Environment and Natural Resources Trust Fund

2021 Request for Proposal

General Information

Proposal ID: 2021-127

Proposal Title: Water Storage Project Implementation Framework

Project Manager Information

Name: Charles Fritz

Organization: International Water Institute

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Project Basic Information

Project Summary: Establish a transferable implementation framework to assess water storage projects that includes metrics to quantitatively assess benefits (public and private) to achieve flood damage reduction, water quality, and habitat goals.

Funds Requested: $290,000

Proposed Project Completion: 2022-12-31

LCCMR Funding Category: Water Resources (B)

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?

Statewide

When will the work impact occur?

During the Project and In the Future

Narrative

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

Current efforts to implement water storage projects in Minnesota focus almost solely on peak flow reduction (e.g. Red River Basin impoundments) or are the secondary or tertiary effects of implementing other conservation practices (e.g. wetland restoration). Little information or guidance is currently available to help local governments and watershed planners to identify optimal placement and configuration of water storage practices for multiple benefits. Further, the scale of water storage needed to achieve goals has not been clearly defined, structural and non-structural water storage opportunities have not been identified, and the benefits (public vs. private) of these water storage sites have not been quantified. Without this information, it is unlikely that watershed implementation groups will be able to fund and construct enough water storage projects to achieve watershed storage goals or to evaluate their multiple purpose potential.

Comprehensive water storage data and an approach to use it for strategic implementation are needed to bridge the gap between current planning processes (e.g., One Watershed One Plan) and project implementation, and to empower local watershed planning groups to better compare, contrast, and prioritize water storage projects to ensure public investments result in desired outcomes.

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.

This project will develop comprehensive geospatial water storage data and a programmatic framework to prioritize and implement water storage projects in two Minnesota watersheds (HUC8). The framework will ensure money from MN's Clean Water Legacy Amendment is used to realize public (rather than private) benefits. We will create a robust, technically defensible set of water storage data with a comprehensive set of quantitative attributes to identify, compare, and prioritize potential storage locations based on their hydrologic, water quality, and ecological benefits, as well as cost and index of "permitability". The programmatic framework will include education materials and step-by-step instructions for local watershed planners so they can readily use the data, engage landowners, and measure progress toward multipurpose goals. Local planning organizations and citizens in two Minnesota watersheds will be involved to help develop the programmatic framework.

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?

Project outcomes include comprehensive water storage data (structural, non-structural), a method for local governments and planners to compare and contrast different water storage locations and configurations, and a programmatic implementation framework to ensure progress to water storage goals. An implementation template will be created in a collaborative process with local teams to develop and optimize water storage project implementation scenarios to achieve desired multipurpose outcomes and ensure measurable progress towards Minnesota's water quality, flood damage reduction and habitat improvement goals.

Activities and Milestones

Activity 1: Select Demonstration Watersheds and Assemble Implementation Team

Activity Budget: $25,000

Activity Description:
Local watershed planning groups will be engaged to select two pilot watersheds (HUC8). Priority will be given to watersheds with existing Prioritize Target and Measure Application (PTMApp) and/or Hydrologic Simulation Program Fortran (HSPF) datasets and to watersheds which have initiated or completed a comprehensive watershed management plan with water storage goals. Currently available data will be assembled to identify water storage opportunities and to quantify their benefits (e.g. hydrologically conditioned DEM, wildlife habitat models).

Activity Milestones:

Description	Completion Date
Assemble data	2020-09-30
Select HUC 8 Watersheds and Assemble Local Implementation Team	2021-08-31

Activity 2: Identify Water Storage Project Opportunities and Develop Metrics to Quantify Public and Private Benefits

Activity Budget: $175,000

Activity Description:
Existing geospatial tools and models (e.g. PTMApp) will be used to identify the characteristics of potential structural and non-structural water storage sites within each watershed. This includes fine-tuning applicable terrain analysis methods (e.g. LIDAR drained wetlands) and pertinent criteria (cover crop ranking, soil health ranking) to verify and screen all water storage locations. The attributes for each of these water storage locations will then be quantified to estimate individual and cumulative water storage. Hydrological metrics (e.g. peak flow reduction, annual flow reduction, and acres of non-contributing area for various precipitation events) will be derived to assess hydrologic and flood damage reduction benefits. Water quality metrics (e.g. sediment, nitrogen, and phosphorous load reductions) will be derived from existing models to assess water quality benefits. Habitat benefits will be derived based on the proximity of water storage sites to MN wildlife action network priority areas. Life-cycle costs and a project permitting index will also be derived for each water storage project. A summary matrix of these quantitative attributes will be developed to compare and prioritize water storage sites for their various private and public benefits.

Activity Milestones:

Description	Completion Date
Water Storage Databse	2021-07-31
Attribute Water Storage Database	2021-12-31
Implementation scenario / Develop Qualitative Metrics	2021-12-31

Activity 3: Develop Programmatic Implementation Framework

Activity Budget: $90,000

Activity Description:
Products from Activities 1 and 2 will be used to engage the local implementation planning team and develop a

programmatic implementation framework that empowers local users to equitably apportion the life cycle costs of water storage projects and appropriately estimates their accrued public vs private benefits. The framework will guide users through a robust and technically defensible process to assess water storage projects and estimate their ability to achieve local and state water plan goals. Two reports will be prepared. One report will guide users through the programmatic framework and to develop optimal water storage scenarios to achieve watershed goals. A second report provided to the LCCMR and other state-funding agencies will describe the programmatic framework, the data and metrics developed to assess multiple benefits of storage projects, and a clear road map to expand this programmatic framework to other MN watersheds.

Activity Milestones:

Description	Completion Date
Report (LCCMR and Local)	2022-03-31
Implementation Framework Application with Local Planning Group	2022-03-31

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Matt Drewitz/Henry VanOffelen	MN Board of Water and Soil Resources	Project team member. Project advisory.	No

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?

The water storage project information and implementation framework will be used by the local watershed planning teams in two HUC8 watersheds to develop strategies to achieve flood damage reduction and ecological goals. All project methods will be transferable to other MN watersheds. Project data will be provided to local governments, BWSR/MNGEO. These data will add value to a number of MN's established planning models including the Prioritize, Target and Measure Application (PTMApp).

Project Manager and Organization Qualifications

Project Manager Name: Charles Fritz

Job Title: Executive Director

Provide description of the project manager's qualifications to manage the proposed project.

Charles Fritz has been Executive Director of the International Water Institute since 2000. He has managed numerous federal, state and local, grant funded projects totaling over $30 million including the Red River Basin LiDAR Mapping Initiative, Prioritize, Target and Measure Application, Red River Basin Decision Information Network, Watershed Pollutant Load Monitoring, River of Dreams, and River Watch. Mr. Fritz holds a Master's of Science Degree in Natural Resources Management and a Bachelor's Degree in Science and Mathematics from North Dakota State University.

Organization: International Water Institute

Organization Description:

The International Water Institute (Institute) is a 501c3 non-profit organization working to foster watershed stewardship through leadership in decision support, environmental monitoring, and educational programming. The Institute delivers innovative watershed education programs and undertakes applied research to build science capacity among local leaders, leading to informed water and natural resource decisions and robust long term solutions to society's complex water and natural resource challenges.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Executive Director		Project Management			26%	0.4		$31,000
GIS Specialist		Data creation/Terrain Analysis			26%	1.4		$130,000
Research Director		Methods and data creation			26%	1.2		$80,000
							Sub Total	**$241,000**
Contracts and Services								
Technical Team Member	Professional or Technical Service Contract	Work with sponsoring entity to develop flood damage reduction, water quality, and habitat metrics. Meeting facilitation. Develop implementation plan input and feedback.				200,000		$30,000
							Sub Total	**$30,000**
Equipment, Tools, and Supplies								
	Tools and Supplies	Meeting consumables (reports, maps, etc.)	Meeting facilitation and outreach					$2,500
							Sub Total	**$2,500**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								

	Miles/ Meals/ Lodging	Watershed coordiantion	Assumes 4 meetings with local planners and landowners per watershed					$4,000
							Sub Total	**$4,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
	Publication	Final Report	Project methods, data examples, and programmatic template					$2,500
							Sub Total	**$2,500**
Other Expenses								
		Landowners Stipend	Landowner (assumes 5 in each subwatershed) stipend to assist with programmatic implementation template development					$10,000
							Sub Total	**$10,000**
							Grand Total	**$290,000**

Classified Staff or Generally Ineligible Expenses

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

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	**-**
Non-State				
			Non State Sub Total	**-**
			Funds Total	**-**

Attachments

Required Attachments

Visual Component

File: 5a7cf7c8-512.pdf

Alternate Text for Visual Component

An example storage project geodata with qualitative metrics (benefits/attributes).

Financial Capacity

File: 08262277-506.pdf

Board Resolution or Letter

Title	File
Board Letter indicating support for Submission	09ed4881-7a3.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have patent, royalties, or revenue potential?

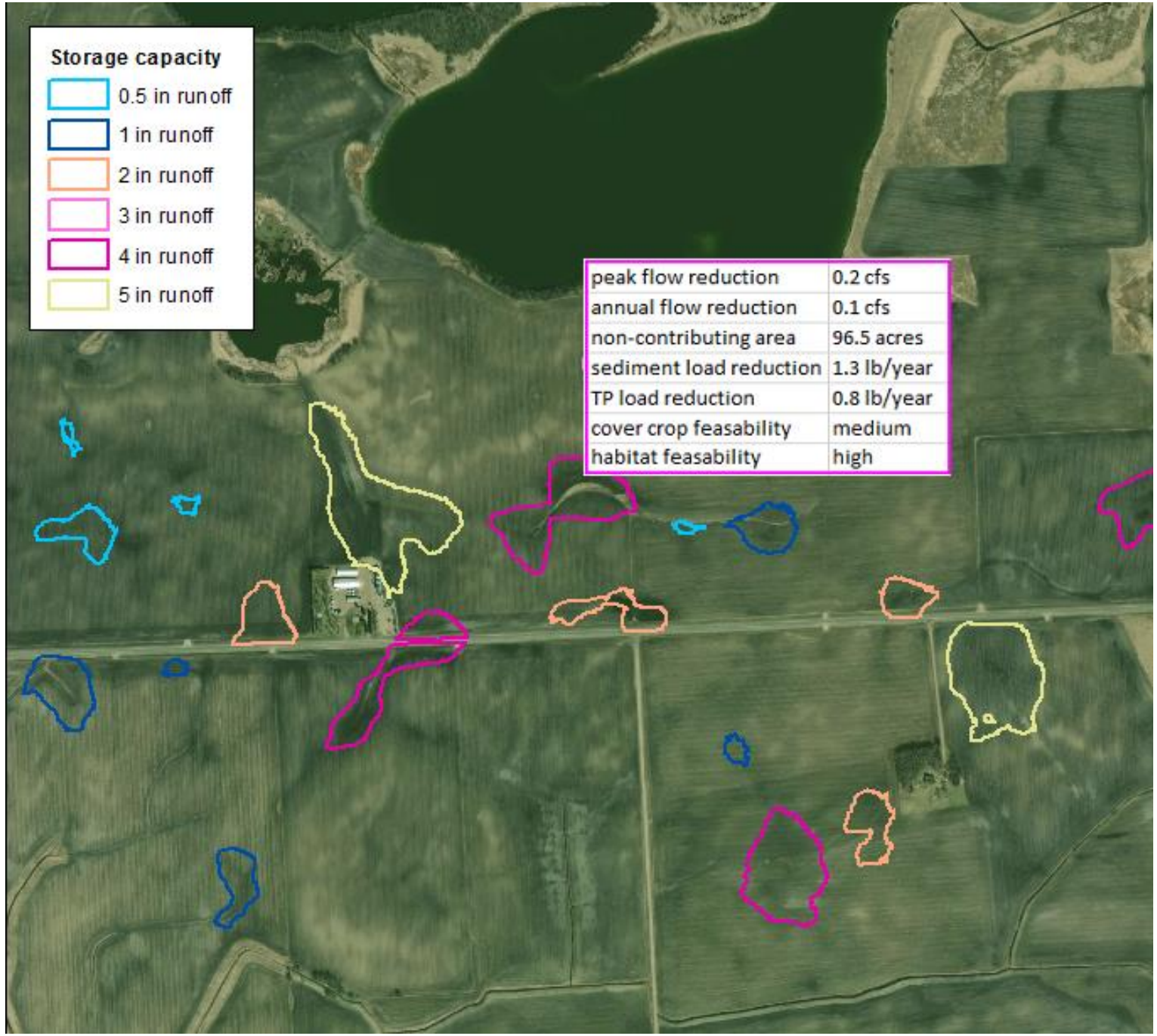
No

Does your project include research?

Yes

Does the organization have a fiscal agent for this project?

No


Storage capacity
0.5 in runoff
1 in runoff
2 in runoff
3 in runoff
4 in runoff
5 in runoff
peak flow reduction 0.2 cfs
annual flow reduction 0.1 cfs
non-contributing area 96.5 acres
sediment load reduction 1.3 lb/year
TP load reduction 0.8 lb/year
cover crop feasability medium
habitat feasability high