



# Environment and Natural Resources Trust Fund (ENRTF)

## M.L. 2019 ENRTF Work Plan (Main Document)

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**Today's Date:** August 9, 2018

**Date of Next Status Update Report:** March 1, 2020

**Date of Work Plan Approval:**

**Project Completion Date:** June 30, 2022

**Does this submission include an amendment request?** N

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**PROJECT TITLE:** Wastewater Nutrient Reduction through Industrial Source Reduction Assistance

**Project Manager:** Laura Babcock

**Organization:** University of Minnesota

**College/Department/Division:** School of Public Health/Environmental Health Sciences/Minnesota Technical Assistance Program

**Mailing Address:** 200 Oak St. SE, Suite 350-1

**City/State/Zip Code:** Minneapolis, MN 55455

**Telephone Number:** 612-624-4678

**Email Address:** lbabcock@umn.edu

**Web Address:** www.mntap.umn.edu

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**Location:** Statewide

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**Total Project Budget:** \$200,000

**Amount Spent:** \$0

**Balance:** \$200,000

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**Legal Citation:** M.L. 2019, Chp. xx, Sec. xx, Subd. xx

**Appropriation Language:**

## I. PROJECT STATEMENT:

Treatment facilities manage effluent as part of the public infrastructure needed for public health, economic development and job growth. This project will provide source reduction technical assistance for industrial facilities discharging high wastewater nutrient load to their municipal wastewater facility. Businesses that generally have achievable nutrient source reduction opportunities include:

- Car/Truck Washing
- Dairies
- Food Processing Plants
- Meat Packing Plants
- Metal Finishing Facilities
- Nursing Homes
- Restaurants
- Schools
- Industrial Cleaning/Sanitizing

By promoting strategies for upstream nutrient management in the feed to mechanical and pond wastewater systems, the treatment intensity needed to meet wastewater discharge requirements is reduced. Reduced treatment requirements may postpone or eliminate capital investment needs. The Minnesota Technical Assistance Program (MnTAP) has demonstrated source reduction strategies to improve a wastewater facility's ability to meet effluent targets while enhancing business operations through expanded capacity, improved quality and reduced cost.

- Mankato, MN a long time manufacturer changed their coating line and optimized chemical use to eliminate 340 lb phosphorus to the wastewater stream while decreasing off-grade production
- Monticello, MN a food processing facility streamlined the chemicals used in their cleaning and sanitizing operations reducing the phosphorus in their wastewater effluent by 80%

## II. OVERALL PROJECT STATUS UPDATES:

**First Update March 1, 2020**

**Second Update September 1, 2021**

**Third Update March 1, 2021**

**Fourth Update September 1, 2022**

**Fifth Update March 1, 2022**

**Final Report between project end (June 30) and August 15, 2022**

## III. PROJECT ACTIVITIES AND OUTCOMES:

**ACTIVITY 1 Title: Identify/Engage Locations with High Nutrient Effluent and Industrial Clients for Assistance Activities**

**Description:** Select communities with wastewater facilities that can benefit from upstream nutrient source reduction technical assistance. This includes facilities with high P and N discharge levels that may be in areas with impaired surface water and serve industries traditionally having high wastewater load. Contact wastewater facilities, municipalities and their clients to share information on upstream effluent nutrient reduction options, the potential impact wastewater plant operations and local surface water quality.

**ACTIVITY 1 ENRTF BUDGET: \$32,000**

<b>Outcome</b>	<b>Completion Date</b>
1. 20-30 communities identified with high potential for effluent nutrient reduction	9/30/2019
2. 20-30 communities informed on options for nutrient source reduction	12/31/2019
3. 5-10 communities seek to explore source reduction technical assistance	3/31/2020
4. 5-10 upstream sites agree to source reduction assessments	4/30/2020

**First Update March 1, 2020**

**Second Update September 1, 2021**

**Third Update March 1, 2021**

**Fourth Update September 1, 2022**

**Fifth Update March 1, 2022**

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**ACTIVITY 2 Title: Conduct Nutrient Source Reduction Assessments at Industrial Facilities and Measure Impact**

**Description:** Conduct technical assistance assessments to identify and implement source reduction opportunities that will decrease municipal wastewater nutrient load. Record results and assess impact on wastewater operations and discharge. Technical assistance activities will recommend process optimization strategies and material substitution to reduce site load released to wastewater. Highly complex systems will be able to apply to the MnTAP Intern Program for a summer intern to provide added engineering manpower to support identification, implementation and outcome documentation of nutrient reduction activities.

**ACTIVITY 2 ENRTF BUDGET: \$148,000**

<b>Outcome</b>	<b>Completion Date</b>
1. 5-10 source reduction site assessments for wastewater nutrient reduction	12/31/2021
2. At least 2 source reduction intern projects for wastewater nutrient reduction	9/30/2021
3. All participating sites receive follow up assistance from MnTAP	3/31/2022
4. At least 5000 lb nutrient load to wastewater facilities reduced	6/30/2022

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**Second Update September 1, 2021**

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**ACTIVITY 3 Title: Share Results Achieve and Replication Opportunity Across Minnesota**

**Description:** Develop a process for conducting similar analysis through example case studies, assessment tools and lessons learned for broad dissemination to facilities across Minnesota for additional site engagement. Share information through publications, presentations and webinars targeting wastewater facility staff, city managers, industries and organizations that discharge high wastewater load.

**ACTIVITY 3 ENRTF BUDGET: \$20,000**

<b>Outcome</b>	<b>Completion Date</b>
1. At least 2 success storied published	4/30/2022
2. At least 2 presentations at sector specific events	4/30/2022
3. 1 webinar presented live and recorded for future viewing	4/30/2022

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**Fifth Update March 1, 2022**

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**IV. DISSEMINATION:**

**Description:** General project information, general technical information, sign up mechanism to participate in the evaluation, publications and other project related information will be included in a series of web pages under the MnTAP POTW pages <http://www.mntap.umn.edu/industries/facility/potw/> as a new subpage dedicated to project activities. Periodic updates of project progress and publicly available results will be published in the MnTAP monthly electronic newsletter, ENews , and bi-annual print and electronic publication, Source, along with feature articles on the project web page. Access to these communication pieces will be through the current MnTAP publication web pages <http://www.mntap.umn.edu/resources/publications/>. All MnTAP resources are freely distributed for use in replicating and advancing the work.

Intern project information will be posted on the MnTAP Intern Program web pages for company solicitation, and student recruiting <http://www.mntap.umn.edu/interns/>. Intern project results will be posted under MnTAP Intern Past Projects <http://www.mntap.umn.edu/interns/pastprojects/> and in the annual print and electronic intern project summary publication, Solutions <http://www.mntap.umn.edu/resources/publications/solutions/>.

Webinar materials that are presented as part of the project will be posted under MnTAP Resources and Tools on the MnTAP Webinars pages <http://www.mntap.umn.edu/resources/webinars/> for future viewing and sharing.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the [ENRTF Acknowledgement Guidelines](#).

**First Update March 1, 2020**

**Second Update September 1, 2021**

**Third Update March 1, 2021**

**Fourth Update September 1, 2022**

**Fifth Update March 1, 2022**

**Final Report between project end (June 30) and August 15, 2022**

**V. ADDITIONAL BUDGET INFORMATION:**

**A. Personnel and Capital Expenditures**

**Explanation of Capital Expenditures Greater Than \$5,000:**

**Explanation of Use of Classified Staff:**

**Total Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation:**

Enter Total Estimated Personnel Hours for entire duration of project: 5,741	Divide total personnel hours by 2,080 hours in 1 yr = TOTAL FTE: 2.76
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**Total Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation:**

Enter Total Estimated Contract Personnel Hours for entire duration of project: 0	Divide total contract hours by 2,080 hours in 1 yr = TOTAL FTE: 0
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**VI. PROJECT PARTNERS:**

**A. Partners outside of project manager's organization receiving ENRTF funding**

None

**B. Partners outside of project manager's organization NOT receiving ENRTF funding**

Joel Peck, Municipal Liason MPCA

City and site management partners will be engaged at time program starts

**VII. LONG-TERM- IMPLEMENTATION AND FUNDING:**

This proposal delivers demonstrated industrial wastewater effluent nutrient reductions and quantifies impact on downstream wastewater treatment performance and nutrient release to surface waters. Once developed and documented, these strategies can be replicated throughout the state by incorporation into existing and future programs that assist local communities and water/wastewater operations.

**VIII. REPORTING REQUIREMENTS:**

- Project status update reports will be submitted March 1 and September 1 each year of the project
- A final report and associated products will be submitted between June 30 and August 15, 2022

**IX. SEE ADDITIONAL WORK PLAN COMPONENTS:**

**A. Budget Spreadsheet**

- B. Visual Component or Map**
- C. Parcel List Spreadsheet – N/A**
- D. Acquisition, Easements, and Restoration Requirements – N/A**
- E. Research Addendum – N/A**

Attachment A:  
 Environment and Natural Resources Trust Fund  
 M.L. 2019 Budget Spreadsheet



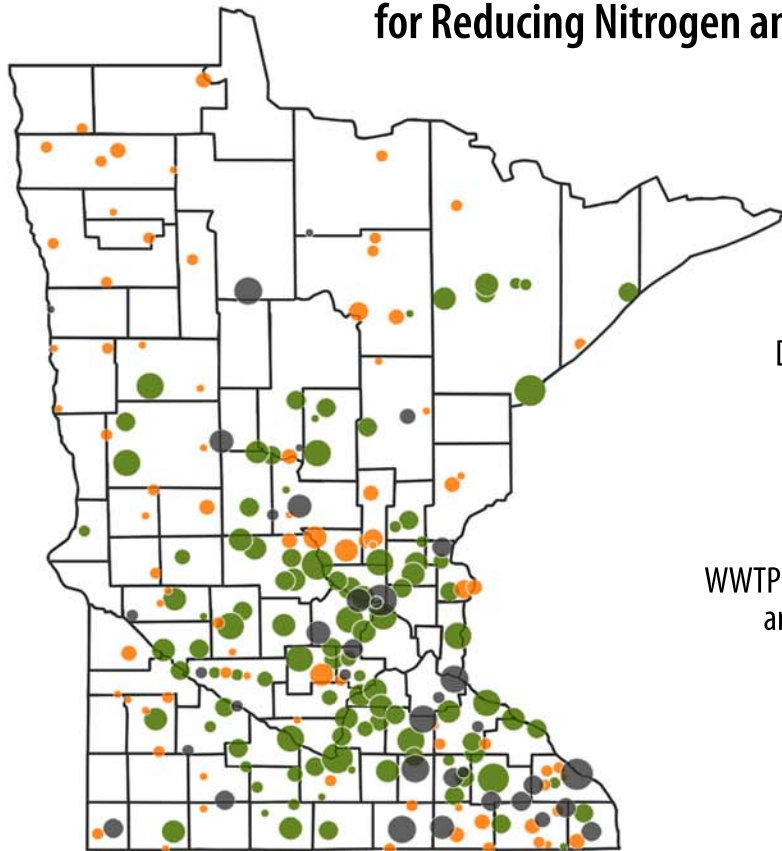
Legal Citation:  
 Project Manager: Laura Babcock  
 Project Title: Wastewater Nutrient Reduction through Industrial Source Reduction Assistance  
 Organization: University of Minnesota  
 Project Budget: \$200,000  
 Project Length and Completion Date: 3 yrs, June 30, 2022  
 Today's Date: August 10, 2018

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Budget	Amount Spent	Balance
<b>BUDGET ITEM</b>			
<b>Personnel (Wages and Benefits)</b>	\$ 188,500	\$ -	\$ 188,500
<i>Project Manager - 21,500 (65.8% Salary, 34.2% Fringe), 0.05 FTE for 3 years</i>			
<i>Engineer 1 - \$105,000 (71.6% Salary, 28.4% Fringe), 0.44 FTE for 3 years</i>			
<i>Engineer 2 - \$15,800 (71.6% Salary, 28.4% Fringe), 0.05 FTE for 3 years</i>			
<i>MnTAP Project Support - \$12,200 (71.6% Salary, 28.4% Fringe), 0.06 FTE for 3 years</i>			
<i>Interns - \$34,000 (94% Salary, 6% Fringe), 0.48 FTE for 2 years</i>			
<b>Professional/Technical/Service Contracts</b>			
<b>Equipment/Tools/Supplies</b>			
<i>Field equipment for phosphorus and nitrogen analysis - Digester, \$2,500</i>	\$ 2,500		\$ 2,500
<i>Field equipment for phosphorus and nitrogen analysis - Photometer. \$3,500</i>	\$ 3,500		\$ 3,500
<i>Supplies for phosphorus and nitrogen analysis - \$1,000</i>	\$ 1,000	\$ -	\$ 1,000
<b>Printing</b>			
<i>No printing activities due to reduced budget</i>	\$ -	\$ -	\$ -
<b>Travel expenses in Minnesota</b>			
<i>Travel to/from UMN TC campus to communities with high discharge industries to conduct assessment or intern activities by car or University fleet vehicle. Estimated distribution of expenses 77% mileage/car, 18% lodging, 5% food per University of Minnesota policy. Whole allocation will be used for travel purposes, while expenses for food and lodging will only be needed if very remote sites are engaged which require travel outside the day of site activities.</i>	\$ 4,500	\$ -	\$ 4,500
<b>Other</b>			
	\$ -	\$ -	\$ -
<b>COLUMN TOTAL</b>	\$ 200,000	\$ -	\$ 200,000

OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
<b>Non-State: Private contribution to Intern Program</b>	Pending	\$ 12,000	\$ -	\$ 12,000
<b>State: Rent allocation for FTE associated with project</b>	Secured	\$ 12,960	\$ -	\$ 12,960
		\$ 52,000	\$ -	\$ 52,000
<b>In kind: University overhead expenses, 26%</b>	Secured			

PAST AND CURRENT ENRTF APPROPRIATIONS	Amount legally obligated but not yet spent	Budget	Spent	Balance
<b>Current appropriation: none</b>		\$ -	\$ -	\$ -
<b>Past appropriations: none</b>		\$ -	\$ -	\$ -

# Industrial Opportunity and Technical Assistance Process for Reducing Nitrogen and Phosphorous in Surface Water



>4,400 businesses discharging to WWTPs with high:

Nitrogen		Phosphorus	Nitrogen + Phosphorus	
	100 - 222			100 - 137
	50 - 100			50 - 100
	20 - 50			20 - 50
	10 - 20			10 - 20
	5 - 10			5 - 10
	1 - 5			1 - 5
	1			1

Minnesota manufacturing businesses (NAICS 31-33) in towns with wastewater treatment plants discharging >2ppm Phosphorus and/or >10 ppm Nitrogen (excluding St Paul)

Discharge to WWTP



MnTAP source reduction  
Technical Assistance



WWTP processes nitrogen  
and phosphorus



Lower influent load  
can lead to lower nutrients



High nutrient discharge



Low nutrient discharge