

Executive Summary

Vision

Conserving Minnesota’s water resources is important to the state’s long-term development. The potential to use treated municipal wastewater as a water supply for industrial use is of interest as a way to conserve water resources while supporting economic development.

With interest in recycling treated municipal wastewater growing, the Metropolitan Council (Met Council) undertook this study titled, “Recycling Treated Municipal Wastewater for Industrial Water Use.” Funding for this project was recommended by the Legislative Commission on Minnesota Resources (LCMR) from the Minnesota Environment and Natural Resources Trust Fund. The Met Council and other agencies provided in-kind contributions of staff time and production services.

Guiding Goal: *Conserve Minnesota’s water resources*

Benefits:

- Reduce ground water depletion by providing an alternative supply for nonpotable water uses
- Provide a reliable and potentially lower cost water source for industries

The study’s objectives were: (1) Determine the feasibility of recycling treated municipal wastewater for industrial water use in Minnesota, and (2) Identify implementation issues associated with this recycling.

Findings and Next Steps

Recycling treated municipal wastewater can conserve water resources and support industries and economic development. In coming to this conclusion, the study first evaluated the feasibility of wastewater recycling as an industrial water source and then identified implementation issues. Findings are summarized in Figure ES.1 and described below.

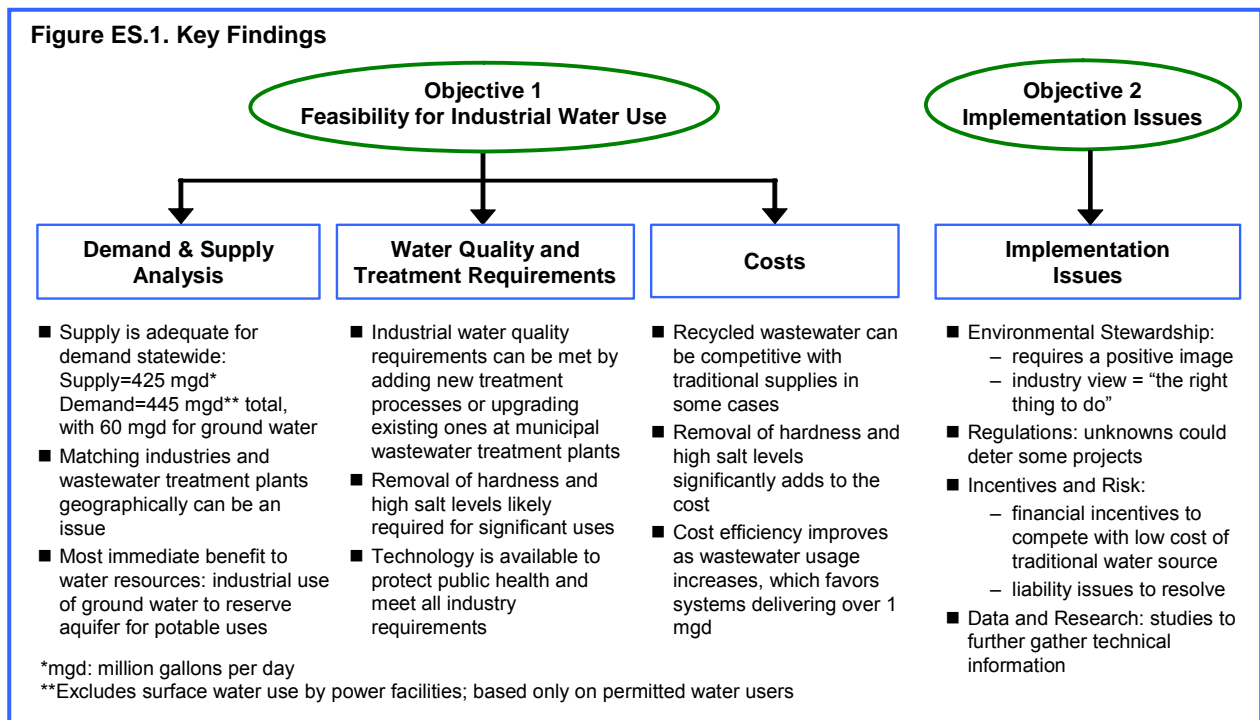
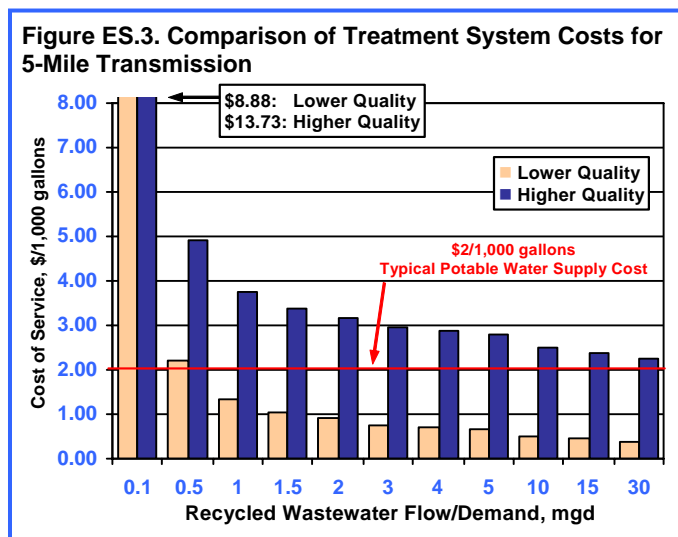
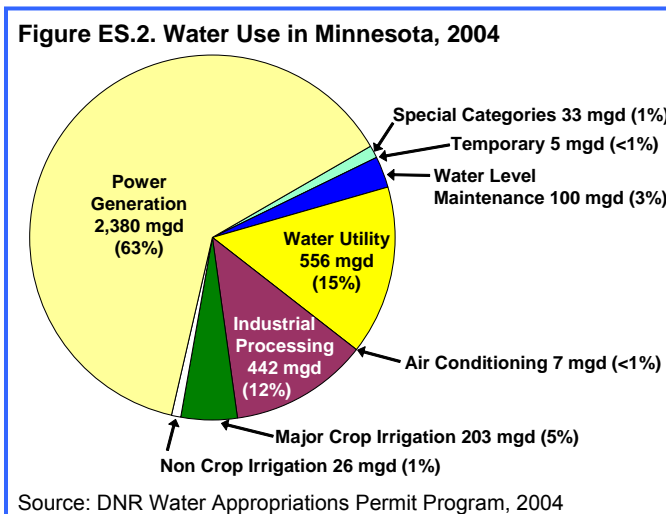


Figure ES.2 shows that non-power industries in Minnesota use 442 million gallons per day (mgd) of water from their own permitted supplies. The quantity of treated municipal wastewater available statewide, estimated at 425 mgd, could fill a portion of this industry water demand. However, industries and wastewater plants are not always close to each other. Over half of the treated municipal wastewater, 255 mgd, is generated in the Twin Cities metro area while industrial water demand in the metro area is estimated at 75 mgd.

Wastewater treatment technologies are available to meet the highest levels of water quality required by industries and protect public health. Treatment technologies are becoming more competitive. For some industry needs, only minimal changes to a wastewater plant’s disinfection process would be required. In other cases, significant additional treatment would be needed. Typically, removal of hardness and high salt levels would be required.

For some industry water uses, the cost of treated municipal wastewater can be competitive with other water supplies. Recycled wastewater systems are cost competitive at capacities of 1 mgd or greater, as shown in Figure ES.3. Systems of this size would likely serve one large or several smaller industries or multiple recycled wastewater users, industrial and non-industrial.



regarding liability and providing economic incentives beyond the market value of water versus treated wastewater would support new recycling projects.

Next steps could include demonstration projects with unilateral, partnered, or other approaches. A wastewater utility may unilaterally make treated wastewater available at a quality useable by various industries. In a “partnered” project, a partnered group with representatives from industry, water, wastewater, community, and regulatory sectors would walk hand-in-hand through the planning, design, and construction phases of a project.

Recycled treated municipal wastewater is an emerging water supply for Minnesota industries. Economic development, water supply limitations, and environmental regulations will increasingly drive the need to find alternative water supplies. Recycling treated municipal wastewater for industrial water use is feasible and, in some situations, cost competitive with other water supplies. Implementation issues are addressable. Recycling treated municipal wastewater can conserve water resources and support industries and economic development.