

**Environment and Natural Resources Trust Fund  
2016 Request for Proposals (RFP)**

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**Project Title:**

**ENRTF ID: 060-B**

Sulfate/Wild-Rice Municipal Wastewater Treatment Plant Alternative Analysis

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**Category:** B. Water Resources

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**Total Project Budget:** \$ 180,000

**Proposed Project Time Period for the Funding Requested:** 2 years, July 2016 to June 2018

**Summary:**

Analyze alternatives for improved treatment of sulfate and salty parameters at municipal wastewater plants. This analysis will inform implementation of the wild rice and sulfate and other water quality standards.

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**Name:** Scott Kyser

**Sponsoring Organization:** MPCA

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**Web Address** \_\_\_\_\_

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**Location**

**Region:** Metro

**County Name:** Statewide

**City / Township:**

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**Alternate Text for Visual:**

Municipal WWTPs that could potentially receive a sulfate limit are generally found throughout central and NE MN. Municipal WWTPs that could potentially receive a 'salty' chloride limit are generally found throughout southern and central MN.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %



**PROJECT TITLE: Municipal Sulfate and Salty Parameter Treatment Alternatives Analysis**

**I. PROJECT STATEMENT**

**The goal of this project is to analyze alternatives for improved treatment of sulfate and salty parameters at municipal wastewater plants. This analysis will inform implementation of the wild rice and sulfate and other water quality standards.** Feasibility and costs are critical considerations when the MPCA develops compliance schedules for discharge permits with sulfate and salty parameter limits.

A document that summarizes and critically evaluates potential municipal sulfate and salty parameter treatment technologies would be extremely useful for municipalities in Minnesota. It would be useful to know how sulfate and the salty parameters could be effectively co-removed.

Municipal wastewater discharges can be a significant source of salts (chloride, sulfate, salinity, dissolved materials, etc.) to surface waters. Starting in 2009 the MPCA began monitoring for salty parameters in wastewater discharges. Limits for salty parameters are being included in some permits as needed to minimize impacts to fish and other aquatic life.

In 2015, the MPCA plans to begin the administrative process to revise the existing 10 mg/L wild rice sulfate standard to better reflect the complex biochemistry necessary to support wild rice. Currently there are few effluent limits in wastewater permits derived from the existing wild rice sulfate standard. Although specifics about how a revised standard may be implemented are limited, more WWTPs are likely to have sulfate limits in the future.

Municipal WWTPs are not designed to remove sulfate or salty parameters from their wastewater. In order to remove sulfate or salty parameters, a treatment plant would need to upgrade or change their treatment processes. The proposed study will allow affected communities to better understand sulfate and salty parameter treatment alternatives and their costs before beginning pilot testing and design work. Better understanding the availability of wastewater treatment technologies to remove these parameters may also inform the development of industrial wastewater discharge permits.

The treatment plant engineering design community has the best resources available to both critically evaluate sulfate and salty parameter treatment alternatives and their associated costs for municipal treatment plants. The design community possesses knowledge and costing experience that the MPCA does not have. MPCA would issue a competitive Request for Proposals (RFP) to solicit a sulfate and salty parameter treatment alternatives analysis that critically evaluates the applicability of sulfate treatment technologies and their costs for municipal utilities. At a minimum, seven treatment alternatives including source reduction at the water treatment plant will be evaluated for removal potential for both salty parameters and sulfate.

The MPCA believes there would be additional value in a more detailed "Case Analysis" exercise where the consultant would perform initial sulfate and salty parameter treatment plant design for a representative small, medium and large scale municipality. The consultant would use their most promising treatment technology to perform an initial level design as a way to identify design concerns that could only come to light through the design process. Since a WWTP that simultaneously treats human waste and potentially removes sulfate and salty parameters to low levels has never been designed in Minnesota, this step would provide crucial implementation information. A "Case Analysis" exercise is common in federal EPA guidance documents for evaluating wastewater treatment technologies and provides critical insight.



II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Administration of Sulfate and Salty Parameter Treatment Alternative RFP Budget: \$100,000.00

The RFP will encourage the state and national design community to apply for funds to complete an analysis of sulfate and salty parameter treatment options. Once the best candidate is selected, funds and necessary design information will be delivered to the consultant. The grantee will have twelve months to complete the deliverable. A presentation of likely feasible treatment alternatives to the MPCA will be required six months before receipt of the final deliverable.

Table with 2 columns: Outcome, Completion Date. Rows include: 1. MPCA completes administration of competitive RFP (March 2017), 2. Presentation by grantee of preliminary results at MPCA (September, 2017), 3. Deliverable of Sulfate and Salty Parameter Treatment Alternatives Report to MPCA (March, 2018), 4. Sulfate and Salty Parameter Treatment Alternatives Report on MPCA website (April, 2018)

Activity 2: Sulfate and Salty Parameter Treatment Case Analysis

Budget: \$80,000.00

The candidate will select the most promising sulfate and salty parameter treatment technologies from Activity 1 and begin a preliminary design for three representative municipalities. The goal of design would be to unearth implementation concerns only discoverable through initial design and get a better sense of costs. The information found in this preliminary design would be used to inform the final deliverable to include accurate costs and design consideration.

Table with 2 columns: Outcome, Completion Date. Rows include: 1. Consultant identifies most promising treatment technology (September 2017), 2. Consultant completes Case Analysis for three representative WWTP (February, 2018), 3. Consultant presents findings of final deliverable to MPCA (March, 2018), 4. Sulfate and Salty Parameter Treatment Alternatives Report on MPCA website (April, 2018)

III. PROJECT STRATEGY

A. Project Team/Partners

The MPCA proposes to award grant funds through a competitive RFP process to design firms and consultants to implement tasks described in project activities.

B. Timeline Requirements:

- MPCA develops and issues RFPs, reviews proposals and awards grants: July 2016 – March 2017
Grantee presents preliminary results of alternative analysis to MPCA: September 2017
Grantee researches and completes report: March 2017 – March 2018
Final report submitted to the LCCMR and available publically on MPCA webpage –April, 2018

C. Long Term Strategy & Future Funding Needs

This proposal is part of the MPCA’s long term plan for implementing a permitting strategy for the protection of wild rice and complying with salty parameter water quality standards. Additional future funds are not necessary.

## 2016 Detailed Project Budget

**Project Title:** *Municipal Sulfate Treatment Alternatives Analysis*

*INSTRUCTIONS AND TEMPLATE (1 PAGE LIMIT)*

*Attach budget, in MS-EXCEL format, to your "2016 LCCMR Proposal Submission Form".*

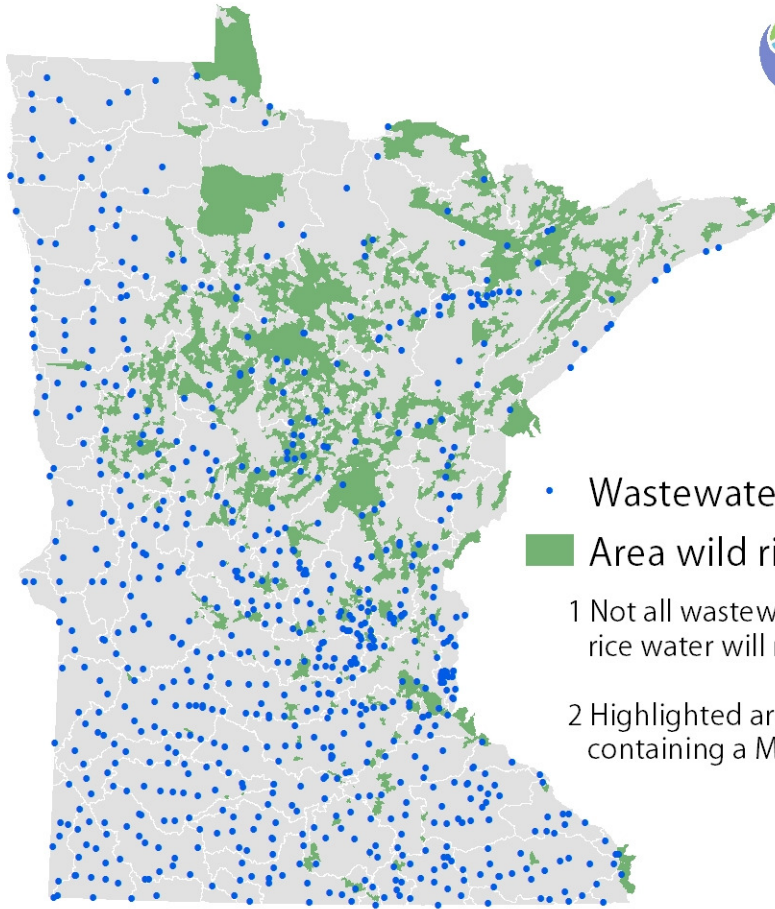
*(1-page limit, single-sided, 10 pt. font minimum. Retain bold text and DELETE all instructions typed in italics. ADD OR DELETE ROWS AS NECESSARY. If budget item row is not applicable put "N/A" or delete it. All of "Other Funds" section must be filled out.)*

**IV. TOTAL ENRTF REQUEST BUDGET [Insert # of years for project] years**

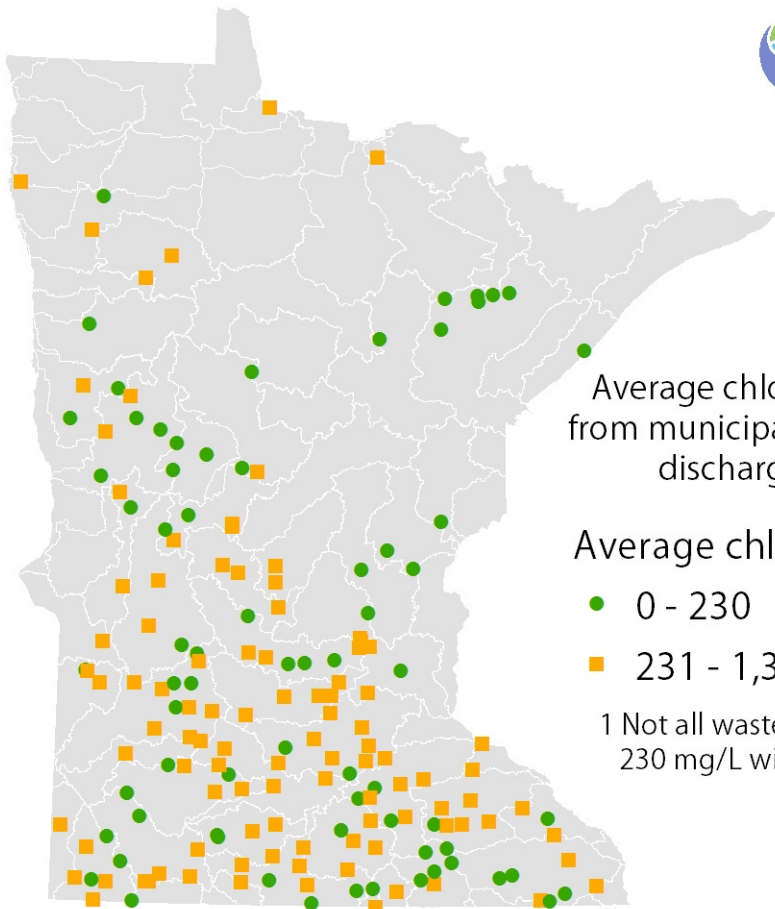
<b>BUDGET ITEM</b> (See "Guidance on Allowable Expenses", p. 13)	<b>AMOUNT</b>
<b>Personnel:</b> <i>In this column, list who is getting paid to do what and what is the % of full-time employment for each position. List out by position or position type - one row per position/position type. For each, provide details in this column on the inputs: i.e., % dollars toward salary, % dollars toward benefits, time period for position/position type, and number of people in the position/position type.</i>	None
<b>Professional/Technical/Service Contracts:</b> <i>In this column, list out proposed contracts. A competitive RFP, focusing on the state and national design community, will be issued. The RFP will solicit proposals to analyse a minimum of seven sulfate treatment alternatives.</i>	Activity 1: \$100,000 Activity 2: \$80,000
<b>Equipment/Tools/Supplies:</b> <i>None</i>	None
<b>Acquisition (Fee Title or Permanent Easements):</b> <i>Not Applicable</i>	None
<b>Travel:</b> <i>Be specific. Generally, only in-state travel essential to completing project activities can be included.</i>	None
<b>Additional Budget Items:</b> <i>In this column, list any additional budget items that do not fit above categories. List by item(s) or item type(s) and explain how number was determined One row per type/category.</i>	None
<b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>	\$ 180,000

**V. OTHER FUNDS** *(This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)*

<b>SOURCE OF FUNDS</b>	<b>AMOUNT</b>	<b>Status</b>
<b>Other Non-State \$ To Be Applied To Project During Project Period:</b>	\$ -	None
<b>Other State \$ To Be Applied To Project During Project Period:</b>	\$ -	None
<b>In-kind Services To Be Applied To Project During Project Period:</b> <i>MPCA Project Manager time (.0125 FTE for one year x \$X hourly salary and fringe = \$13,248). Funds provided through the Federal Environmental Protection Agency's Performance Partnership Grant.</i>	\$ 13,248	Secured
<b>Funding History:</b> <i>Indicate funding secured but to be expended prior to July 1, 2016, for activities directly relevant to this specific funding request, including past and current ENRTF funds. State specific source(s) of fund and dollar amount.</i>	\$ -	None
<b>Remaining \$ From Current ENRTF Appropriation:</b> <i>Not Applicable</i>	\$ -	N/A



- Wastewater treatment facility
  - Area wild rice may be located
- 1 Not all wastewater facilities near a wild rice water will receive a sulfate limit.
  - 2 Highlighted areas are catchments containing a MDNR wild rice water.



Average chloride concentration from municipal NPDES wastewater discharges (2009-2014)

Average chloride conc. (mg/L)

- 0 - 230
- 231 - 1,300

1 Not all wastewater facilities over 230 mg/L will receive a chloride limit.



**Environment and Natural Resources Trust Fund (ENRTF)**

**2016 Main Proposal**

**Project Title: Municipal Sulfate and Salty Parameter Treatment Alternatives Analysis**

**Project Manager Qualifications/Organization**

**Project Manager**

Scott Kyser is graduate engineer in the Environmental Analysis and Outcomes Division of the Minnesota Pollution Control Agency. He will be lead technical administrator for the project with responsibility for MPCA's portion of the study and overseeing management, project reporting, and contracting.

**Qualifications**

Education:

M.S. 2011 University of Minnesota (Environmental Engineering)

B.A. 2007 Gustavus Adolphus College (Biology)

Work Experience:

2013-Present Graduate Engineer II, Minnesota Pollution Control Agency

2011-2013 Environmental Engineer, Barr Engineering, Minneapolis, Minnesota.

**Organization Description**

The Minnesota Pollution Control Agency's mission is to protect and improve the environment and enhance human health. The MPCA monitors environmental quality, offers technical and financial assistance, and enforces environmental regulations.