

RECOMMENDATIONS: DIRECTIONS FOR FUTURE GROUNDWATER PROTECTION

The GCC is directed by statute to include in its annual report a "list and description of current and anticipated groundwater problems" and to "set forth the recommendations of the Council" (s. 15.347(13)(g), Wis. Stats.). In this section, the GCC identifies its recommendations for future groundwater protection and management. These recommendations include top priorities of immediate concern, on-going efforts that require continued support, and emerging issues that will need to be addressed in the near future.

Priority Recommendations

Evaluate the occurrence of viruses and other pathogens in groundwater and groundwater-sourced water supplies, and develop appropriate response tools. Viruses and other microbial pathogens have been found in municipal and domestic wells, challenging previous assumptions about their persistence and transport. Monitoring and assessment should focus on refining our understanding of pathogens in groundwater, in particular where and when they pose threats to human health. Agencies should also work with partners to increase awareness of waste disposal choices, their risks and costs. Background on the issue and the rationale for the recommendation are found at:

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuality/MicrobialAgents.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/Benefits/DetectMonMicrobes.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/AgencyActivities/DHSactivities.pdf>

Implement practices that protect groundwater from nitrate and other agricultural contaminants (microbial agents, pesticides and their degradates). Nitrate that approaches and exceeds unsafe levels in drinking water is one of the top drinking water contaminants in Wisconsin, posing an acute risk to infants and women who are pregnant, a possible risk to the developing fetus during very early stages of pregnancy, and a chronic risk of serious disease in adults. In addition, pesticides are estimated to be present in one-third of private drinking water wells in Wisconsin. Areas of the state with a higher intensity of agriculture generally have higher frequencies of detections of pesticides and nitrate. Agencies should develop and evaluate a strategy to promote practices that lead to efficient use of nitrogen and careful or reduced use of pesticides in order to protect drinking water sources. Implementation of these practices should be supported with appropriate technical tools and incentives. Background on the issue and the rationale for the recommendation are found at:

<http://dnr.wi.gov/topic/groundwater/documents/GCC/AgencyActivities/DNRactivities.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/AgencyActivities/DATCPactivities.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuality/Nitrate.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuality/Pesticides.pdf>

Support the sustainable management of groundwater quantity and quality in the state to ensure that water is available to be used, which will protect and improve our health, economy, and environment now and into the future. This includes:

- Supporting an inventory of information on the location, quantity, and uses of the state's groundwater
- Supporting targeted monitoring and modeling of the impact of groundwater withdrawals on other waters of the state
- Supporting identification and evaluation of options for areas with limited groundwater resources

Background on the issue and the rationale for the recommendation are found at:

<http://dnr.wi.gov/topic/groundwater/documents/GCC/Report/WIgroundwaterLaw.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/AgencyActivities/DNRactivities.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuantity/WaterUse.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuantity/RegionalDrawdowns.pdf>

Ongoing Recommendations

Without ongoing attention to the following needs, Wisconsin cannot address the priority recommendations (see above) or begin to understand emerging issues (see below).

Support implementation of the Statewide Groundwater Monitoring Strategy. Chapter 160 of the Wisconsin Statutes requires the DNR to work with other agencies and the GCC to develop and operate a system for monitoring and sampling groundwater to determine whether harmful substances are present (s. 160.27, Wis. Stats.). The strategy has been incorporated into the DNR Water Monitoring Strategy, but needs are constantly evolving as new problems emerge. For example, food processors, homeowners, municipalities, and well drilling contractors need more information about the origin and extent of naturally occurring contaminants such as arsenic, other heavy metals, acidic conditions, sulfate, total dissolved solids, radium, and uranium. Wisconsin should improve the accessibility of current data and continue to encourage research efforts that will provide information for addressing these issues. State agencies, the university, and federal and local partners should continue to implement and modify this strategy to efficiently meet monitoring objectives. Background on the issue and the rationale for the recommendation are found at:

<http://dnr.wi.gov/topic/groundwater/documents/GCC/Benefits/Drawdowns.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuantity/GroundwaterLevelNetwork.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuantity/QuantityQuality.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuality/Arsenic.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/GwQuality/Radionuclides.pdf>

Continue to catalog Wisconsin's groundwater resources. Management and protection of Wisconsin's groundwater resources requires publically-accessible and up-to-date data in order to foster informed decisions, not only on state policy matters but also for sound business decisions on siting or technology investments. State agencies and the University should continue to collect, catalog, share, and interpret new data about Wisconsin's groundwater so that it can be used by health care providers and people seeking business locations, as well as homeowners and local governments.

Continue to support applied groundwater research. Focus on investments to identify and test cost-effective groundwater protection strategies that can prevent groundwater problems before they need to be remediated at a much greater cost. (see

<http://dnr.wi.gov/topic/groundwater/documents/GCC/MonitoringResearch/AllProjects.pdf>). State

agencies should work to maximize collaboration to answer the key groundwater questions facing Wisconsin water suppliers. To maintain adequate levels of support, agencies should seek leveraging partnerships for applied analysis and innovation.

Emerging Issues

Industrial sand mining. Since 2010, unprecedented growth of industrial sand mining and processing has occurred in West-Central Wisconsin and is expected to continue growing for another decade. The potential impact of this industry on groundwater resources has not been comprehensively evaluated, which would be the first step to avoid problems and plan for restoration. Wisconsin should support data analysis and field investigations to understand how this industry might impact groundwaters. Agencies should partner with industry and local governments to develop and adapt site analysis and best-management practices for this industry.

Livestock industry expansion. Since 2010, many animal feeding operations that house thousands of animals have been sited or proposed in Wisconsin. These operations require large quantities of groundwater for both animals and animal food crops, and must also dispose of large amounts of animal waste. Wisconsin agencies should develop efficient and effective ways for measuring groundwater quality and quantity conditions in and around these operations. Agencies, industry and local governments should partner to develop policies and innovations that allow for effective siting and efficient operation of these facilities, while still protecting groundwater quality and quantity. Background on the issue and the rationale for the recommendation are found at:

<http://dnr.wi.gov/topic/groundwater/documents/GCC/AgencyActivities/DNRactivities.pdf>

<http://dnr.wi.gov/topic/groundwater/documents/GCC/AgencyActivities/DATCPactivities.pdf>

Effects of extreme weather. More prolonged drought or heat waves can increase groundwater demand at the same time as reducing supply. Groundwater quality may be affected by large fluctuations in water table elevation that can occur with extreme weather. More severe flooding can affect groundwater quality, wells and water system operations. Public drinking water supplies as well as water-dependent industries need reliable estimates of these effects in order to develop practical emergency response and adaptation strategies. To understand and predict the impact of these changes on the state's groundwater, agencies should develop the data and provide analyses of likely scenarios for quantity and quality of Wisconsin's groundwater supply.

Metallic mining. Lead, zinc, iron and copper deposits exist around Wisconsin. These deposits may be mined in the future and are located in sparsely-populated regions where background information on groundwater resources is often incomplete. The state should support background data collection and groundwater assessments so that future decisions about potential mining operations can be made most efficiently.