

Final Abstract

Final Report Approved on January 16, 2025

M.L. 2020 Project Abstract

For the Period Ending June 30, 2025

Project Title: Expanding Protection Of Minnesota Water Through Industrial Conservation

Project Manager: Bruce Alexander

Affiliation: U of MN - School of Public Health

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City/State/Zip: Minneapolis, MN 55455

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Website: <https://www.sph.umn.edu/>

Funding Source:

Fiscal Year:

Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 04g

Appropriation Amount: \$178,000

Amount Spent: \$142,849

Amount Remaining: \$35,151

Sound bite of Project Outcomes and Results

This project sought to decrease water demand in communities at risk for inadequate ground water supply or quality through technical assistance and intern projects focused on water conservation. In total, this project reduced 14.1 million gallons of annual water use in Minnesota.

Overall Project Outcome and Results

Water availability in Minnesota varies by region and water source. Regions with low producing aquifers may be constrained in their ability to support growth in residential, commercial, and/or industrial sectors due to their limited water supply. This project sought to decrease water demand in communities at risk for inadequate ground water supply or quality through technical assistance and intern projects focused on water conservation. Recommendations from these engagements provided cost-effective solutions to reduce water use to assist communities in meeting the water demands for current and future applications.

For this project, the Minnesota Technical Assistance Program (MnTAP) and project partner Minnesota Rural Water Association (MRWA) worked to identify areas with water availability or water quality challenges and reach out to those

areas offering water conservation workshops, technical assistance for businesses, and intern projects for businesses.

Key outcomes of this project:

- Completed 12 site assessments to evaluate water conservation opportunities and scope intern projects
- Completed 6 intern projects
- Created a water assessment tool for facilities to evaluate water use onsite and identify opportunities
- Delivered a webinar on water conservation strategies, the Grede Foundry intern project, and the water assessment tool
- Presented 3 educational workshops on water conservation
- Reduced 14.1 million gallons of industrial/commercial water use annually

Work was conducted for sites in Beltrami, Chisago, Douglas, Kandiyohi, Lac Qui Parle, Nicollet, Otter Tail, Pennington, Polk, Rice, Roseau, Sherburne, Sibley, Stearns, Wadena, and Wright counties. Intern projects were completed at

- Heartland Corn Products in Winthrop, MN
- All Flex Solutions in Northfield, MN
- Grede Foundry in St. Cloud, MN
- Liberty Paper Inc. in Becker, MN
- MN Department of Administration Office of Enterprise Sustainability (sites around the state)
- Puris in Dawson, MN

Project Results Use and Dissemination

Since water conservation opportunities are often relevant across facilities, MnTAP developed public resources from this project which are available on our website. MnTAP created a water assessment tool that facilities can use to evaluate water use and identify and quantify potential water saving opportunities. MnTAP and MRWA hosted a webinar with water reduction strategies, a highlight of the intern project at Grede Foundry, and a demonstration of the water assessment tool. Intern project summaries are posted for Heartland Corn Products, All Flex Solutions, Grede Foundry, Liberty Paper, MN Department of Administration Office of Enterprise Sustainability, and Puris.



Environment and Natural Resources Trust Fund

M.L. 2020 Approved Final Report

General Information

Date: January 21, 2025

ID Number: 2020-024

Staff Lead: Mike Campana

Project Title: Expanding Protection Of Minnesota Water Through Industrial Conservation

Project Budget: \$178,000

Project Manager Information

Name: Bruce Alexander

Organization: U of MN - School of Public Health

Office Telephone: (612) 625-7934

Email: balex@umn.edu

Web Address: <https://www.sph.umn.edu/>

Project Reporting

Final Report Approved: January 16, 2025

Reporting Status: Project Completed

Date of Last Action: January 16, 2025

Project Completion: October 31, 2024

Legal Information

Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 04g

Appropriation Language: \$178,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Minnesota technical assistance program in partnership with the Minnesota Rural Water Association to provide technical assistance to businesses to decrease industrial and commercial water use in communities at risk for inadequate groundwater supply or quality.

Appropriation End Date: June 30, 2024

Narrative

Project Summary: Project seeks to decrease water demand in communities at risk for inadequate ground water supply or quality by providing technical assistance to identify cost-effective ways to reduce industrial/commercial use.

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Some parts of Minnesota suffer from low producing aquifers that are unable to support growth in residential and industrial/commercial water use. Other areas may have sufficient water supply, however, high water use may result in contamination due to drawdown and infiltration. Reducing water demand in areas at risk for water scarcity or well contamination may provide a low cost option for water management activities when compared with well drilling or extensive water purification. The proposal seeks to expand a successful industrial/commercial water efficiency program demonstrated in the metro area to the entire State of Minnesota. Industrial water efficiency technical assistance can reduce industrial water use, decrease water demand and improve operating costs. Significant water savings through maintenance and minor process modifications may also be realized.

- A food processing facility achieved over 2 million gallons of water savings annually and operating cost reduction of \$14,000/yr by optimizing pump operations and irrigation controls.
- A healthcare facility identified 7.6 million gallons of water savings annually and operating cost reduction of \$123,000/yr by optimizing water discharge procedures and developing a replacement schedule for less efficient equipment at the end of useful life.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

Provide technical assistance to identify cost-effective ways to reduce industrial/commercial water use. MnTAP will identify target regions with water access and/or water quality challenges by analyzing state water data and using detailed community water system knowledge of partner Minnesota Rural Water Association (MRWA) and others. MnTAP and MRWA will engage these regions by conducting water efficiency workshops, direct technical assistance to businesses, and placing interns in businesses with high water efficiency opportunity to launch conservation implementation.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

3-4 regions receive directed outreach for water conservation technical assistance.

3-4 educational workshops on water conservation in participating regions.

5-8 high water users identified.

5-8 water conservation and source reduction site assessments complete.

3 water conservation focused intern projects in the selected regions.

10,000,000 gallons of water reduced annually.

3 intern success stories published.

Presentations outlining the project outcomes.

1 webinar recorded and archived for future viewing.

Water use assessment screening tool developed.

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Region(s): Central, NE, NW, SE, SW,

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Identify and engage regions with water supply and/or water quality challenges

Activity Budget: \$53,500

Activity Description:

Partner with MRWA to identify 10 regions in Minnesota that have not received water efficiency technical assistance previously and could benefit from reduced water demand. The regions will be selected based on aquifer resiliency, MRWA regional knowledge, and the presence of significant industrial activity. Regional water supply providers and commercial/industrial water users will be contacted for participation in the project. Project opportunity information sharing will be conducted through communication pieces and educational workshops on water use best management practices and success stories from past projects.

Activity Milestones:

Description	Approximate Completion Date
10 outreach targets identified.	September 30, 2021
Characterize regions by industry and water conservation potential.	November 30, 2021
3-4 regions receive directed outreach for water conservation technical assistance.	December 31, 2021
3-4 educational workshops on water conservation in participating regions.	March 31, 2022
5-8 high water users identified	March 31, 2022

Activity 2: Conduct water conservation assessments at industrial facilities and measure impact

Activity Budget: \$104,500

Activity Description:

Conduct technical assistance site assessments at the sites identified in Activity 1 to demonstrate water conservation and source reduction opportunities. Site assessments will include mapping site water use, identifying high use operations and recommending options to manage water use more efficiently. Up to three complex, technical projects will be chosen as summer intern projects to assess industrial water use, develop water saving recommendations and launch conservation implementation.

Activity Milestones:

Description	Approximate Completion Date
5-8 water conservation and source reduction site assessments complete.	May 31, 2023
3 water conservation focused intern projects in the selected regions.	September 30, 2023
All participating sites receive follow up assistance from MnTAP.	April 30, 2024
10,000,000 gallons of water reduced annually.	April 30, 2024

Activity 3: Share results and replication opportunity throughout the state

Activity Budget: \$20,000

Activity Description:

Outline a self-assessment process to identify water efficiency opportunity and disseminate success stories/lessons learning to a broad audience throughout Minnesota. Present findings at available regional meetings, informational publications and through a webinar that is open to the public and recorded for future viewing. Maintain effective reporting communications with project sponsor.

Activity Milestones:

Description	Approximate Completion Date
Presentations outlining the project outcomes.	September 30, 2023
3 intern success stories published.	October 31, 2023
Water use assessment screening tool developed.	December 31, 2023
1 webinar recorded and archived for future viewing.	March 31, 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Lori Blair	Minnesota Rural Water Association (MRWA)	MRWA will engage their clients in this project, make project information and research findings available on their website, and in their publications. MRWA will work closely with MnTAP to identify and engage communities with efficiency opportunity, support training activities and encourage implementation of recommendations.	Yes

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

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 Water pages <http://www.mntap.umn.edu/focusareas/water/> 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, 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.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?

This project seeks to develop a strategy to bring a demonstrated industrial/commercial water efficiency technical assistance program to communities throughout the state interested in water management strategies. Once developed and documented, these strategies will be available to communities, businesses and existing programs that assist Minnesota communities with sustainable water use for replication beyond the program time period.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Wastewater Nutrient Reduction through Industrial Source Reduction Assistance	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 04c	\$200,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount	\$ Amount Spent	\$ Amount Remaining
Personnel										
Engineer		Technical assistance and training			31.8%	2.25		\$86,300	-	-
Intern Manager		Hire, train and supervise intern program			31.8%	0.15		\$11,000	-	-
Principle Investigator		Program administration, reporting			36.5%	0.15		\$11,200	-	-
Intern(s)		Execute site based projects			8%	1.5		\$46,000	-	-
							Sub Total	\$154,500	\$124,500	\$30,000
Contracts and Services										
Minnesota Rural Water Association	Subaward	Minnesota Rural Water Association to provide direct community outreach and promote project results through website and meetings. Sole source contract based on MRWA extensive experience and relationships in target communities				0.24		\$20,000	\$16,349	\$3,651
							Sub Total	\$20,000	\$16,349	\$3,651
Equipment, Tools, and Supplies										
							Sub Total	-	-	-
Capital Expenditures										
							Sub Total	-	-	-
Acquisitions and Stewardship										
							Sub Total	-	-	-
Travel In Minnesota										

	Miles/ Meals/ Lodging	Mileage and per diem for travel within Minnesota to provide technical assistance	Provide on site visits to define water conservation opportunities.					\$2,000	\$2,000	-
							Sub Total	\$2,000	\$2,000	-
Travel Outside Minnesota										
							Sub Total	-	-	-
Printing and Publication										
							Sub Total	-	-	-
Other Expenses										
		Meeting space rental for up to 3 sites	Provide up to three locations for educational events.					\$1,500	-	\$1,500
							Sub Total	\$1,500	-	\$1,500
							Grand Total	\$178,000	\$142,849	\$35,151

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount	\$ Amount Spent	\$ Amount Remaining
State						
In-Kind	MPCA Annual grant to MnTAP for operations.	Rent associated with FTE assigned to this project	Pending	\$10,360	\$8,089	\$2,271
			State Sub Total	\$10,360	\$8,089	\$2,271
Non-State						
In-Kind	Private companies participating in the Intern Program	Cost share from facilities participating in Intern Program used to pay a portion of the intern program costs. These funds will be used to cover the remaining costs of the interns not covered by ENRTF funds.	Potential	\$15,000	\$3,237	\$11,763
In-Kind	University of Minnesota Indirect rate 26% MTDC	Non-recovered indirect on grant total.	Secured	\$46,280	\$37,141	\$9,139
			Non State Sub Total	\$61,280	\$40,378	\$20,902
			Funds Total	\$71,640	\$48,467	\$23,173

Attachments

Required Attachments

Visual Component

File: [0c069c09-ee9.pdf](#)

Alternate Text for Visual Component

Map of Minnesota ground water use based on DNR permits and vulnerability rating (high, med, low) with industrial clusters superimposed. The project outline as Engage Regions, Engage Industrial users, Provide Technical Assistance, Implement Recommendations and Develop a process model for replication....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
MPCA In-kind Rent Match Authorization	d32e710b-197.pdf
UMN Sponsored Projects Administration Authorization to Submit	c1ac5672-01a.pdf
Background Check Certification Form	ee6d1bac-dad.pdf
MnTAP Intern Job Ad 2022_Heartland Corn	f7b2084d-d63.pdf
2022 MnTAP Intern Job Ad_Heartland Corn	7da4b275-c31.pdf
2020-024 Update Report 04012022	bae4a32b-bba.docx
Activity 1 Map_042022	b5d81789-015.pdf
Activities and Milestones ENRFT 2020-024	ddc2b1ac-5e1.pdf
2023 MnTAP Intern Job Ad All Flex Solutions	f825ec25-32a.pdf
2023 MnTAP Intern Job Ad Grede Foundry	0c65b881-299.pdf
2024 MnTAP Intern Job Ad Puris Proteins	10246a52-a70.pdf
2024 MnTAP Intern Job Ad Liberty Paper	c0593a81-96a.pdf
2024 MnTAP Intern Job Ad Dept Admin OES	d182a9f7-a7a.pdf

Media Links

Title	Link
Water Conservation at Heartland Corn Products Presentation	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2022/Presentations/Heartland-Corn-Slides.pdf
Water Conservation at Heartland Corn Products Executive Summary	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2022/Executive-Summary/Heartland-Corn-Executive-Summary.pdf
Water Conservation at All Flex Solutions Presentation Slides	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2023/Presentations/All-Flex-Nile-Timmerman.pdf
Water Conservation at All Flex Solutions Presentation Video	https://vimeo.com/user91989039
Water Conservation at All Flex Solutions Executive Summary	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2023/All-Flex.pdf
Water Conservation at Grede Foundry Presentation Slides	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2023/Presentations/Grede-Huy-Vo.pdf
Water Conservation at Grede Foundry Presentation Recording	https://vimeo.com/880153183?share=copy
Water Conservation at Grede Foundry Executive Summary	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2023/Grede.pdf
Water Assessment Tool	http://www.mntap.umn.edu/resources/tools-calculators/water-tool-2/
Water Efficiency Webinar Recording	http://www.mntap.umn.edu/focusareas/water/projects/h2o4mncities/

MnTAP Impact 2023 - Project Information on P 14	http://www.mntap.umn.edu/wp-content/uploads/2024/06/Impact-2023.pdf
Water Conservation at MN Dept of Admin, OES Executive Summary	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2024/Executive-Summary/MN-Dept-of-Admin-Lucy.pdf
Water Conservation at MN Dept of Admin, OES Presentation Slides	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2024/slides/MnTAP-Symposium-Presentation-2024-MN-Dept-of-Admin-Lucy.pdf
Water Conservation at Liberty Paper Executive Summary	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2024/Executive-Summary/Liberty-Jannatul.pdf
Water Conservation at Liberty Paper Presentation Slides	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2024/slides/MnTAP-Symposium-Presentation-2024-Liberty-Paper-Jannatul.pdf
Water Conservation at Puris Proteins Executive Summary	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2024/Executive-Summary/Puris-Roman.pdf
Water Conservation at Puris Proteins Presentation Slides	http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2024/slides/MnTAP-Symposium-Presentation-2024-Puris-Roman.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

Revised budget reflects the recommended amount of \$178,000.

Indirect charge match from UMN was reduced to reflect the 26% off of the reduced total \$178,000.

Changed contact info for fiscal agent

Allocation for MRWA services reclassified as sub-award.

Timeline was extended to the end of the appropriation period 6/30/2024 with extra time allocated to generation of self assessment tool, site follow up, and dissemination of information and generated resources.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I understand the UMN Policy on travel applies.

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

Yes

Does the organization have a fiscal agent for this project?

Yes, Sponsored Projects Administration

Work Plan Amendments

Amendment ID	Request Type	Changes made on the following pages	Explanation & justification for Amendment Request (word limit 75)	Date Submitted	Approved	Date of LCCMR Action
1	Project Manager	Previous Manager: Laura Babcock (lbabcock@umn.edu) New Manager: Bruce Alexander (balex@umn.edu)	Dr. Laura Babcock has retired from our organization and we desire for the project to proceed under the direction of Dr. Bruce Alexander.	July 6, 2023	Yes	July 6, 2023
2	Amendment Request	<ul style="list-style-type: none"> • Budget - Personnel • Budget - Professional / Technical Contracts • Budget - Non-ENRTF Funds Contributed • Attachments 	Per the 1/31/24 request, we are requesting to rebudget the \$30,000 subaward from MWRA to the University of Minnesota for personnel and two additional interns. We will be utilizing these funds through 6/30/24. Starting 7/1/24, we will be funding the interns using funds received through the cost share from private companies participating in the Intern Program.	March 4, 2024	Yes	March 14, 2024
3	Completion Date	Previous Completion Date: 06/30/2024 New Completion Date: 10/31/2024	Currently, our work under the MWRA sub-award is meeting all the grant objectives, however, the subaward is currently on track to have \$30,000 in surplus. We would like to utilize these funds to allow for two additional interns in summer 2024 to complete water conservation projects. The ENRTF funds would only be used until 6/30/2024. The extension request is to accommodate the duration of the internships and follow-up reporting.	March 1, 2024	Yes	March 5, 2024
4	Completion Date	Previous Completion Date: 10/31/2024 New Completion Date: 06/30/2025	LCCMR administrative workaround to approve October update.	December 2, 2024	Yes	December 2, 2024
5	Completion Date	Previous Completion Date: 06/30/2025 New Completion Date: 10/31/2024	LCCMR administrative workaround to approve October update.	December 2, 2024	Yes	December 2, 2024

Status Update Reporting

Final Status Update December 15, 2024

Date Submitted: December 9, 2024

Date Approved: January 3, 2025

Overall Update

During this reporting period, intern project executive summaries were completed and posted on MnTAP's website along with presentation slides from MnTAP's Intern Symposium in August 2024. Overall, MnTAP has recommended strategies that could reduce 120 million gallons of water use per year and 13.8 million gallons of water per year have been saved through implementation.

Activity 1

No outreach occurred during this reporting period. Combining overall outreach, MnTAP and MRWA have reached out to 25 communities, four organizations, and 48 businesses (this includes 25 businesses who received outreach while recruiting for intern host companies for summer 2024). The project has engaged one organization, and 12 businesses so far. Nine communities and two organizations connected with us as part of this outreach about water conservation, water challenges they were facing, or businesses in the area that may be good candidates for the project.

(This activity marked as complete as of this status update)

Activity 2

No additional site visits or intern projects were completed during this reporting period. Previously reported recommendation totals for one intern project and new implementation totals were updated. Primary recommendations from all 12 site assessments and 6 intern projects included reusing water, decreasing flow rates, and optimizing processes. When fully implemented the recommended strategies have the potential to reduce 120 million gallons of water use annually. Additionally, the recommendations included the opportunity to save 1.8 million kWh of electricity, 523,000 therms of fuel, 61,000 lbs of hazardous waste, and 13.6 million lbs of non-hazardous material. These changes to operations are estimated to save \$3,733,000 annually when fully implemented. Follow up with facilities have identified implementation that saved 13.8 million gallons of water, 247,000 kWh, and \$58,300 annually. Follow up with the facilities will continue throughout the next 2 years.

(This activity marked as complete as of this status update)

Activity 3

Executive summaries for the three 2024 intern projects were completed and posted to MnTAP's website along with presentation slides from MnTAP's Intern Symposium in August 2024. Intern presentation recordings will be posted to MnTAP's website once they are finalized.

(This activity marked as complete as of this status update)

Dissemination

Intern project executive summaries for Liberty Paper, MN Department of Administration, Office of Enterprise Sustainability, and Puris Proteins were posted on the MnTAP website individually and as part of MnTAP's Solutions publication. Presentation slides for Liberty Paper, MN Department of Administration, Office of Enterprise Sustainability, and Puris Proteins were posted on the MnTAP website.

Additional Status Update Reporting

Additional Status Update December 15, 2024

Date Submitted: September 30, 2024

Date Approved: December 2, 2024

Overall Update

Per LCCMR staff guidance and due to system logic, this is place holder text for the final update to be submitted in December 2024.

Activity 1

Per LCCMR staff guidance and due to system logic, this is place holder text for the final update to be submitted in December 2024.

Activity 2

Per LCCMR staff guidance and due to system logic, this is place holder text for the final update to be submitted in December 2024.

Activity 3

Per LCCMR staff guidance and due to system logic, this is place holder text for the final update to be submitted in December 2024.

Dissemination

Per LCCMR staff guidance and due to system logic, this is place holder text for the final update to be submitted in December 2024.

Status Update Reporting

Status Update October 1, 2024

Date Submitted: September 30, 2024

Date Approved: December 2, 2024

Overall Update

During this reporting period, three intern projects were completed. Intern project results were presented at MnTAP's Intern Symposium in August 2024. Overall, MnTAP has recommended strategies that could reduce 82.1 million gallons of water use per year and 12.8 million gallons of water per year have been saved through implementation.

Activity 1

No outreach occurred during this reporting period. Combining overall outreach, MnTAP and MRWA have reached out to 25 communities, four organizations, and 48 businesses (this includes 25 businesses who received outreach while recruiting for intern host companies for summer 2024). The project has engaged one organization and 12 businesses so far. Nine communities and two organizations connected with us as part of this outreach about water conservation, water challenges they were facing, or businesses in the area that may be good candidates for the project.

(This activity marked as complete as of this status update)

Activity 2

Three intern projects (two were half-funded by this grant) were completed during the current reporting period. No site assessments were completed during this reporting period (2 previously unreported intern scoping site visits were added to the totals). Primary recommendations from all 12 site assessments and 6 intern projects included reusing water, decreasing flow rates, and optimizing processes. When fully implemented the recommended strategies have the potential to reduce 82.1 million gallons of water use annually. Additionally, the recommendations included the opportunity to save 1.8 million kWh of electricity, 523,000 therms of fuel, 61,000 lbs of hazardous waste, and 11,000 lbs of non-hazardous material. These changes to operations are estimated to save \$1,087,000 annually when fully implemented. Follow up with facilities have identified implementation that saved 12.8 million gallons of water, 247,000 kWh, and \$54,300 annually. Follow up with the facilities will continue throughout the next 2 years.

Activity 3

At the MnTAP Intern Symposium on August 14, 2024, Jackson Harris (intern at Aspire Bakeries), Lucy Weglarz (intern at MN Department of Administration, Office of Enterprise Sustainability), and Roman Lidyaev (intern at Puris Proteins) presented on their projects. Presentation slides, recorded presentation video, and executive summaries will be reported when completed and/or posted to our website by the next reporting deadline.

Dissemination

Intern job ads for Aspire Bakeries, MN Department of Administration, Office of Enterprise Sustainability, and Puris Proteins were posted on the MnTAP website. Project results for 2023 were summarized in MnTAP's Impact publication.

Status Update Reporting

Status Update April 1, 2024

Date Submitted: March 12, 2024

Date Approved: March 14, 2024

Overall Update

During this reporting period, a water assessment tool that calculates water use in common processes and potential water and cost savings from common optimizations was completed and posted to MnTAP's website. A water efficiency webinar was presented and a recording of the webinar was posted to MnTAP's website. Intern project presentation slides, presentation recordings, and executive summaries from summer 2023 were posted to MnTAP's website. Overall, MnTAP has recommended strategies that could reduce 63.6 million gallons of water use per year and 12.2 million gallons of water per year have been saved through implementation.

Activity 1

Overall, MnTAP has reached out to 20 communities, two organizations, and 20 businesses. The project has engaged one community, one organization, and 10 businesses so far. 15 cities and one organization have not responded to our outreach. Three cities were not interested in participating in the project and one city needs additional follow up. Previous follow up to one city was unintentionally omitted from prior reporting and has been added to the total.

Activity 2

No site assessments were completed during this reporting period. Primary recommendations from all 7 site assessments and 3 intern projects that have been completed included reusing water, decreasing flow rates, and optimizing processes. When fully implemented the recommended strategies have the potential to reduce 63.6 million gallons of water use annually. Additionally, the recommendations included the opportunity to save 1.3 million kWh of electricity, 15,630 therms of fuel, 61,000 lbs of hazardous waste, and 8,500 lbs of non-hazardous material. These changes to operations are estimated to save \$657,000 annually when fully implemented. Implementation that saved 12.2 million gallons of water (this increased total from 12.1 million gallons includes a correction from prior reporting) and \$34,900 annually has been identified. Follow up with the facilities will continue over the next 6 months and throughout the next 2 years. MnTAP is submitting an amendment request which would allow us to support 2 additional intern projects.

Activity 3

Presentation slides, recorded presentation videos, and the executive summaries for the intern projects at All Flex Solutions and Grede Foundry in summer 2023 were posted to MnTAP's website. A water assessment tool that helps users assess water use in common processes (i.e. irrigation, domestic water use) and calculate savings for common recommendations (i.e. installing low flow faucets) is complete and posted to our website. A webinar covering common water efficiency strategies was presented on December 5, 2023. The webinar included a presentation from Grede Foundry staff about the intern project and a demo of the water assessment tool. The webinar was attended by 79 people and a recording has been posted to MnTAP's website.

Dissemination

Intern project results for All Flex Solutions and Grede Foundry were posted to MnTAP's website. A water assessment tool was posted to MnTAP's website. A water efficiency webinar was presented on December 5, 2023 and a recording was posted to MnTAP's website.

Status Update Reporting

Status Update October 1, 2023

Date Submitted: September 29, 2023

Date Approved: October 24, 2023

Overall Update

MnTAP continued outreach to communities and organizations for assistance. During this reporting period, one water efficiency site assessment and two intern projects were completed. A water assessment tool that calculates water use in common processes and potential water and cost savings from common optimizations was created. Overall, MnTAP has recommended strategies that could reduce 63.6 million gallons of water use per year. Follow up with organizations that received a site assessment or hosted an intern project identified 12.1 million gallons of water per year saved through implementation.

Activity 1

Outreach to five additional communities and one organization occurred during this reporting period. This outreach received no response from five communities and the organization and one community declined assistance. Additional follow up to two cities was completed. Overall, MnTAP has reached out to 20 communities, two organizations, and 20 businesses. The project has engaged one community, one organization, and 10 businesses so far. 14 cities and one organization have not responded to our outreach. Three cities were not interested in participating in the project and two cities need additional follow up. Previous outreach to two cities was unintentionally omitted from prior reporting and has been added to the total.

Activity 2

One site assessment and two intern projects were completed during the current reporting period. Primary recommendations from all 7 site assessments and 3 intern projects completed during the project include reusing water, decreasing flow rates, and optimizing processes. When fully implemented the recommended strategies have the potential to reduce 63.6 million gallons of water use annually. Some recommended water strategies had the opportunity to reduce chemical or energy use. MnTAP identified additional energy and/or waste reduction opportunities at some of the site assessments. Recommendations also include opportunities to save 1.3 million kWh of electricity, 15,630 therms of fuel, 61,000 lbs of hazardous waste, and 8,500 lbs of non-hazardous material annually. These changes to operations are estimated to save \$657,000 annually when fully implemented. Follow up with facilities have identified implementation that saved 12.1 million gallons of water and \$34,900 annually. Follow up with the facilities will continue over the next 6 months and throughout the next 2 years.

Activity 3

At the MnTAP Intern Symposium on August 16, 2023, Nile Timmerman (intern at All Flex Solutions) and Huy Vo (intern at Grede Foundry) presented on their projects. Presentation slides, recorded presentation video, and the executive summary will be reported when completed and/or posted to our website by the next reporting cycle. A water assessment tool that helps users assess water use in common processes (i.e. irrigation, domestic water use) and calculate savings for common recommendations (i.e. installing low flow faucets) was created and is being updated with final edits. A link to the tool will be reported when it is posted to our website by the next reporting cycle.

Dissemination

Intern project results for All Flex Solutions and Grede Foundry were presented at MnTAP's Intern Symposium on August 16, 2023.

Status Update Reporting

Status Update April 1, 2023

Date Submitted: March 24, 2023

Date Approved: April 4, 2023

Overall Update

MnTAP continued outreach to communities and organizations for water efficiency workshops and site assessments. Cities have not been directly receptive to hosting training sessions and only one city has coordinated with MnTAP to connect with businesses in the area. This may suggest cities do not have as much interaction with businesses related to water use as was assumed initially. Businesses have been generally more receptive to outreach and have been interested in technical assistance to reduce water use as an opportunity to reduce costs. Three water efficiency workshops were presented – one to state agencies and two at MRWA conferences in January and March 2023. Seven water efficiency site assessments were completed including scoping two intern projects for summer 2023. Follow up with organizations that received a site assessment identified 8.7 million gallons of water per year saved through implementation.

Activity 1

MnTAP conducted outreach to 3 additional communities (13 total) this reporting period. Of the 13 communities MnTAP reached out to, 1 community is engaged in the project, 2 communities refused assistance, 6 communities did not respond, and 4 communities need additional follow up. MnTAP conducted outreach to 18 organizations and engaged 6 additional organizations in the project (9 total) this reporting period. A water efficiency workshop was presented to state agencies and two workshops were presented at MRWA trainings in January and March 2023. The workshops covered water efficiency strategies and recommendations MnTAP has made for common equipment and processes such as irrigation.

Activity 2

MnTAP completed 7 site assessments this reporting period. Two site assessments were used to scope focus areas and possible opportunities for intern projects. One intern will be at a flexible circuit board manufacturer (<http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/Job-Ads/2023/All-Flex.pdf>) and one will be at a foundry (<http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/Job-Ads/2023/Grede.pdf>). For the remaining 5 sites, recommendations to reduce water use are being developed and will be reported in the next reporting cycle. Follow up with previous sites identified implementation resulting in 8.7 million gallons of water and \$10,600 saved annually. Follow up will continue with all sites for 2 years after their initial visit.

Activity 3

Results from the intern project at Heartland Corn Products have been published including the presentation slides - <http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2022/Presentations/Heartland-Corn-Slides.pdf>, presentation recording - <http://www.mntap.umn.edu/interns/symposium-2/presentations/2022-presentations/#david>, and executive summary - <http://www.mntap.umn.edu/wp-content/uploads/simple-file-list/Intern/2020-2029/2022/Executive-Summary/Heartland-Corn-Executive-Summary.pdf>. A water assessment tool is being developed. The tool will guide users through assessing water use in common processes (i.e. irrigation, domestic water use, steam systems, etc) and calculating savings for common recommendations (i.e. installing high efficiency toilets). Once complete, the tool will be available on the MnTAP website for anyone to use.

Dissemination

Intern project results from Heartland Corn Products were posted to the MnTAP website. Job ads for 2 intern projects for summer 2023 were posted to the MnTAP website.

Status Update Reporting

Status Update October 1, 2022

Date Submitted: October 17, 2022

Date Approved: October 19, 2022

Overall Update

Outreach continued during this reporting period. Community outreach efforts have in some cases been met with polite postponement of decisions on participation. This was somewhat expected due to the potential impact water efficiency measures could have on city revenue from water sales. Communities facing water limits – mechanical or permit and those with high numbers of industrial users have been most engaged to date. MnTAP will continue community outreach activities to schedule water efficiency training events. The outreach approach was modified to include direct outreach to industries themselves. MnTAP has been contacted by facilities in areas targeted by this grant seeking industrial water assessments and intern projects to help them identify and implement industrial water efficiency measures. These facilities are often trying to manage water use and discharge to meet permit limits, reduce costs and achieve corporate sustainability goals. Several technical assistance activities have been launched during this reporting period with two site assessments and one intern project completed identifying a total of 15.5 million gallons of water conservation opportunity. Follow up with these facilities will launch in the next reporting period along with outreach for additional site visits and intern program engagement for Summer 2023.

Activity 1

Activity 1, Identify, Engage, Training - A project website has been launched as a placeholder to direct interested participants for additional information and collect information requests from sites that come to the website rather than through direct contact with MnTAP staff. <http://www.mntap.umn.edu/focusareas/water/projects/h2o4mncities/> MnTAP promoted the project during the water conservation session of the P2 week Mini-Webinar series on September 20, 2022. <https://www.facebook.com/mntapumn/videos/3171836283033337/>

Outreach has been conducted to one additional state agency, nine city governments and one additional business during this reporting period. Outreach to the State Agency and three communities had a neutral to positive response and plans are in place for additional follow up activity. Two communities refused assistance. Four outreach efforts are still incomplete and will continue into the next reporting period. MnTAP and MRWA are in discussions about presenting an industrial water efficiency training at an upcoming MRWA event planned for January 2023 in northwestern Minnesota.

MnTAP and MRWA had to hire staff to fill vacancies from retirements. Activity 1 was launched late and not completed by the deadline. Activity 1 will continue in parallel with Activity 2 over next reporting period..

Activity 2

Activity 2, Efficiency Assessments - One site assessment and one intern project at the same site were completed during the current reporting period. An additional assessment at a second site was also completed. Primary project recommendations included reusing water in a variety of processes. When fully implemented this strategy has the potential to reduce 15.5 million gallons of water use annually from ground water and decrease the same amount to the local POTW. These changes to operations are estimated to save \$17,600 annually when fully implemented. Follow up with the facilities will occur over the next 6 months and throughout the next 2 years.

Activity 3

Activity 3, Share Results - August 17, 2022 MnTAP Intern Symposium, Heartland Corn Products, Winthrop, MN – Presentation slides, recorded presentation video and the executive summary will be reported when completed by the next reporting cycle. MnTAP published a mini webinar on industrial water efficiency and briefly highlighted results from

2 2022 MnTAP Intern projects to demonstrate the value of industrial water efficiency efforts. Project activities were promoted during this presentation. The webinars are hosted on the MnTAP website <http://www.mntap.umn.edu/resources/publications/p2/> and the MnTAP Facebook page <https://www.facebook.com/watch/?v=3171836283033337>

Dissemination

Dissemination plan is on track as outlined in Activity 3. The 2022 MnTAP Intern Project Executive Summary will be published in the 2022 MnTAP Solutions in Q4 2022 and posted on the MnTAP website. The project website will continue to be updated with relevant information.

Status Update Reporting

Status Update April 1, 2022

Date Submitted: April 22, 2022

Date Approved: April 29, 2022

Overall Update

Since project initiation, significant progress has been made on establishing a cross-organizational team as well as Activities 1 and 2 deliverables. In February 2022, a fully executed subaward was finalized with our project partner, Minnesota Rural Water Association (MRWA). Due to staff retirement, MRWA needed to hire a new team member for this project. This new MRWA staff member started on March 1, 2022 and the first full team meeting was held in mid-March.

Activity 1

In support of Activity 1 deliverables, data has been gathered from the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Natural Resources (DNR). Meetings have been held with the DNR and MRWA to discuss what is known about specific regions and cities that are currently facing water scarcity or poor water quality challenges. The information gathered is currently being used to develop a map showing environmental justice areas, industrial wells, industrial wastewater flow, residential vs. non-residential water use by municipality, and aquifer vulnerability. Ultimately this map will be used in Quarter 2, 2022 in conjunction with the named list of cities provided by MRWA and the DNR to select high water users and identify locations to provide educational workshops. Current map is included as an attachment. No sites or regions have been specifically selected for grant activities at this time. A summary of Activity 1 - Activities and Milestones for this reporting period relative to grant targets has been updated in an attachment.

Activity 2

As part of work on Activity 2, one MnTAP intern project focused on water conservation at a MN ethanol plant, Heartland Corn Products in Winthrop, MN, is planned for summer 2022. MnTAP staff have completed a scoping visit at the company to identify opportunities for water conservation at the facility and determine the focus of the intern project. The position description for the project has been posted on the MnTAP website for intern recruiting and has been submitted with this update. Results from this project will be reported in the October 1, 2022 update. A summary of Activity 2 - Activities and Milestones for this reporting period relative to grant targets has been updated in an attachment.

Activity 3

Not started

Dissemination

None