



Environment and Natural Resources Trust Fund

M.L. 2020 Approved Work Plan

General Information

ID Number: 2020-034

Staff Lead: Michael Varien

Date this document submitted to LCCMR: August 13, 2021

Project Title: Innovative Solution for Protecting Minnesota from PFAS Contamination

Project Budget: \$250,000

Project Manager Information

Name: Bill Keegan

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Project Reporting

Date Work Plan Approved by LCCMR: August 13, 2021

Reporting Schedule: April 1 / October 1 of each year.

Project Completion: December 31, 2023

Final Report Due Date: February 14, 2024

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? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and 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	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 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
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
							Sub Total	\$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

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
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
			Non State Sub Total	\$1,250,000
			Funds Total	\$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...

Optional Attachments

Support Letter or 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, or sale of products and assets?

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

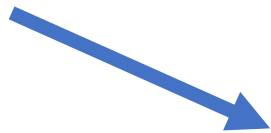
Does the organization have a fiscal agent for this project?

No

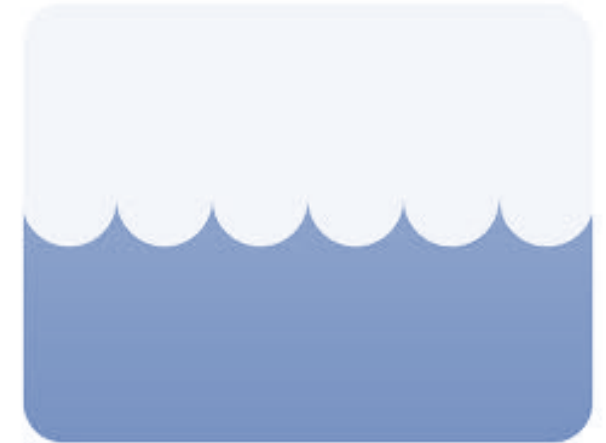
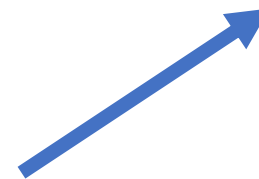
Protecting Minnesota's Water by Removing PFAS



Industrial Wastewater



Innovative treatment technology to
remove PFAS and other water
contaminants



Clean Water for Environment

