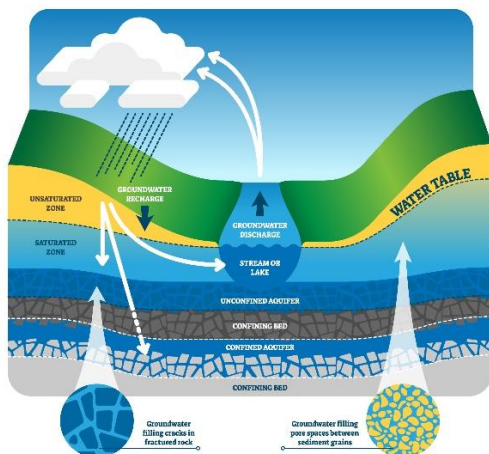


Understanding Groundwater and Surface Water Interactions for Long-Term Water Supply Sustainability

Groundwater, lakes, rivers, wetlands, stormwater systems, and land use are part of one interconnected water system. As the region grows and climate conditions change, understanding and managing groundwater and surface water connections is increasingly important to protect long-term water sustainability.



In some parts of the region, groundwater and surface water interactions influence the sustainability of water supplies, the condition of groundwater-dependent ecosystems, and the effectiveness of long-term water management decisions. Pumping can impact nearby lakes, streams, wetlands, springs, or groundwater-dependent ecosystems. Contaminants from stormwater runoff, fertilizers, road salt, septic systems, or other sources may also move between connected groundwater and surface water systems. Because these connections often cross community boundaries, local decisions can create unintended impacts elsewhere and increase future costs.

Understanding these connections can be difficult because conditions vary significantly across the region based on geology, land use, aquifer conditions, and local hydrology. In some areas, existing information is sufficient to support planning decisions, while others may require additional monitoring, modeling, or field studies to better understand potential impacts.

Communities and state agencies are improving monitoring, groundwater modeling, and regional collaboration to better understand connected water resources and support informed decisions about water use, land use, infrastructure, and future growth before problems become more difficult and costly to address.

Integrated planning can help reduce unintended consequences and improve long-term resilience.

CURRENT CONTEXT

Minnesota has a strong regulatory framework to protect our waters, including wellhead protection, wetland rules, stormwater permits, and local ordinances.

Utilities, watershed organizations, agencies, researchers, and communities already collaborate on many water monitoring and planning efforts.

Existing regional modeling and monitoring efforts provide important information about groundwater and surface water interactions.

Climate change, increasing contaminants (such as chloride, nitrate, and stormwater pollutants), and declining water levels continue to stress groundwater and surface waters and the health of those that rely on them.

Existing planning systems do not always evaluate cumulative impacts across jurisdictions or water systems.

In some areas, additional monitoring, field studies, or analysis are needed to better understand groundwater-surface water interactions and potential water impacts.

Opportunities for action:

Consider long-term and cumulative impacts

Evaluate the effectiveness of the water permit allocation process and identify improvements to better consider long-term and cumulative impacts on groundwater, surface water, and groundwater-dependent ecosystems when reviewing development and water-use decisions.

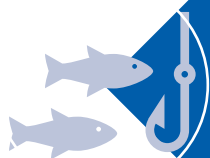
Improve monitoring and scientific information

Prioritize monitoring, modeling, and field studies in locations where groundwater-surface water interactions may have significant implications for water supply sustainability, ecosystem health, or future infrastructure decisions.

Strengthen coordinated planning

Encourage collaborative planning efforts among utilities, agencies, communities, watershed organizations, and researchers.

Communities and agencies across the metropolitan region are evaluating how groundwater-surface water interactions should be considered when reviewing proposed development, changing water demands, alternative water supplies, and other regional water management strategies:



The Vermillion River watershed is collaborating with partners to address impacts to the trout stream, connections to downgradient Hastings' water supply and interactions with nearby privately-owned wells.



In the White Bear Lake area, communities and state agencies are collaborating to plan for efficient water use that balances growing water demand and water levels in White Bear Lake.



To protect the Savage Fen and Mt. Simon-Hinckley Aquifer, the cities of Burnsville and Savage partnered with Kraemer quarry to use surface water as new source, taking pressure off both the protected Mt. Simon-Hinckley aquifer and the Savage Fen.

To see the full report: [LINK/QR code to website where full report is posted](#)