DNR Waters Guidance Paper - March 1998

Mt. Simon-Hinckley Aquifer

The 1989 Ground Water Act included the following provision related to the Mt. Simon-Hinckley aquifer:

Minnesota Statutes 103G.271, Subdivision 4a. Mt. Simon-Hinckley Aquifer. (a) The commissioner may not issue new water use permits that will appropriate water from the Mt. Simon-Hinckley aquifer in a metropolitan county, as defined in section 473.121, subdivision 4, unless the appropriation is for potable water use, there are no feasible or practical alternatives to this source, and a water conservation plan is incorporated with the permit.

The intent of the law is to protect use of the Mt. Simon-Hinckley aquifer for drinking water purposes and prohibit use of this resource for lower priority and nonessential purposes such as lawn watering.

Application Process

New public water supply wells require Minnesota Department of Health (MDH) plan approval prior to construction. MDH cannot approve construction plans for public water suppliers that serve more than 1,000 people until the demand reduction measures listed in M.S. 103G.291 are approved by DNR. Coordination with MDH should help identify proposals for new public water supply wells. However, there is no process for identifying non-municipal well proposals other than periodic reminders to well drillers regarding restrictions on use of the Mt. Simon-Hinckley aquifer.

Feasible or Practical Alternatives

New water appropriation permits for Mt. Simon-Hinckley wells, or amendments to existing permits that would add new Mt. Simon-Hinckley wells, can only be granted if no other feasible or practical alternatives are available. Applicants must provide an evaluation of surface and ground water sources in the area and document why these sources are not feasible or practical alternatives. Well spacing, additional storage, demand management measures to reduce peak demands, and conservation programs that improve water use efficiencies are examples of other measures that may be appropriate alternatives. The DNR is responsible for determining if an alternative is feasible. Contact the Ground Water Unit if there are questions regarding potential water supply alternatives.

Inadequate pumping capacity is a reason that is frequently cited for selecting the Mt. Simon-Hinckley over other ground water sources. Alternative sources that provide reasonable capacity should be pursued even if more than one well is required to supply the proposed pumping rate. Please keep in mind that the volume that can be authorized from the Mt. Simon-Hinckley is limited to domestic water demands. Any permit the DNR issues for such appropriation must limit pumping rate or volume, or both. Mt. Simon-Hinckley wells may not be used to meet peaking demands or demands created by non-residential development (See Appendix A).

Potable Water Use

The intent of the statute was to protect the Mt. Simon-Hinckley aquifer for drinking water purposes. However, allowing water to be used only for drinking water would be difficult to enforce and may not be reasonable in areas where there are no alternative sources to supply domestic water requirements. Therefore, use of the Mt. Simon-Hinckley should be limited to the domestic uses defined in Minnesota Rules.

Minnesota Rules 6115.0630, Subpart 9. "Domestic Use" means use for general household purposes for human needs such as cooking, cleaning, drinking, washing, and waste disposal, and uses for on-farm livestock watering excluding commercial livestock operations which use more than 10,000 gallons per day or 1,000,000 gallons per year.

The applicant must provide a statement of justification regarding the need for the new well or increased volume of water along with seasonal and annual data for residential, commercial, industrial, and unaccounted-for water volumes. Some of this information may be available in the water emergency and conservation plan submitted by the public water supplier. A total of 75 gallons per capita per day for residential customers should be used to calculate the base water demands for general domestic needs that do not include lawn sprinkling and other nonessential uses. If adequate information is not submitted by applicants, the DNR will use this average to calculate allowable pumping volumes from the Mt. Simon-Hinckley aquifer.

Water Conservation Plan

The law requires that a water conservation plan must be made a condition of the permit. The plan must identify procedures and measures that will be implemented to ensure that water withdrawals from the Mt. Simon-Hinckley aquifer will not be used for purposes other than domestic consumption. The plan must include measures that address seasonal peak demands for nonessential water uses such as lawn watering. These plans include required language on education of the public on water conservation. Appendix B lists ways of reducing peak demand that may be required before use of additional Mt. Simon-Hinckley water may be allowed. Conservation and education measures are considered very important. We have found that education and rate structure changes can reduce peak demands significantly. In areas where growth is not significant, such efforts can eliminate the need for additional water volumes.

Grand Fathering

The law only applies to new permit applications, amendments to existing permits that add a well completed in the Mt. Simon-Hinckley aquifer, and amendments to existing permits that will increase the volume pumped out of the Mt. Simon-Hinckley aquifer. Public water suppliers with existing Mt. Simon-Hinckley wells or multi-aquifer wells completed in the Mt. Simon-Hinckley can continue to use these wells up to documented historic pumping rates and volumes. While considering requests for amendments to existing permits, DNR will consider the highest annual volume pumped from the Mt. Simon-Hinckley prior to implementation of this new law to be the base volume. This base volume will not be submitted to the test of potable or domestic use.

A Mt. Simon-Hinckley well that existed prior to August 1, 1989, that is sealed in accordance with the Minnesota Department of Health Well Code can be replaced with a new Mt. Simon-Hinckley well. Multi-aquifer wells that include the Mt. Simon-Hinckley formation can also be reconstructed into a single aquifer Mt. Simon-Hinckley Well or replaced with a new Mt. Simon-Hinckley well if the multi-aquifer well is sealed. The well to be replaced can also be considered for use as an observation well as an alternative to sealing.

Permit Limitations and Conditions

New Mt. Simon-Hinckley wells and/or increased volumes that are approved by DNR can be included under an existing public water supply permit if the wells are part of the same distribution system. The authorized volume of water from the Mt. Simon-Hinckley wells must be specified if more than one aquifer and non-domestic uses are authorized by the permit. The permit must also include a condition that specifies the conservation measures that will be implemented for use of the Mt. Simon-Hinckley. Appendix “A” will be used to determine the maximum yearly volume that can be permitted from all wells penetrating the Mt. Simon-Hinckley aquifer.

Appendix A

Mt. Simon-Hinckley Aquifer

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Worksheet for Determining the Maximum Volume of Water that may be Authorized from the Mt. Simon-Hinckley Aquifer (MTSH)

A. Highest yearly volume of water pumped from the MTSH in or prior to 1989:

_____ Gallons.
Note: Multi-aquifer wells that include the MTSH will be considered MTSH wells for this determination.

B. Residential Winter Demand (billing period with lowest volume) divided by the population and the

number of days in the billing period: _____ GPCD.
Note: DNR staff will use 75 gallons per capita per day for the Metro Area unless the permittee provides extremely detailed data to show and justify that their per capita use should be higher.

C. Present population _____ minus population in 1989 _____

= _____ (population increase or decrease)
Note: Metropolitan Council projections and estimates will be used to determine the current population. If accurate 1989 estimates are not available, DNR staff will use the 1990 Met Council figures minus 10% of the difference in population between 1980 and 1990.

D. Multiply the results from B and C: _____Gallons per Day (GPD)

E. Multiply D by 365: _____ gallons

F. Add A and E to get the total authorized volume of water: _____ gallons per year may be utilized from the MTSH. Volumes in excess of this amount must come from other sources.

OR

Communities that have had no historical MTSH usage, or minor usage, should use the following:

A. Current population _____ multiplied by Residential Winter Demand (use 75 GPCD unless more accurate information is available) _____ Gallons per capita per day, multiplied by 365

days = _____ Gallons per Year may be utilized from the MTSH.
Volumes in excess of this amount must come from other sources.

Appendix B: Reducing Peak Day Demands Caused By Lawn Watering

Water treatment plants and storage facilities are typically built to supply demands that are two, three and even four times larger than average daily demand on the system. This excess capacity is needed only a few days each year and adds significant costs to the design, construction and operation of a water system. Implementing measures to improve water use efficiencies and reduce peak demands can be a lower cost alternative compared to construction of new wells or treatment facilities. Here are a few examples of methods that can be used to reduce seasonal peak demands caused by lawn watering.

1. Public Education and Information: Provide customers with information on how often to water, how much water to apply, the best times to water and other lawn watering tips to improve sprinkling efficiencies. Attached are lists of public education options and lawn watering tips that you may find helpful.

2. Odd/Even lawn watering ordinances: Odd/even lawn watering ordinances can help reduce peak demands on a water system, but may actually increase water usage by encouraging customers to water more often than needed. Watering once or twice per week should be adequate for most types of soils. Odd/even lawn watering ordinances should always be done in conjunction with a public education program that includes information on how often to water, how much water to apply and the best times to water (see attached materials). Ordinances that allow lawn watering every 3-4 days could be considered in areas with heavier soils.

3. Time of day lawn watering ordinances (no lawn watering during midday hours): Early morning is the best time to water for a healthy lawn. Public information programs and local ordinances that encourage lawn watering before 10:00 a.m. and after 6:00 p.m. can improve lawn watering efficiencies by reducing water lost to evaporation and wind drift. Some communities also limit lawn watering between 4 p.m. and 9 p.m. to reduce peak demands during these hours. Time of day lawn watering ordinances should be done in conjunction with a public education program.

4. Water Rate Structures: Increasing block (rates that increase as consumption increases) rate structures and seasonal surcharges (higher rates during months with peak demands) are examples of rate structures that can be used to reduce peak demands and encourage efficient water use. Customers that use more water and contribute to peak demands on the system would pay higher water bills. These rate structures provide incentives to use water efficiently and may be appropriate for generating revenue for funding the construction of new wells or treatment facilities that are required that to supply peak demands.

5. Billing Frequency: Monthly billing encourages conservation by providing timely information on water usage which gives customers an opportunity to make modifications in water use practices or identify and repair costly leaks. Water bills can also be used to provide information on how to use water efficiently.

6. Development Approvals: Local approvals for new developments often encourage open space that typically includes large turf areas requiring high volumes of water. Encouraging alternative landscapes, reducing turf areas, and the planting of trees can reduce water use.

7. Sprinkling Systems: The popularity of automated sprinkling systems have increased water use and peak demands significantly. Communities have adopted ordinances that require automated sprinkling systems to have rain sensors that prevent the operation of systems after an adequate amount of precipitation has accumulated.

Appendix C: **Water Conservation Public Information & Education**

The water, wastewater, and energy saving benefits from water conservation measures should be included with information on how to improve water use efficiencies. Information should be provided several times each year and especially during high use periods. The American Water Works Association (AWWA) has two web locations that provide conservation tips and information www.awwa.org and www.waterwiser.org.

BILLING INSERTS
Communities can develop billing inserts or purchase billing inserts from the American Water Works Association (AWWA). To obtain a list of AWWA publications call (800) 926-7337. Inserts and other materials can also be obtained from the Minnesota Rural Water Association (800) 367-6792.

WATER BILLS
Water conservation tips (and reminders) can be included on customer water bills.

CONSUMER CONFIDENCE REPORTS
Short articles or tips could be included on the annual consumer confidence report.

NEWS LETTERS
Community news letters could include short articles or tips to encourage water conservation.

LOCAL PAPERS
Local newspapers could include short articles on methods to improve water use efficiencies.

INFORMATION AT WATER UTILITY AND PUBLIC BUILDINGS
Water conservation information could be made available in displays at utility and city buildings.

PUBLIC SERVICE ANNOUNCEMENTS (PSA)
Local radio and TV stations can provide short messages on improving water use efficiencies.

CABLE TV PROGRAMS
Communities could develop a video or encourage school or community organizations to develop a water conservation video for local access cable TV.

DEMONSTRATION PROJECTS
Water efficient landscaping areas could be developed to provide information on plants that are drought tolerant and alternatives to large turf areas. Water efficient plumbing fixtures could also be installed in public buildings.

PROJECT WET (Water Education for Teachers)
Local schools could consider Project WET, which is a K-12 school curriculum related to water resources and conservation. For information on Project WET call DNR Waters at (651) 297-4951.

WATER AUDIT AND RETROFIT KITS
Communities can distribute or make available information and materials for doing residential water audits and/or provide showerheads and other retrofitting devices.

LOCAL REGULATIONS AND ORDINANCES
Local regulations can also be a very effective means for providing information on best management practices for improving water use efficiencies. Some examples for addressing seasonal increases in water demands for lawn watering include: time of day lawn watering restrictions, requirements for rain detection devices on automatic lawn watering sprinklers, and general water wasting (curb) ordinances. Odd/even lawn watering ordinances can help reduce demands, but may actually encourage people to water more often than necessary and should be used in conjunction with information on how often and best times of the day to water.