

Final Abstract

Final Report Approved on December 28, 2023

M.L. 2020 Project Abstract

For the Period Ending June 30, 2024

Project Title: Innovative Solution for Protecting Minnesota from PFAS Contamination

Project Manager: Bill Keegan

Affiliation: Dem-Con

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Funding Source:

Fiscal Year:

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

Appropriation Amount: \$250,000

Amount Spent: -

Amount Remaining: \$250,000

Sound bite of Project Outcomes and Results

Given that it is unclear when the regulatory environment will be stabilized, Dem-Con is withdrawing our current project from LCCMR and returning the funds for reallocation to other projects benefitting Minnesota.

Overall Project Outcome and Results

With the uncertain regulatory environment around PFAS in Minnesota and Federally, this project has not started and is on indefinite hold until the regulatory requirements are determined. It is difficult, if not impossible, to build a treatment system while treatment standards continue to change.

Given that it is unclear when the regulatory environment will be stabilized, Dem-Con is withdrawing our current project from LCCMR and returning the funds for reallocation to other projects benefitting Minnesota. We are hopeful that we will be able to submit a new application at a future date once the regulatory environment is determined. Thank you for your consideration and support of our project.

Project Results Use and Dissemination

Given that it is unclear when the regulatory environment will be stabilized, Dem-Con is withdrawing our current project from LCCMR and returning the funds for reallocation to other projects benefiting Minnesota. We are hopeful that we will be able to submit a new application at a future date once the regulatory environment is determined. Thank you for your consideration and support of our project.



Environment and Natural Resources Trust Fund

M.L. 2020 Approved Final Report

General Information

Date: August 28, 2024

ID Number: 2020-034

Staff Lead: Becca Nash

Project Title: Innovative Solution for Protecting Minnesota from PFAS Contamination

Project Budget: \$250,000

Project Manager Information

Name: Bill Keegan

Organization: Dem-Con

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Email: billkeegan@dem-con.com

Web Address: <https://dem-con.com/>

Project Reporting

Final Report Approved: December 28, 2023

Reporting Status: Project Completed

Date of Last Action: December 28, 2023

Project Completion: December 31, 2023

Legal Information

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

Appropriation Language: \$250,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Dem-Con Companies to demonstrate a new technology for protecting the state's drinking water and natural resources by eliminating per- and polyfluoroalkyl substances (PFAS) from point source discharges. This appropriation is subject to Minnesota Statutes, section 116P.10, related to royalties, copyrights, patents, and sale of products and assets.

Appropriation End Date: June 30, 2024

Narrative

Project Summary: Protection of State’s drinking water resources and natural resources by eliminating a new Contaminant of Emerging Concern (CEC) known as Perfluoroalkyl and Polyfluoroalkyl substances (PFAS) from point source discharges.

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

Per – and polyfluoroalkyl substances (PFAS) are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products such as food packaging materials, nonstick cookware, stain/water resistant carpet and clothing, cleaning products, paints, varnishes, sealants, firefighting foam, cosmetics, etc. Current water treatment technologies are ineffective at removing PFAS resulting in impacts to the State’s drinking water, surface water, fish and wildlife, and human populations. Due to the widespread use, documented contamination, and persistence in the environment, PFAS has become a Contaminant of Emerging Concern (CEC) both federally and locally in Minnesota. Research indicates that these contaminants can be harmful to human health and the Minnesota Department of Health (MDH) established health-based advisory values as low as 15 parts per trillion (ppt). An innovative treatment technology is being proposed by Dem-Con Companies (Dem-Con) to remove PFAS from contaminated water before it enters the environment. Once demonstrated, this technology can be implemented on a broader basis for residential, commercial, and industrial discharges throughout the State of Minnesota protecting our natural resources.

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.

Dem-Con is a progressive leader in the waste recycling, processing, and public education space. We will continue to look for opportunities to improve the environment by moving beyond the status quo and this project is another example of this initiative. Our interest in this project is to not only to address an emerging environmental and health concern for Minnesota, but we believe that addressing this issue “up-stream” at the source, regardless of the source, is a more proactive way of protecting the environment and our natural resources. To demonstrate our commitment to the project and the environment, Dem-Con is proposing to fund the initial project costs in excess of the Legislative Citizen Commission on Minnesota Resources (LCCMR) grant and 100% of the annual operations, reporting, and maintenance costs (\$100,000/yr) throughout the expected 15-year life of the treatment system. The proposed system will clean up millions of gallons of contaminated water at the Dem-Con site alone and infinitely more when applied to sites throughout the state of Minnesota. The financial commitment from Dem-Con will maximize the return on investment for the LCCMR and the State of Minnesota.

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?

Design, engineer, and build a water treatment system at the Dem-Con Environmental Campus. The documented PFAS concentrations present in the landfill leachate are higher than most domestic wastewater providing a unique opportunity to evaluate this technology which could then be applied not only to other industrial point source discharges but also more broadly to domestic wastewater. Additionally, we will conduct a structured research program to characterize the feed material (leachate), conduct treatability studies, perform repeatability tests, durability evaluation, and prepare publicly available data summaries, conclusions and recommendations for application of this technology to different sources of these contaminants.

Project Location

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

Region(s): Metro

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

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Design, Engineer, and Build Treatment System

Activity Budget: \$250,000

Activity Description:

Design, engineer, and build a wastewater treatment system at the Dem-Con Environmental Campus in Shakopee, Minnesota to treat leachate from the landfill located at the site. The treatment system is unique from existing treatment technologies in that it can treat <2000 Daltons particle size and can handle up to 10% of suspended solids and co-contaminants while still removing PFAS contaminates down to less than 10 ppt. The documented PFAS concentrations present in the landfill leachate are higher than most domestic wastewater providing a unique opportunity to evaluate this technology on a “industrial strength” discharge which could then be applied not only to other industrial point source discharges but also more broadly to the lower concentrations found in domestic wastewater.

Activity Milestones:

Description	Approximate Completion Date
Design treatment system for our facility by evaluating site specific criteria and analytical data.	December 31, 2021
Engineer and implement process solutions based on the design developed.	January 31, 2022
Construct the system including supporting infrastructure such as the building and discharge infrastructure.	June 30, 2022

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.

Dem-Con would summarize treatment system design, findings, and recommendations in the final report to be shared with the public. Dem-Con will provide acknowledgement of ENRTF, and include the ENRTF logo on reports and data submitted to the public

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?

As a progressive leader in the industry, Dem-Con is committed to the success of this project and helping to pioneer a new technology that will improve the quality of human health, the environment, and our natural resources. To demonstrate this commitment, we are proposing to fund the initial project costs in excess of the LCCMR grant matching each grant dollar with an in-kind Dem-Con contribution. Additionally, Dem-Con will be responsible for funding 100% of the ongoing operational, maintenance, and reporting costs throughout the expected 15-year life of the equipment.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount	\$ Amount Spent	\$ Amount Remaining
Personnel										
							Sub Total	-	-	-
Contracts and Services										
							Sub Total	-	-	-
Equipment, Tools, and Supplies										
							Sub Total	-	-	-
Capital Expenditures										
		Design, Engineer, and Build Treatment System	Design, engineer, and build a wastewater treatment system at the Dem-Con Environmental Campus to treat leachate from the landfill located at the site.	X				\$250,000	-	\$250,000
							Sub Total	\$250,000	-	\$250,000
Acquisitions and Stewardship										
							Sub Total	-	-	-
Travel In Minnesota										
							Sub Total	-	-	-
Travel Outside Minnesota										
							Sub Total	-	-	-
Printing and Publication										

							Sub Total	-	-	-
Other Expenses										
							Sub Total	-	-	-
							Grand Total	\$250,000	-	\$250,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
<p>Capital Expenditures</p>		<p>Design, Engineer, and Build Treatment System</p>	<p>ENRTF funds used for subsidizing purchase of equipment for the project. The ENRTF funds are only being used for capital expenditure. The reporting, design, engineering is being covered by the applicant.</p> <p>The applicant, Dem-Con, is paying 84% of the overall project expenses and 100% of operating expenses.</p> <p>Additional Explanation : The wastewater treatment system will be depreciated over seven years and will be maintained throughout that projected useful life. Dem-Con commits that if the wastewater treatment system is sold before that time the Environment and Natural Resources Trust fund will be paid the cash value received from the sale or a residual value approved by the LCCMR director.</p>

Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount	\$ Amount Spent	\$ Amount Remaining
State						
			State Sub Total	-	-	-
Non-State						
In-Kind	As a progressive leader in the industry, Dem-Con is committed to the success of this project and helping to pioneer a new technology that will improve the quality of human health, the environment, and our natural resources. To demonstrate this commitment, we are proposing to fund 63% of the initial project costs not only matching each grant dollar, but exceeding it with an in-kind Dem-Con contribution. Additional, Dem-Con will be responsible for funding 100% of the ongoing operational, maintenance, and reporting costs throughout the expected 20-year life of the equipment.	Funding of 63% of the overall project costs including the design, engineering, and construction of a treatment system as well as conducting the analysis of program, reporting, conclusions, recommendations & broader Implementation.	Secured	\$1,250,000	-	\$1,250,000
			Non State Sub Total	\$1,250,000	-	\$1,250,000
			Funds Total	\$1,250,000	-	\$1,250,000

Attachments

Required Attachments

Visual Component

File: [dc2aef60-cd4.pdf](#)

Alternate Text for Visual Component

Minnesota's Industrial Wastewater is treated using innovative technology to remove PFAS and other water contaminants protecting our environment. Clean water is then released into the environment...

Financial Capacity

File: [5beabfe3-45a.pdf](#)

Supplemental Attachments

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

Title	File
MPCA Letter of Support	1c8dc791-5f9.pdf
Background Check Certification - Dem-Con	a8174623-8ac.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

Changed the ENRTF funding request to \$250,000 to match the LCCMR staff funding recommendations

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?

Yes

Do you agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

N/A

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?

No

Does the organization have a fiscal agent for this project?

No

Work Plan Amendments

No Amendments Entered

Status Update Reporting

Final Report Approved: December 28, 2023

Project Status: Project Completed

Final Status Update February 14, 2024

Date Submitted: December 8, 2023

Date Approved: December 11, 2023

Overall Update

See below

Activity 1

See below

Dissemination

See below

Status Update Reporting

Status Update October 1, 2023

Date Submitted: December 8, 2023

Date Approved: December 11, 2023

Overall Update

With the uncertain regulatory environment around PFAS in Minnesota and Federally, this project has not started and is on indefinite hold until the regulatory requirements are determined. It is difficult, if not impossible, to build a treatment system if you don't know what standard you are designing to for treatment as the treatment standards continue to change.

Given that it is unclear when the regulatory environment will be stabilized, Dem-Con is withdrawing our current project from LCCMR and returning the funds for reallocation to other projects benefitting Minnesota. We are hopeful that we will be able to submit a new application at a future date once the regulatory environment is determined. Thank you for your consideration and support of our project.

Activity 1

NA. See above.

Dissemination

NA. See above.

Status Update Reporting

Status Update April 1, 2023

Date Submitted: April 11, 2023

Date Approved: May 10, 2023

Overall Update

Given the uncertain regulatory environment around PFAS, Dem-Con has temporarily put this project on hold. Specifically, the treatment standards are currently being developed by the EPA and MPCA. Dem-Con is actively involved in this process and once the regulatory limits are set, we would then proceed to develop a treatment system to those standards.

Activity 1

Given the uncertain regulatory environment around PFAS, Dem-Con has temporarily put this project on hold. Specifically, the treatment standards are currently being developed by the EPA and MPCA. Dem-Con is actively involved in this process and once the regulatory limits are set, we would then proceed to develop a treatment system to those standards.

Dissemination

Given the uncertain regulatory environment around PFAS, Dem-Con has temporarily put this project on hold. Specifically, the treatment standards are currently being developed by the EPA and MPCA. Dem-Con is actively involved in this process and once the regulatory limits are set, we would then proceed to develop a treatment system to those standards.

Status Update Reporting

Status Update October 1, 2022

Date Submitted: October 10, 2022

Date Approved: October 27, 2022

Overall Update

Given the continually changing and uncertain PFAS regulatory environment both federally and locally our project is on indefinite hold until we have some clarity of the regulatory standards to which we are intending to design the system to achieve.

Activity 1

The system design (Milestone 1) is on hold as we do not know which standards we are designing to until the MPCA determines regulatory limits. Engineering and construction of the system (Milestone 2 & 3) follow the design so they are indefinitely on hold as well.

Dissemination

The project is on indefinite hold so no dissemination is planned at this time. However, if the project were to proceed once the regulatory environment is more certain, Dem-Con would summarize treatment system design, findings, and recommendations in the final report to be shared with the public as described in the Dissemination Description of this report.

Status Update Reporting

Status Update April 1, 2022

Date Submitted: April 27, 2022

Date Approved: April 28, 2022

Overall Update

Due to initial delays from COVID and a continually changing regulatory environment around PFAS the project has been delayed. We continue to pursue the project and are nearing completion of the competitive bidding for the design and implementation. Once these bids are completed a vendor can be selected and we can begin to move forward with the project. On the regulatory front, the recent release of the MPCA PFAS Monitoring Plan as well as newly proposed limits for PFAS have needed to be considered as part of our proposed project. Specifically, as new lower PFAS limits are implemented the treatment system needs to be revised to treat to the new limits. Additionally, with the potential designation of PFAS as a hazardous substance or hazardous waste would impact our ability to dispose of the PFAS that is removed. Finally, the ability to discharge the clean water, after PFAS is removed, is becoming a permitting hurdle with the MPCA which may not be able to be resolved. We would welcome any support from LCCMR in this regard.

Activity 1

The project has been delayed about six months for the reasons stated above and Activity 1 is anticipated to be completed by June 30, 2022.

Dissemination

As we are still in the bidding stage there is nothing to disseminate at this point.