

Beneficial Use of Wastewater and Stormwater: Capital Grants for Demonstration Projects



Legislative Charge

Minn. Statutes § 116.195 Beneficial use of wastewater; Capital grants for demonstration project, Subd. 5.

The agency shall report by February 1 of each year to the chairs of the house of representatives and senate committees with jurisdiction over environment policy and finance and capital investment on the grants made and projects funded under this section. For each demonstration project funded, the report must include information on the scale of water constraints for the area, the volume of treated wastewater supplied or stormwater available, the quality of stormwater or treated wastewater supplied and treatment implications for the industrial user, impacts to stream flow and downstream users, and any considerations related to water appropriation and discharge permits.

HIST: 2008 c 179 s 37; 1Sp2011 c 6 art 2 s 22

CHAPTER 172 - H.F. No. 1231, Article 2 Clean Water Fund; Sec. 4 Pollution Control Agency (c) \$1,500,000 the first year and \$3,169,000 the second year are for grants under Minnesota Statutes section 116.195, to political subdivisions for up to 50 percent of the costs to predesign, design, and implement capital projects that use stormwater or treated municipal wastewater instead of groundwater from drinking water aquifers, in order to demonstrate the beneficial use of wastewater, including the conservation and protection of water resources. Of this amount, \$1,000,000 the first year is for grants to ethanol plants that are within one and one-half miles of a city for improvements that reuse greater than 300,000 gallons of wastewater per day.

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Executive Summary

The Minnesota Pollution Control Agency (MPCA) has been charged with implementing a pilot grant program (Program) for beneficial reuse of wastewater and stormwater. The Program provides financial assistance for efforts to reuse treated municipal wastewater or stormwater in industrial processes that would otherwise be using groundwater. Grants are awarded to local units of government which undertake joint projects with industrial and agricultural producers. Established through 2009 legislation¹, the Program was subsequently revised by statute to provide for the beneficial use of stormwater in addition to treated wastewater. The Program includes two grant tracks:

- Ethanol set-aside track – grants for using treated wastewater or available stormwater in ethanol production
 - General track – grants for using treated wastewater or available stormwater in a range of industrial and agricultural uses
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Ethanol set-aside track grants

The following cities and partnering corporations are eligible for grants under the provisions of the ethanol set-aside track:

Benson and Chippewa Valley Ethanol Company, LLP

Morris and Diversified Energy Company II (DENCO II), LLC

Winnebago and Corn Plus Cooperative, LLP

The MPCA issued Ethanol Set-Aside Requests for Proposals (RFPs) and directly solicited proposals from the three eligible communities in March and November of 2010 and again in December 2011. In keeping with statutory revisions the December 2011 RFP included the option of reusing stormwater as well as wastewater. This request for a statutory change in the Program was identified in the 2011 Legislative Report.

No proposals were received in response to the three RFPs provided by the MPCA and consequently no grants have been awarded in the ethanol set-aside track. To clarify why no proposals were forthcoming, the MPCA surveyed the three eligible communities in 2011 and again in 2012.

The survey and responses received are attached as Appendix 1 and summarized as follows:

1. Please share with us the reason(s) your community chose not to apply for a grant:

- The ethanol plant has already invested in a functional and efficient groundwater supply system that is not yet depreciated, consequently substantial investment in another source and method of acquiring water is not cost-effective at this time.
- Introducing beneficial use is best done when the ethanol facility is on the drawing board.
- Chippewa Valley Ethanol Company produces a finely crafted premium Shakers Vodka. Introducing treated wastewater from the Benson plant would not help marketing this product.
- The legislation was written to apply to only three ethanol plants, but did not anticipate or take into consideration the specifics of those plants and their communities.
- The tolerance for experimenting with something new is seen as too risky and would involve revisiting regulatory considerations and requirements.
- A drought during the summer of 2011 demonstrated the limitations of stormwater based reuse.

¹ Minn. Stat. § 116.195, as amended and House File No. 1231, Chap. 172, Art 2; Sec. 4 (2009)

- Ethanol producers and other dischargers are currently responding to MPCA statewide efforts to more fully achieve existing water quality standards for Class 3 and Class 4 waters. These priorities can limit opportunities for innovative projects such as beneficial use.
2. Do you have suggestions for changes to the grants program that would make it more attractive for you to participate in the future?
 - Undertake a more thorough conversation with the ethanol facilities and the cities before the statutes and grants process is written.
 3. Do you have anything else to share with the MPCA about the ethanol grants program?
 - This is a great idea with potential far reaching benefits including: Reduced use of groundwater for ethanol production; a general reduction of water use; reduced energy use, increase quality of wastewater generated by the plant and reduced storm sewer runoff into streams and rivers.
 - Communication is key.

General track grants

Municipal wastewater or stormwater can also be used for a variety of general industrial and agricultural purposes. These include cooling water for power generation, cropland and golf course irrigation, and miscellaneous industrial processing water.

During May of 2011, the MPCA awarded Beneficial Use Grants to the cities of Elk River and Paynesville as described below.

City of Elk River Project

Grant Award: \$285,740

Total Project Cost: \$617,080

The city of Elk River and the Great River Energy Facility located in Elk River are undertaking a Beneficial Use Project in which wastewater effluent from the city will replace groundwater at the Great River Energy Facility. Wastewater effluent from the Elk River Wastewater Treatment Facilities (WWTF) will receive additional advanced treatment so that it meets the required standards for use in the following activities at the Great River Energy Facility: (a) boiler make-up water; (b) building air-conditioning water; and (c) evaporator cooling water for peak production. In conjunction with the project planning and design process, the feasibility and advantages of returning boiler makeup water and building air-conditioning cooling water to the Elk River WWTF for treatment and disposal will also be evaluated. The annual volume of wastewater to be reused, as identified in the Grant Contract and Work Plan, is 28.2 million gallons. A final determination of the volume of wastewater will be available once the project is constructed and is operational.

The MPCA consulted with the Department of Natural Resources (DNR) regarding groundwater sensitivity for each of the project applications to the Beneficial Use Program. At the request of the MPCA, the DNR identified the aquifers that would benefit from the supplanting of groundwater use by treated wastewater according to three comparative categories of aquifer sensitivity. Aquifers with the slowest recharge rate were identified as having the highest sensitivity; those with the fastest recharge rate were identified as having the lowest sensitivity and an intermediate group was also identified. The effected Mount Simon aquifer in the Elk River area was identified as having high sensitivity.

The Elk River WWTF currently discharges to the Mississippi River according to National Pollution Discharge Elimination System (NPDES) permit issued by the MPCA. Great River Energy currently discharges boiler makeup water and building air-conditioning cooling water to the Mississippi River according to an NPDES permit and discharges evaporator cooling water into the Elk River sewer system for treatment by the Elk River WWTF prior to disposal into the Mississippi River. The Facilities Plan for the project is currently under development by the city of Elk River in conjunction with Great River Energy and in consultation with the MPCA and is scheduled to be completed by this coming March. When the Facilities Plan is completed it will

identify and specify changes in volumes and pollutant loadings of the discharges from the Elk River WWTF and Great River Energy resulting from beneficial use. These discharges will be reviewed by the MPCA and as necessary modified to ensure that they comply with applicable water quality standards for the Mississippi River. The availability and use of 28.2 million gallons for energy production will result in a corresponding reduction of groundwater use. Once the Facilities Plan and all necessary permit changes are reviewed and approved by the MPCA the city will develop Plans and Specifications and proceed to construction of the project.

Elk River has thus far received \$7,780.00 in grant assistance as reimbursement for completed project activities. Grant funds for the Elk River project are available for reimbursement of eligible project expenditures through June 30, 2013.

City of Paynesville Project

Grant Award: \$2,494,362

Total Project Cost: \$5,900,000

The city of Paynesville is undertaking a proposed joint project with area farmers in which wastewater effluent from the city will replace groundwater in the irrigation of cropland. Wastewater effluent discharged from the treatment facilities will be treated to MPCA secondary standards suitable for the irrigation of agricultural cropland. The annual volume of wastewater to be reused, as identified in the Grant Contract and Work Plan, is 267.30 million gallons, replacing water that would otherwise be acquired from Quarternary Buried Artisan Aquifers and Quarternary Buried Unconfined Aquifers. A final determination of the volume of wastewater will be available once the project is constructed and is operational.

The MPCA consulted with the DNR regarding groundwater sensitivity for each of the project applications to the Beneficial Use Program and the effected aquifers in the Paynesville area were assigned to the intermediate category. (Please see DNR groundwater categories discussed in Elk River project description.)

The Paynesville treatment facility currently disposes of wastewater effluent through spray irrigation according to a State Disposal System (SDS) permit, so there are effectively no impacts on stream flow and downstream users. The Beneficial Use Project is being undertaken in conjunction with a proposed expansion of the overall capacity of the treatment facilities to accommodate the increased loadings from the Associated Milk Producers Incorporated facility located in Paynesville. The project provides for beneficial use through a corresponding expansion of spray irrigation structures and appurtenances, ensuring that there continues to be no impacts on stream flow and downstream users. Prior to approval to construct the project the city's SDS permit for spray irrigation has been revised and finalized according to permit program guidelines and requirements to ensure that standards are met.

Paynesville has completed and received MPCA preliminary approval of a Facilities Plan for the project. The city's consulting engineers estimate of the overall cost of construction was 8.28 million. The city proceeded to advertise for bids in June 2011, however, the bid proposals, at over nine million, significantly exceeded the estimated cost for the project. The city of Paynesville is currently working with its engineer to explore ways of reducing the overall cost of the project. When this process is complete and has been approved by the MPCA the city plans to re-bid the project. As specified by the city, grant funds awarded through the Beneficial Use Program will be dedicated to construction so that the city of Paynesville has not yet incurred Beneficial Use expenditures or requested reimbursement. Grant funds for the Paynesville project are available for reimbursement of eligible project expenditures through June 30, 2013.

State agency partners

In developing and implementing this program, the MPCA continues to work cooperatively with the DNR and the Minnesota Public Facilities Authority.