustainable to supply the needs of future generations and the proposed use will not harm ecosystems, *degrade water*, or reduce water levels beyond the reach of public water supply and domestic wells (emphasis added). This language suggests that the DNR may not issue a water appropriation permit if it will have any impact on water quality.
- Minnesota Statutes, Chapter 103G does not include a definition of degrade.

These statutes and rule provisions have arisen over time and often serve slightly different purposes. They also are primarily reactionary tools, rather than preventive. Further clarity and greater emphasis in preventive approaches – such as a clear definition of “degrade” – would assist state agencies in their efforts to protect groundwater quality and quantity.

[12] M.S. 115.44
[13] M.S. 103H.275