Environment and Natural Resources Trust Fund
2019 Request for Proposals (RFP)

Project Title: **ENRTF ID: 068-B**

Evaluating Public and Private Benefits of Ag-Water Certification

Category: B. Water Resources

Sub-Category:

Total Project Budget: $ 349,486

Proposed Project Time Period for the Funding Requested: June 30, 2021 (2 yrs)

Summary:

We will provide evidence on the environmental and economic impacts of Minnesota's Agricultural Water Quality Certification Program from the farm, watershed, and broader supply chain perspectives.

Name: Derric Pennington

Sponsoring Organization: World Wildlife Fund, Inc.

Title: Lead Scientist

Department:

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Location

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

N/A

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____%
____ If under $200,000, waive presentation?			

PROJECT TITLE: Evaluating public and private benefits of Ag-Water Certification

I. PROJECT STATEMENT

We propose an evidence-based approach for evaluating Minnesota's land-use policies and programs. Specifically, we will provide evidence on the environmental and economic impacts of Minnesota's Agricultural Water Quality Certification Program (MAWQCP) from the farm, watershed, and broader supply chain perspectives.

Improving Minnesota's water quality and other ecosystem services in agriculturally dominated watersheds is an important policy objective. MAWQCP is a voluntary opportunity for farmers and agricultural landowners to implement conservation practices that protect Minnesota's water, and has scaled to the entire state with increased interest nationally. Our proposed project would seek to evaluate and communicate the role of MAWQCP to help achieve water and other conservation goals. We will evaluate the drivers of landowner enrollment into the program and the impact of MAWQCP certification on water quality, water quantity, carbon storage and sequestration, and habitat in Minnesota since implementation.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Better understand "why" MN landowners enroll in MAWQCP?

We will statistically assess the "why" behind enrollment by applying a rigorous quasi-experimental design approach, commonly used in program evaluations, to assess what landowner perceptions, biophysical, economic, and other factors are associated with MAWQCP enrollment.

ENRTF BUDGET: $150,000

Outcome	Completion Date
1. Identify farm-level biophysical and socioeconomic characteristics associated with enrollment in MAWQCP	End of 2020

Activity 2: Evaluate the causal impacts of MAWQCP certification on farm-level profits, water quality, water quantity, carbon storage and sequestration, and habitat in Minnesota since the Program's implementation.

Using data on enrolled parcels and their pre-and post-enrollment practices, we will leverage understanding the drivers of behaviors approach used in *Activity 1* along with spatially-explicit biophysical and economic models to assess the expected causal impact from the farm-level enrollment in MAWQCP. We will use a biophysical-economic model updated to reflect current endorsed practices to provide rigorous quantitative estimates on how land management practices jointly affect farm-level agricultural profits and conservation outcomes.

ENRTF BUDGET: $100,000

Outcome	Completion Date
1. Estimate the impact of MAWQCP-recommended management practices in terms of biophysical and economic values for agriculture production, natural resource conservation, including public savings and costs of water and air pollution prevention	End of 2021
2. Quantify current farm-level conservation and economic impacts from adopting management practice required under MAWQCP	End of 2021

Activity 3: Evaluate the expected impacts, opportunities and challenges of broad-scale MAWQCP enrollment.

By leveraging the models in *Activity 2*, we will analyze and provide ex ante quantitative estimates on the expected farm-level and watershed-level impacts of broad-scale MAWQCP enrollment in terms of change in agricultural profits and conservation outcomes, including change in water quality (e.g., nitration, phosphorus and sediment loadings), carbon storage, recreation, air quality, and habitat provision when compared to baseline or business as

usual conditions. We will actively engage MN-based supply chain actors in the private sector to inform these analyses and to share and promote the results.

ENRTF BUDGET: $100,000

Outcome	Completion Date
1. Evaluate the expected farm and watershed-level impact on each objective listed in *Activity 2:Outcome 1* under different alternative scenarios of enrollment levels	End of 2021
2. Understand and demonstrate MAWQCP's role in advancement of private sector sustainability goals and initiatives	End of 2021

III. PROJECT PARTNERS:

A. Partners receiving ENRTF funding

Name	Title	Affiliation	Role
Derric Pennington	Lead Scientist	World Wildlife Fund	Lead PI/Project Manager
Brent Dalzell	Researcher	University of Minnesota	Ag/Water Modeler
Daniela Miteva	Assistant Professor	Ohio State University	Impact Evaluation
Peter Hawthorne	Researcher	University of Minnesota	Impact Forecasting
Eric Londsdorf	Researcher	University of Minnesota	Ecosystem services

B. Partners NOT receiving ENRTF funding

Name	Title	Affiliation	Role
Brad Redlin	MAWQCP Program Manager	Minnesota Department of Agriculture	Advisory
Danielle Isaacson	MAWQCP Program Development Specialist	Minnesota Department of Agriculture	Advisory
Peter Gillitzer	MAWQCP Assessment & Research Coordinator	Minnesota Department of Agriculture	Advisory
Stephen Polasky	Professor Dept of Ecology and Applied Economics	University of Minnesota	Advisory
David Mulla	Professor Dept of Soils, Water and Climate	University of Minnesota	Advisory

IV. LONG-TERM- IMPLEMENTATION AND FUNDING:

Long-term implementation of project results will be incorporated within MAWQCP's ongoing operations and budget and will provide:

- Means to integrate and align the MAWQCP in support and advancement of private sector sustainability goals and initiatives;
- Means to promote participation via mechanisms and among communities and growers not engaged via current program delivery operations; and
- Means to improve program delivery and services for water quality outcomes

No new funding is needed.

V. TIME LINE REQUIREMENTS:

The project timeline is estimated to take 2 years to complete.

2019 Proposal Budget Spreadsheet

Project Title: How does MN's Ag-Water Certification impact conservation and economic returns?

IV. TOTAL ENRTF REQUEST BUDGET 2 years

BUDGET ITEM	AMOUNT
Personnel:	
Derric Pennington (25% FTE: 70% salary; 30% fringe) - Project Manager and Lead Principal Investigator	$76,058.78
Research assistant (50% FTE: 79% salary; 21% fringe) - ecosystem services modeler	$47,949.00
Supply Chain/Corporate Engagement Analyst (12.5% FTE: 70% salary; 30% fringe) - Private sector engagment	$37,467.38
Brent Dalzell (33% FTE: 67% salary; 33% fringe)	$53,000.00
Peter Hawthorne (10% FTE: 67% salary; 33% fringe) - impact forcasting lead and modeler	$23,107.00
Eric Londsdorf (5% FTE: 67% salary; 33% fringe) - ecosystem services lead and modeler	$12,555.00
Daniela Miteva (15% FTE: 67% salary; 33% fringe) - ex post impact evaluation lead and statistical modeler	$50,400.00
Research assistant (50% FTE: 79% salary; 21% fringe) - social survey implementation and impact evaluation	$47,949.00
Professional/Technical/Service Contracts:	$0.00
Equipment/Tools/Supplies:	$0.00
Acquisition (Fee Title or Permanent Easements):	$0.00
Travel: For car travel to in-state meetings with producers and other relevant stakeholders.	$1,000.00
Additional Budget Items:	
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$349,486.17

V. OTHER FUNDS *(This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)*

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State $ To Be Applied To Project During Project Period:	$ -	*N/A*
Other State $ To Be Applied To Project During Project Period:	$ -	*N/A*
In-kind Services To Be Applied To Project During Project Period:	$ -	*N/A*
Past and Current ENRTF Appropriation:	$ -	*N/A*
Other Funding History:	$ -	*N/A*

Derric N. Pennington
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Project Role: Lead PI and Project Manager

Education

- 2008 Doctor of Philosophy, Conservation Biology Graduate Program, Minor, Sustainable Agriculture Systems, University of Minnesota, St. Paul, Minnesota.

As a Lead Scientist at World Wildlife Fund (WWF) based in Minnesota, Derric brings a unique hybrid perspective of an academic-practitioner scientist that guides his research and outreach efforts. Specifically, he brings a deep understanding and appreciation of the practical, ecological, economic and social aspects of sustainability challenges, and have a proven track record of successful project management of leading multidisciplinary research projects addressing "real world" challenges. In addition to being a lead scientist for WWF, Derric is also a Fellow at the Institute on the Environment (IonE) and Adjunct Faculty in the Dept of Fisheries, Wildlife and Conservation Biology at the University of Minnesota. He is also an affiliate researcher with the Natural Capital Project. He is currently housed at IonE where he serves as program director of IonE's partnership with WWF. In this broad capacity, Derric conducts and leads research with collaborators in ecology, economics and policy that includes academics and practitioners to help improve our understanding of when, where, and how conservation can benefit both biodiversity and people in the context of real-world policy decisions. Moreover, his efforts are both directly informed by and seek to inform Minnesota and more broadly WWF and its global and regional network of collaborators in the private, finance, and public sectors to better communicate and improve the uptake of scientific evidence to help solve pressing sustainability challenges.

For 50 years, WWF has been protecting the future of nature. The world's leading conservation organization, WWF works in 100 countries and is supported by more than one million members in the United States and close to five million globally. WWF's unique way of working combines global reach with a foundation in science, involves action at every level from local to global, and ensures the delivery of innovative solutions that meet the needs of both people and nature.