Central Wisconsin Sand and Gravel Aquifer
Managing Water for Multiple Uses

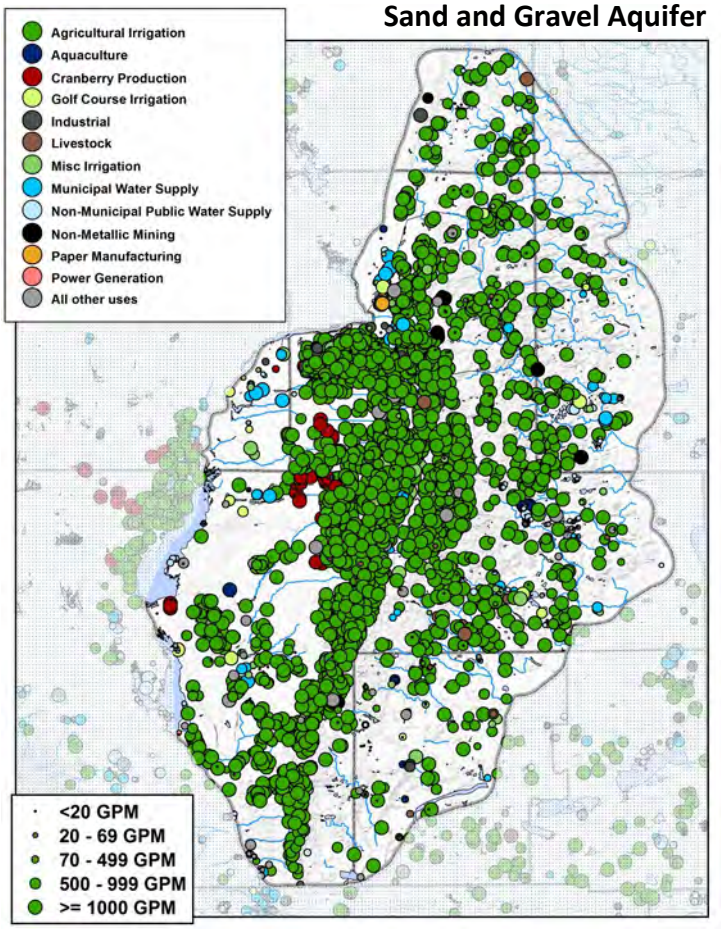
What is the Central Wisconsin Sand and Gravel Aquifer ?

An aquifer is a rock or soil formation that can store or transmit water. **The Central Wisconsin Sand and Gravel Aquifer (CWSGA)** is defined as a contiguous area east of the Wisconsin River where groundwater is stored in sand and gravel deposits more than 50 feet deep. The aquifer covers 1.75 million acres in parts of Adams, Marathon, Marquette, Portage, Shawano, Waupaca, Waushara and Wood counties.

These deposits of sand and gravel were left by melting glaciers at the end of the last ice age. Because they are comprised of coarse material, rainfall and snowmelt are more likely to soak into the ground rather than flowing off the land surface to lakes and streams. In many areas of the CWSGA, there can be over 150 feet of sand and gravel saturated with groundwater. Often, this aquifer starts only a few feet below the surface.

This region is characterized by over 800 miles of trout streams and over 300 lakes. Most of these streams and lakes are highly dependent on groundwater as their primary source of water.

High Capacity Wells Located in the Central Wisconsin Sand and Gravel Aquifer



The CWSGA has proven to be an effective setting for a number of agricultural industries including produce, grain, dairy, timber, Christmas tree and cranberry production. In fact there are over 2000 high capacity irrigation wells in the CWSGA. This represents half of all irrigation wells in Wisconsin and their use is a major contributor to Wisconsin's national ranking in crop production for potatoes (3rd), green beans (1st), sweet corn (2nd), peas (3rd), and carrots (2nd). The estimated economic impact of irrigated agriculture in this area is billions of dollars and tens of thousands of jobs per year. Achieving a sustainable balance between water uses requires a scientific approach to adaptive management and the participation of local stakeholders.

Currently, the DNR is working to improve its management tools by partnering with the U.S. Geological Survey, the Wisconsin Geological and Natural History Survey, and others by building computer models to better understand the complex groundwater-surface water interactions and how different management alternatives affect groundwater and surface water flows. In addition, DNR is in the early stages of developing a strategic analysis for the CWSGA that will collect, analyze and report the latest scientific, ecological and socio-economic information relating to groundwater and surface water in the eight-county area.

Read more about these efforts on the back and how partners hope they will lead to possible solutions.

Central Wisconsin Sand and Gravel Aquifer High Capacity Well Trends and Concerns

Work underway to help provide foundation for possible future discussions and solutions

Work is underway to help foster the sustainable use of groundwater in the Central Sands to benefit the people, natural resources and economy of the region and state. Two particularly important efforts are underway to help address and find possible solutions to meet growing demands for, and concerns about, groundwater withdrawals: the **Strategic Analysis for Surface Water and Groundwater Use, Effects and Management in the Central Sands of Wisconsin** and the **Groundwater Flow Model for the Little Plover River Basin.**

These efforts build on a growing body of research and monitoring in the Central Sands area coordinated through Wisconsin Groundwater Coordinating Council. They also build on cooperative efforts by state and federal agencies, academia, and high capacity well owners to voluntarily find solutions.

Getting the big picture as a foundation for discussion

To help find ways to sustainably manage groundwater in Wisconsin's Central Sands region in the future, the state is launching an effort to collect, analyze and report the latest scientific, natural resources and socio-economic information relating to groundwater and surface waters in the eight-county Central Sands area.

This **Strategic Analysis for Surface Water and Groundwater Use, Effects and Management in the Central Sands of Wisconsin** aims to summarize the state of the science in all of these areas and assess alternative courses of action to protect groundwater and surface water. The resulting comprehensive document can be used as a reference for the development of public policy.

In mid-January 2014, DNR will provide to the public for feedback a draft outline of the topics planned for inclusion in the analysis. A draft analysis is expected to be done in 2015 and will be available for public comment at that time. A team of DNR staff across disciplines from field and central offices will work on the analysis. Dan Helsel, water leader for DNR's West district, is the lead contact and can be reached at daniel.helsel@wi.gov or 715-284-1431.

Zeroing in on a specific situation to develop a model for elsewhere

DNR is funding a project jointly conducted by the Wisconsin Geologicaland Natural History Survey and the U.S. Geological Survey to develop a sophisticated computer model aimed at helping maintain healthy water levels in the Little Plover River.

The group will assess the current state of science regarding groundwater and surface water interaction in the Little Plover River watershed and will develop a groundwater flow model to simulate the local groundwater and surface water systems.

A second phase of the modeling will develop tools to evaluate various pumping scenarios and water management strategies to ensure the health of the Little Plover River. The project is expected to take about two years.

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