Project Title: **ENRTF ID:**   112-F

Using Training to Prevent Salt Pollution

Topic Area: F. Outreach/Education/Training

Total Project Budget: $ 369,840

Proposed Project Time Period for the Funding Requested: 3 yrs, July 2013 - June 2016

Other Non-State Funds: $ 0

Summary:

Reduce salt pollution in Minnesota waters by: training winter maintenance personnel; identifying ways to reduce salt from water softeners; and creating a long term strategy to sustain these efforts.

Name: Jenny   Winkelman

Sponsoring Organization: Mississippi Watershed Management Organization

Address: 2522 Marshall St NE

   Minneapolis   MN   55418

Telephone Number: (612) 465-8780 ext 202

Email jwinkelman@mwmo.org

Web Address www. mwmo.org

Location

Region: Statewide

County Name: Statewide

City / Township:

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%

PROJECT TITLE: Using Training to Prevent Salt Pollution

I. PROJECT STATEMENT

Salt pollution in lakes, streams and groundwater is permanent and increasing. More than 75% comes from salt applied in winter to control snow and ice, and about 20% comes from water softeners discharging to the sanitary sewer (see graphic, Heinz, Novotny et al. 2008). Because it is impractical and expensive to remove salt after it dissolves in water, prevention at the source is the only cost effective "treatment".

Salt, even at low levels (the equivalent of one teaspoon in five gallons of water) can kill aquatic life, be toxic to wildlife and humans, and accumulates in groundwater—the source of drinking water for over 80% of Minnesotans. 350,000 tons of road salt are applied each winter in the Metro Area, and has the potential to contaminate billions of gallons of water. Every ton of salt used causes $1500 of damage to infrastructure (bridges, iron, cement; Sohanghpurwala 2008). So many lakes and streams are salt-impaired in the Metro area that the Pollution Control Agency (PCA) is addressing salt pollution on a regional scale. Because salt accumulates, the problem continues to grow (see graphic).

There is an urgent need for changes in winter maintenance practices that reduce the use of salt. Using science and technology, snow plow drivers and salt applicators can be trained to use less road, keep our roads safe AND protect our lakes and rivers. Using liquid instead of granular salt, the correct kinds and amounts of salt based on pavement temperature, calibrating equipment, proper storage, optimizing spread pattern are all examples of decisions that reduce salt use.

Training snow plow drivers and salt applicators has been shown to be a practical and cost effective way to reduce salt use. Minnesota has the nation's leading winter maintenance training program with over 3000 certified, which is just the beginning.

Despite the demand for and overwhelming success of trainings (salt reductions of 50% are commonly reported), there is no long term strategy in place to sustain these efforts, nor to address ways to reduce salt coming from water softeners. Trainings are a proactive and cost-effective means of reducing salt pollution especially in the face of budget cuts and emerging regulations.

The goals of this project are:
- **Protect and improve water quality** by proactively reducing salt use while maintaining safe roads.
- **Develop and offer trainings** to reduce salt use by winter maintenance personnel.
- **Develop long-term strategies** for sustaining trainings and supports new initiatives that reduce salt.
- **Identify opportunities** to reducing salt coming from water softeners.

Conduct trainings for winter maintenance personnel throughout the state, and develop and teach two new advanced classes for supervisors, managers and decision makers (24 classes). An assessment tool, enabling organizations to evaluate operations and identify and predict salt and cost reductions over time, will be programed for the web and integrated with reporting requirements. All manuals and training materials will be electronic and on the web. Cities and households in the metro area will be surveyed to learn more about salt coming from water softeners and ways to reduce it. A long term strategy will be crafted for sustaining the training program and addressing new initiatives for reducing salt.

II. DESCRIPTION OF PROJECT ACTIVITIES
Activity 1: Train snow plow drivers, salt applicators, supervisors and others in how to control snow and ice while reducing the amount of road salt used. **Budget:** $339,465

Teach 40-60 classes to public and commercial salt applicators. Teach two, new classes to 200-400 maintenance supervisors, and non-technical decision makers about policies, liability/insurance aspects. Build

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a web-based assessment and reporting tool to quantify salt reduction and costs. Give 10 short presentations at meetings. Combine and update two manuals (6 yrs old). Make all training materials available electronically on the web. Form a technical advisory committee. In-class evaluations (>1000) will be conducted and University of MN staff will evaluate new trainings and web-based tool.

Outcome	Completion Date
1. More than 1500 applicators and supervisors will be trained who reduce salt use on parking lots and sidewalks by 60% and on roads by 30%.	May 2016
2. Organizational level changes that result in effective snow and ice control, and use less salt .	May 2016
3. By taking a detailed look at their own internal operations, organizations will know where and how to reduce salt use.	May 2016
4. Save money for public and commercial organizations by using less salt and working more efficiently.	May 2016
5. Widely available, up-to-date website with training materials, classes and lists of certified people that can be used to select contractors.	May 2016

Activity 2: Survey use of water softeners and technologies to identify ways to reduce salt.   **Budget:** $25,000

Collect data to understand which cities in the Metro area soften water, whether individual households soften the same water and why, and what technologies are being used. Make recommendations for reducing salt coming from water softeners.

Outcome	Completion Date
1. Know the extent to which water softener salt can be easily reduced by eliminating redundancy and obsolete equipment.	May 2016
2. Recommendations for reducing salt coming from water softeners.	May 2016

Activity 3: Planning process to identify long-term strategies and funding to support existing and new salt reduction initiatives.   **Budget:** $5,375

Coordinate a planning effort across sectors to identify long-term strategies and funding to support salt reduction initiatives. Survey water softener use in metro area and recommend next steps.

Outcome	Completion Date
1. Strategic plan for long-term support of trainings & new initiatives that reduce salt.	May 2016
2. Commitments from public (local, state and federal) and private stakeholders.	June 2016

III. PROJECT STRATEGY
A. Project Team/Partners
- Mississippi Watershed Management Organization: in-kind support for all project management and contractor oversight; technical expertise; videoconferencing and training facilities.
- PCA: in-kind support and management including: website and certification program, manual printing, technical expertise, strategic planning, videoconferencing and training facilities.
- Current and new partners will be solicited: watershed management organizations, cities, counties, non-profits, state agencies (e.g., BWSR and MNDOT), private businesses, and maintenance organizations.
- Consultants will be hired competitively based on experience.

B. Timeline Requirements
Year one will be used to develop and test new, core training pieces (web-based assessment tool, manual, new trainings), which will be used in years 2 and 3. In year three, long-term strategic planning will take place.

C. Long-Term Strategy and Future Funding Needs
This project will reduce road salt pollution and identify ways to reduce salt coming from water softeners. These efforts will lead to reversing the trend of salt accumulation in our lakes and streams. A key element of this project is to collaborate with stakeholders to develop a strategy for making this effort sustainable.

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2012-2013 Detailed Project Budget-Using Training to Prevent Salt Pollution
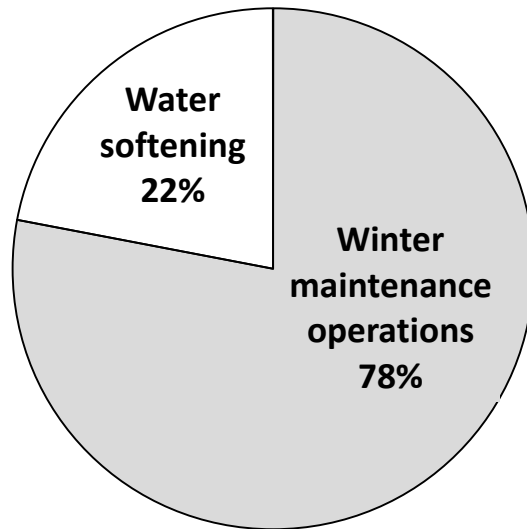**IV. TOTAL ENRTF REQUEST BUDGET 3 years**

BUDGET ITEM	AMOUNT	
Contracts:		
1. Technical training consultants to teach all classes; develop, test and revise new classes, assessment tools and materials; advise technical content, manage committees ($65-100 per hour=$280,400). Competitive process.	$ 280,400	
2. Information Technology/Softward consultant to automate, revise, integrate web-based reporting and tracking tool ($100 per hr+210 hrs=$21,000). Competitive process.	$ 21,000	
3. Hire youth to collate 3000 manuals (min. wage+FICA*3000*.25 hr apiece=$7,500). *Mississippi River Green Team*, a youth conservation and employment program.	7,500	
4. Graphic designer to layout combined manuals($100 per page*75-100 pages $7,500). Competitive process.	7,500	
5. Facilitator for high level strategic planning (5 meetings*1000=$4,000).Competitive process.	4,000	
6. Consultant to evaluate new trainings (3*$5000 each=$15,000); University of MN.	15,000	
7. Consultant to survey water supply/treatment centers, residential use of water softeners, technologies used;recommend practical, efficient ways to reduce salt from softeners ($25,000). Competitive process.	25,000	
Subtotal Contracts:		360,400
Equipment/Tools/Supplies: *3000 Manuals (binders and tabs=$1.37+$0.33*3000=$4800). office supplies & copies for 60+ trainings and 12+ meetings ($1175).*	$ 5,975	
Travel: Mileage, meals, lodging for two trainers at, 10-15, Level 1 trainings and 5, Level 2 trainings held outside of the Metro Area. Mileage only for meetings with contractor, partners, stakeholders, technical advisors.	$ 3,465	
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 369,840	

V. OTHER FUNDS

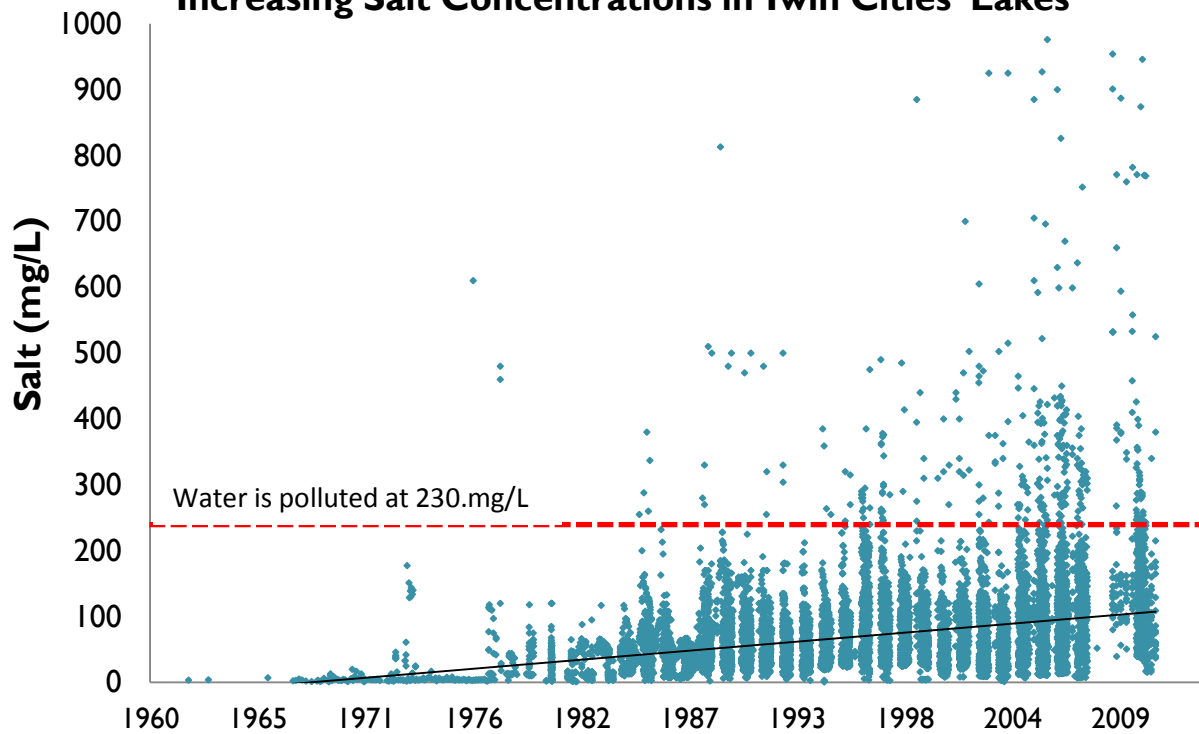| SOURCE OF FUNDS	AMOUNT	Status
Other Non-State $ Being Applied to Project During Project Period:	$ -	
Other State $ Being Applied to Project During Project Period:	$ -	
In-kind Services During Project Period: **$231,010** from PCA: Staff and Information Technology (IT) support for managing certification program, website, remote site and on-location videoconferencing; development, automation and integration of the tool; training locations, participation on committees, printing 3000 manuals. **$62,580** from MWMO: project coordination and management, training location and supplies, participation on committees. **$80,000** match from Partners: for training locations, recruitment/registration of trainees, training supplies, participating on advisory committee, providing trainers (will use a similar match formula as that used for 319 grants (see below).	$ 337,570	$293,590 committed from PCA and MWMO $80,000 pending, partner match to be solicited
Funding History: 2005 ($12,000) Local Technical Assistance Program (UMN Center for Transportation Studies, DOT, MN Road Research Board). 2005, 2006 ($50,000) PCA Pollution Prevention grant. 2006, 2009 ($232,100 plus $278,230 match) EPA 319 grant. 2010 ($15,000 plus $5,000 inkind) from MWMO, UMN-Landcare Department, PCA.	$ 334,660	

* DOT (MN Department of Transportation, EPA (Environmental Protection Agency), MWMO (Mississippi Watershed Management Organization, PCA (MN Pollution Control Agency), UMN (University of Minnesota)

Sources of Salt Pollution in the Twin Cities

Water softening 22%

Winter maintenance operations 78%

Source: Heinz, Novotny et. al. 2008

Increasing Salt Concentrations in Twin Cities' Lakes

Water is polluted at 230.mg/L

Salt (mg/L): 1000, 900, 800, 700, 600, 500, 400, 300, 200, 100, 0

1960, 1965, 1971, 1976, 1982, 1987, 1993, 1998, 2004, 2009

Source PCA 2012

Using Trainings to Prevent Salt Pollution

PROJECT MANAGER QUALIFICATIONS

Jenny Winkelman, Education & Outreach Manager. Ms. Winkelman has more than 20 years of natural resource experience related to freshwater research, monitoring and habitat restoration in Minnesota and Wisconsin and holds a Master of Science degree from the Institute for Nature Conservation Research, Tel Aviv University.

Ms.Winkelman has both technical knowledge and experience developing new programs, managing complex projects and building strategic partnerships. She developed and currently manages the MWMO's Education and Outreach Program (2005 to the present, $250,000 annual budget) and supervises the Stewardship Fund Grant Program ($250,000 annual budget).

She is voluntarily certified in *Level I Snow and Ice Best Management Practices*. Examples of her collaborative work at the MWMO include:

- Production and project management of *Winter Maintenance for Small Sites*, a training video developed in partnership with the University of MN and the PCA.
- Production and project management of *Improved Winter Maintenance: Good Choices for Clean Waters* a video for local cable television networks and the internet.
- Current member on the PCA Twin Cities Metro Area Chloride project's Education and Outreach Committee.
- Development of a new PCA training, manual and certification program *Turfgrass Maintenance with Reduced Environmental Impacts* (funder, technical advisory committee member).
- Past member of the Education Technical Work Team for the *Minnesota Water Sustainability Framework* commissioned by the 2009 Legislature.
- Partner with the Association for the Advancement of Hmong Women in Minnesota, DNR and Department of Health implementing the 2010 LCCMR project *Fishing: A Cross Cultural Gateway to Environmental Education*.

Other:
- 1998-2001, developed the DNR's then-new, statewide shoreline habitat restoration program, based on research, projects, grants and developing needed infrastructure and guidance

ORGANIZATION DESCRIPTION
The Mississippi Watershed Management Organization (MWMO) is a special unit of government organized around the land area and stormwater infrastructure draining into 12 miles of the Mississippi River, which includes the cities of Lauderdale, Minneapolis, Saint Anthony Village, Saint Paul, and lands owned by the Minneapolis Park and Recreation Board. In 2012, three additional cities—Columbia Heights, Fridley and Hilltop—are expected to join the MWMO.

The MWMO provides for the long-term management of water and natural resources through science-based approaches to planning, stormwater monitoring, structural improvements and project implementation. The MWMO's Education and Outreach Program develops and implements activities targeting key audiences to prevent nonpoint source pollution and foster environmental stewardship. The developed and populated nature of this urban area intensifies the use of road salt to maintain transportation infrastructure and the resulting impact of salt on its water resources. Since 2005, the MWMO has dedicated significant time and resources to developing and holding trainings for the operations and maintenance and landscape industries.