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**Section I: Application Type**

<input checked="" type="checkbox"/> <b>Lake Management Planning Grant</b> <i>Check one:</i> <input checked="" type="checkbox"/> Large-scale planning grant <input type="checkbox"/> Small-scale planning grant <i>Check one:</i> <input type="checkbox"/> Lake education <input type="checkbox"/> Organizational development <input checked="" type="checkbox"/> Other study or assessment, or multiple-purpose project	<input type="checkbox"/> <b>Lake Management Protection Grant</b> <i>Check one:</i> <input type="checkbox"/> Wetland restoration <input type="checkbox"/> Ordinance development <input type="checkbox"/> Lake improvement <input type="checkbox"/> Lake classification <input type="checkbox"/> Land or easement acquisition
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Legislative District Numbers	
Senate	Assembly
10	30

To determine your legislative district, go to <http://165.189.139.210/WAML/>  
Type in complete address, next screen shows information.

**Section II: Applicant Information**

Applicant St. Croix County		Type of Eligible Applicant <input checked="" type="checkbox"/> County <input type="checkbox"/> Tribe <input type="checkbox"/> Other Governmental Unit	
Lake Name Surface water of St. Croix County	Size in Acres 9,958.00	<input type="checkbox"/> City <input type="checkbox"/> Sanitary District <input type="checkbox"/> Non Profit Conservation Organization	<input type="checkbox"/> Village <input type="checkbox"/> Lake District <input type="checkbox"/> School Districts (Planning)
Project County/Township/Section/Range St. Croix County		Project Contact Name Brett Budrow	
Authorized Representative Named by Resolution Ellen Denzer		Project Contact Title Land Information Manager	
Authorized Representative Title Community Development Director		Address 1101 Carmichael Rd	
Address 1101 Carmichael Rd		Address 1101 Carmichael Rd	
City Hudson	State WI	ZIP Code 54016	City Hudson
State WI	ZIP Code 54016	Daytime Phone (area code) (715) 386-4673	State WI
Daytime Phone (area code) (715) 386-4673	Evening Phone (area code)	Daytime Phone (area code) (715) 386-4678	ZIP Code 54016
Evening Phone (area code)		Evening Phone (area code)	
E-mail Address ellen.denzer@co.saint-croix.wi.us		E-Mail Address brett.budrow@co.saint-croix.wi.us	

**Mail Check to: (if different from applicant)**

Name and Title	Address		
Organization	City	State	ZIP Code

For DNR Use Only			
Application Type	Date Received	Date Reviewed (LC)	Lake Coordinator Approval / Date
Waterbody ID#	Adequate Public Access <input type="checkbox"/> Yes <input type="checkbox"/> No	Environmental Grants Specialist Approval / Date	
Eligible Project <input type="checkbox"/> Yes <input type="checkbox"/> No	Eligible Applicant <input type="checkbox"/> Yes <input type="checkbox"/> No	Project Priority Rank	
Prior Grant Award(s) <input type="checkbox"/> Yes <input type="checkbox"/> No	Fiscal Year(s)	Amount Received To Date \$	Project Awarded <input type="checkbox"/> Yes <input type="checkbox"/> No



# Lake Management Grant Application

Form 8700-283 (R 12/11)

Page 2 of 4

**Section III: Project Information**

Project Title: LiDAR Data Collection and Terrain Analysis System for St. Croix County Proposed Ending Date: 06/30/15

Other Management Units Around Lake	Letter of Support	Other Management Units Around Lake	Letter of Support
1. St. Croix River Association	<input checked="" type="checkbox"/>	4.	<input type="checkbox"/>
2. Tainter Menomin Lake Improvement Association	<input checked="" type="checkbox"/>	5.	<input type="checkbox"/>
3. St. Croix County Alliance of Sportsmans Clubs	<input checked="" type="checkbox"/>	6.	<input type="checkbox"/>

**Section IV: Lake Access**

Number of Public Vehicle Trailer Parking Spaces Available at Public Access Sites: 100

Number of Public Access Sites on Lake Including Boat Launches and Walk-ins: 20

**Section V: Cost Estimate and Grant Request**

Section V must be completed or application will be returned. Details in support of Section V are welcome.	Project Costs		
	Column 1 Cash Costs	Column 2 Donated Value	DNR Use Only
1. Salaries, wages and employee benefits			
2. Consulting services <i>1 check Dyrco WROC (under)</i>	165,000.00		
3. Purchased services--printing and mailing			
4. Other purchased services (specify):			
5. Plant material			
6. Supplies (specify)			
7. Depreciation on equipment			
8. Hourly equipment use charges			
9. State Lab of Hygiene (SLOH) Costs			
10. Non-SLOH Lab Costs			
11. Land or easement acquisition value			
12. Associated acquisition costs			
13. Other (specify)			
14. Subtotals (sum each column)	165,000.00		
15. Total Project Cost Estimate (sum of column 1 plus sum of column 2)	165,000.00		
16. State Share Requested (calculate based on State share listed below)	<del>50,000.00</del>		

- Subject to the following maximum grant amounts: *\$ 25,000 MAX.*
- Large-scale lake planning projects--up to \$25,000 - 67% State share
  - Small-scale lake planning projects--up to \$3,000 - 67% State share
  - Lake classification and regulation or ordinance development projects--up to \$50,000 - 75% State share
  - Lake protection projects (other than lake classification and regulation or ordinance development projects)--up to \$200,000 - 75% State share

Use of Federal funding as match: (check box below if applicable)

We are using or planning to apply for Federal funds to be used as match.

If known, indicate source of funding:

**Section VI: Attachments (check all that are included)**

**A. For all applicants:**

- 1. Authorizing resolution
- 2. Letters of support
- 3. Map of project location and boundaries
- 4. Lake map with public access sites identified (per Section IV of this application and page 33 of the guidelines)
- 5. Itemized breakdown of expenses
- 6. For projects that entail sending samples to the State Laboratory of Hygiene (SLOH) only: a completed SLOH Projected Cost Form
- 7. Project scope/description:
  - a. Description of project area
  - b. Description of problem to be addressed by project
  - c. Discussion of project goals and objectives
  - d. Description of methods and activities
  - e. Description of project products or deliverables
  - f. Description of data to be collected, if applicable
  - g. Description of existing and proposed partnerships
  - h. Discussion of role of project in planning and/or management of lake
  - i. Timetable for implementation of key activities
  - j. Plan for sharing project results
  - k. Other information in support of project not described above

**B. For applicants that are Lake Management Organizations (LMOs) or Non-profit Conservation Organizations (NCOs):**

- 1. For first time applicant LMOs only: A completed Form 8700-226 (Lake Association Organizational Application)
- 2. For first time applicant NCOs only: Copy of IRS 501(c)(3) determination letter and copies of your Articles of Incorporation and Bylaws
- 3. List of national and/or statewide organizations with which you are affiliated
- 4. List of board members' names, including municipality and county of residence. Designate officers
- 5. Documentation of current financial status
- 6. For land or easement acquisition projects: Detailed description of your organization's land management experience
- 7. Brochures, newsletters, annual reports or other information about your organization

**C. Wetland Restoration Projects:**

- 1. Deed, easement, or land control agreement
- 2. Preliminary engineering plans
- 3. Water regulatory permits
- 4. Map of project location and boundaries

**D. Ordinance Development Projects:**

- 1. Inventory of applicable existing ordinances
- 2. Description of resources each jurisdiction allocates to enforcement
- 3. Preliminary surveys

**E. Lake Improvement Projects:**

- 1. Engineering and design plans
- 2. Water regulatory permits
- 3. Map of project location and boundaries

**Section VI: Attachments, continued**

**F. Land or easement acquisition projects:**

- 1. DNR Form 1800-1 (Environmental Hazards Assessment Form)
- 2. Legal description of the property
- 3. Project location boundary map
- 4. Property or easement appraisal (if not previously submitted to the Department)
- 5. If escrow closing, the title insurance commitment
- 6. Evidence of compliance with Uniform Relocation Act requirements, if applicable
- 7. Agricultural Impact Statement, if applicable
- 8. Status of acquisition negotiations, including expected time frame for closing
- 9. A land management plan
  - a. Full description of property and conditions
  - b. Description of current and proposed uses of property and adjoining properties
  - c. Management requirements for property
  - d. If roads, piers or grading are proposed, a topographic survey with feature locations, and design cross sections

**Section VII: Certification**

I certify that information in this application and all its attachments are true and correct and in conformity with applicable Wis. Statutes.

Print/Type Name of Authorized Representative  
Ellen Denzer

Title of Authorized Representative  
Community Development Director

Signature of Authorized Representative

*Ellen Denzer*

Date Signed

8-1-13



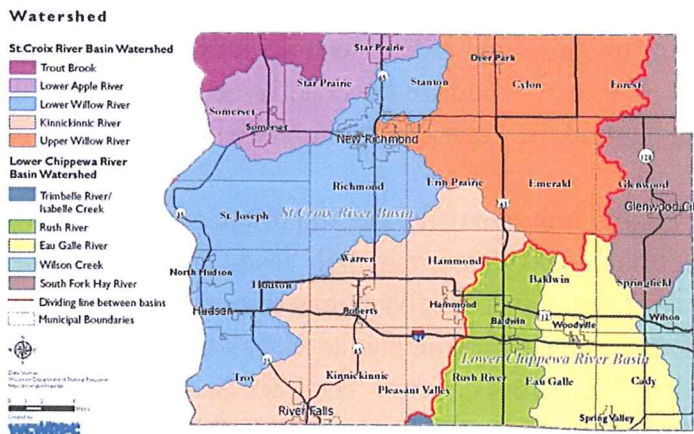
**PROJECT SCOPE:**  
**LiDAR DATA ACQUISITION AND TERRAIN ANALYSIS FOR**  
**IDENTIFYING CRITICAL AREAS FOR PROTECTING AND IMPROVING**  
**WATER QUALITY**

**A. Project Area:**

The project area consists of all of St. Croix County totaling 735 square miles in northwest Wisconsin. St. Croix County is located on the western border of Wisconsin, approximately 35 miles from the St. Paul-Minneapolis metropolitan area. St. Croix County has seen significant changes over the last 15+ years. While over half the county land is still in agriculture, the 33% increase in population since 2000 positions St. Croix County as Wisconsin's fastest growing county. The rapid growth in the western portions of the county also makes St. Croix County the 79<sup>th</sup> fastest growing county in the nation with a 2010 US Census population of 84,345.

Lakes, ponds, rivers, streams, intermittent waterways, and natural drainage ways make up the 18,934 acres of surface waters in St. Croix County. These resources are all water bodies, standing still or flowing, navigable and intermittent, and include natural drainage ways that collect and channel overland rainwater or snowmelt runoff. There are also many artificial drainage ways where the natural drainage ways have been altered by human activity. All of these features have the ability to transport sediment and pollutants and affect the water quality within their watersheds.

The surface waters of St. Croix County fall within two major drainage systems or watersheds - the St. Croix River Basin and the Lower Chippewa River Basin.



Surface waters in the western two-thirds of the County, including the Apple, Kinnickinnic, and Willow Rivers, fall within the St. Croix River Basin. The eastern third of the County, including the Hay and Eau Galle Rivers, are part of the Lower Chippewa River Basin. The

exception is the Rush River in the south-central part of the County which flows directly into the Mississippi River.

The St. Croix River Basin Watershed drains approximately 523 square miles of St. Croix County or 71% of the surface area of St. Croix County to the St. Croix River and Lake St. Croix through tributaries including the Kinnickinnic River, Willow River, Apple River, and Trout Creek. With over 20-years of field investigations, studies have shown that the Apple, Willow and Kinnickinnic Rivers are major contributors of suspended sediments and nutrients. Baseline loading from St. Croix County totals approximately 133,000 pounds of phosphorous per year. While the St. Croix Basin Watershed is the primary focus the South Fork of the Hay River covers 63 square miles of St. Croix County and contributes phosphorous to Lake Tainter and Lake Memomin both of which have TMDL's.

B. Problems to be addressed:

This lake planning grant will address multiple problems that affect water quality within St. Croix County. These problems include lack of accurate elevation data for identifying in field features where overland flow accumulates and is hydrologically connected to surface waters. These features are probable sources of contaminants associated with agricultural practices such as sediments, nutrients, and pesticides. The 2009 St. Croix County Land and Water Resource Management Plan and the WI DNR St. Croix County NR151 MOU site multiple goals and activities relating to conduct ongoing inventory to identify sensitive areas, focusing implementation activities on targeted watershed areas and identifying priority areas. This LiDAR data will be an important implementation tool for the Resource Management Plan and the NR 151 MOU to assist in identifying and administering the Agricultural Performance Standards on farms and critical features for best management practices. BMPs targeted to these features can maximize the benefits on water quality and also maximize the efficiency of funding used for water quality improvement.

Water quality improvement is an important goal for St. Croix County to achieve as the EPA has approved a total maximum daily load (TMDL) for Lake St. Croix in the St. Croix Basin and Lake Tainter and Lake Menomin in the Lower Chippewa Basing. The Lake St. Croix TMDL and implementation plan to meet water quality goals requires a 37% phosphorous reduction in St. Croix County. The Lake St. Croix TMDL plan and Implementation Plan has identified the Willow, Apple and the Kinnickinnic River and their watersheds to be very high contributors of sediment and phosphorus to Lake St. Croix. In fact, these three watersheds are listed in the Lake St. Croix TMDL as some of the highest contributors of phosphorus to Lake St. Croix. If we are going to make strides to improve the surface water quality of Lake St. Croix, much of this work and loading reductions will have to be completed in these three



watersheds. Moreover, Squaw Lake, Cedar Lake and Lake Mallalieu are all listed as TMDL (Impaired waters) and each of those lakes have Management Plans and water quality goals that help identify and address the impairment. (The Lake Mallalieu plan is in DRAFT, waiting for approval) The Willow River/Lake Mallalieu has a DRAFT TMDL plan and a DRAFT Implementation Plan with strategic goals to identify and target high loading sub-watersheds for water quality improvement. Similar reductions and goals are required for Lake Tainter and Lake Menomin, which would include the watershed of the Hay River in St. Croix County. High quality LiDAR data and digital elevation model will enable agricultural producers and resource managers to target conservation efforts to the largest contaminant producing features. This will maximize the benefits on water quality as well as the efficiency of conservation funding.

Water quality improvement and implementation of BMPs has an associated cost. A high quality LiDAR DEM and terrain analysis can rapidly and accurately identify critical feature areas and allow resource managers and farmers to quickly design and implement BMPs with less investment than traditional methods requiring greater staff time and resources. The accurate LiDAR data can also assist the Farmer Led Watershed Council Dry Run Project in St. Croix County to identify BMP's and allow farmers to develop ideas and solutions more efficiently and cost-effectively. The Farmer Led Watershed Council is a joint project involving UW-Extension, WI DNR, the McKnight Foundation, Wisconsin Farmers Union, and the Land Conservation Department. The increased efficiency of staff and resources would also extend to other water quality improvement projects such storm water management related to urban and rural development.

Construction of the St. Croix River Crossing Bridge will bring increased population and land use changes to St. Croix County impacting water quality in the county's lakes, rivers, and streams. Quality LiDAR data will allow developers and resource managers to model storm water within the watershed and design best management practices to mitigate developments impact on water quality. This data will also have ancillary benefits of assisting resource managers in protecting and mitigating impacts to bluff lands and view sheds within the St. Croix River corridor. Example benefits include but are not limited to: updating FEMA flood plain maps, shoreland regulation, calculating existing impervious surfaces, and vegetation inventory.

LiDAR data acquisition will allow St. Croix County resource managers and citizens to address problems and implement policies and solutions identified in the St. Croix County Comprehensive Plan, Natural Resource Management Plan, Squaw Lake, Cedar Lake, Lake Mallalieu and Bass Lake Management Plans, Willow River TMDL and Implementation Plans (DRAFT – waiting for approval). These plans included identifying and targeting

critical features for BMP installation, managing and implementing TMDL's for Lake St. Croix, Lake Tainter, and Lake Menomin, improving stormwater management and improving and protecting the water quality in St. Croix and Dunn County.

C. Project Goals and Objectives:

The goal of this planning grant is to provide agricultural producers, developers, and resource managers a highly accurate elevation model to identify and mitigate critical areas to improve and protect water quality in St. Croix County's lakes, rivers, and streams. The project will all be an important tool for implementing St. Croix County Comprehensive Plan Natural Resource Policies 2.1 – 2.8 relating to surface waters and wetlands as well as implementing all the Lake Management Plans previously listed. These policies promote agricultural and development land use practices that emphasize erosion control, nutrient management, stormwater management, shoreland and stream bank protection.

Objective 1: Contract with consultant to plan and conduct LiDAR data acquisition project for the spring of 2014.

Objective 2: Delivery of data fall/winter of 2014

2.1 Purchase and receive training on appropriate data analysis software to manage the LiDAR data.

2.2 Develop models and analysis to identify critical areas for water quality improvement.

Objective 3: Identify and quantify critical areas for installation of BMP's to improve water quality. Identifying these critical areas, made possible through LiDAR data, will maximize the benefits on water quality while simultaneously increasing the efficiency of conservation funding.

Objective 4: Publish and make the dataset available to federal, state, local governments, and private entities.

4.1 Make the data available to increase the efficiency of resources invested in the protection and improvement of water quality in St. Croix County.

4.2 Provide data and assistance to Dry Run Farmer-led Watershed Council

Objective 5: Provide technical assistance by implementing BMP's using LiDAR derived digital elevation model and analyze the return on investment compared to traditional methods.



D. Project Activities and Tasks:

- a. Retain and contract with vendor to provide LiDAR data acquisition.
  - i. The chosen vendor for this project will be the Wisconsin Regional Orthophotography Consortium chosen vendor. WROC is a multi-entity group led by seven regional planning commissions. The goal of the consortium is to build and sustain a multi-participant program to acquire digital orthoimagery and elevation data throughout Wisconsin. The WROC approach brings a number of potential benefits to its members, including cost savings, specifications and standards support, data sharing between members and partners, and procurement support.
- b. Train staff on the use of data and terrain analysis.
- c. Identify, map, and quantify critical features.
- d. Use data to design BMP's to maximize benefits on water quality. Resource management technicians will test the data to design BMP's.
- e. Design models to quantify water quality improvements.
- f. Quantify the efficiency gains to land owners, developers, and resource managers in designing BMP's.

E. Project Deliverables:

1. Project deliverables include LiDAR data and two foot contours for the entirety of St. Croix County.
2. Identifying, mapping and quantifying critical features for BMP's.
3. A final report quantifying efficiency and savings using LiDAR data to identify and mitigate features that impair water quality.

F. Data to Be Collected

The initial data collected will be a LiDAR point cloud data consisting of x,y,z coordinates.

The data will be cleaned to provide a bare earth model and two foot contours will be provided to the county.

G. Partnerships:

This project will be a partnership between citizens, landowners, federal, state, and local government agencies and non-profit agencies to develop and use highly accurate elevation models as tools to identify and mitigate critical areas that can impair water quality.

The partners include the St. Croix River Basin Team, Wisconsin Department of Natural Resources, Wisconsin Regional Orthophotography Consortium, local governments, the St. Croix River Association, Tainter Menomin Lake Improvement Association, and the St. Croix County Community Development Department.

The partners proposed contribution will be:

\$30,000 St. Croix Basin Team Grant  
\$30,000 St. Croix River Crossing Mitigation Grant  
\$50,000 WI DNR Lake Planning Grant  
\$55,000 St. Croix County Wisconsin Land Information Program Retained Fees  
  
\$165,000 TOTAL Project

H. Role of project in planning and or management of lakes:

Communities and landowners in St. Croix County will need to reduce phosphorus in wastewater treatment facility discharges and storm water runoff from urban, residential, agricultural and forestry land to meet the goals for the Lake St. Croix TMDL and the Lake Tainter and Lake Menomin TMDL. A great deal of Lake Management planning has been conducted over the past several years in St. Croix County that identifies sources of pollutants and strategies to reduce those contributions to these surface waters. This previous lake management planning will be a useful resource and includes: Squaw, Bass and Cedar Lake Management Plans, Lake Mallalieu Management Plan (DRAFT) and the Willow River/Lake Mallalieu TMDL and Implementation Plans (DRAFT). Restoration of water quality will depend upon local support as many phosphorus reductions activities will require voluntary efforts on privately owned land. This project plays a crucial role in cost effectively assisting voluntary efforts in restoring water quality. The data from the project will play a future role in other lake protection programs. Watershed and sub watershed boundaries will be delineated and surface water runoff patterns will be identified to better estimate annual watershed pollutant loading.

This project will assist St. Croix County in administering its updated shoreland zoning ordinance, scheduled for adoption in early 2014, in order to comply with the mandated NR115.

I. Project Timetable:

All activities will be completed within the proposed grant period, ending June 30, 2015.

Objective 1 will be completed fall of 2013.

Objective 2 will be complete by December 31, 2014.



Objective 3 and 4 will be completed by June 30, 2015

J. Project Results and Data Sharing:

All project data and results will be shared with and made available to federal, state, local governments, and private entities through local newspaper articles, public meetings, websites, and the county Facebook page.

The Department of Natural Resources will be provided with the LiDAR Data and two foot contour data for St. Croix County.

Resolution

Pending





*TAINTER MENOMIN LAKE IMPROVEMENT  
ASSOCIATION, INC.*

July 29, 2013

Brett Budrow, Land Information Manager/ LIO  
St. Croix County Planning & Zoning  
1101 Carmichael Rd  
Hudson, WI 54016

RE: Wisconsin DNR Lake Planning Grant

Dear Mr. Budrow:

Tainter Menomin Lake Improvement Association (TMLIA) is pleased to support the planning grant application submitted by the St. Croix County Planning & Zoning Department to obtain Light Detection and Ranging technology (LiDAR). Since a number of tributaries from St. Croix County affect the water quality flowing into Lake Tainter and Lake Menomin, it is important that St. Croix County has access to crucial data that can influence and enhance the implementation of the approved TMDL for Lake Tainter and Lake Menomin.

Lake Tainter and Lake Menomin are some of the most impaired waters in Wisconsin and St. Croix County has an opportunity to assist in improving the unfortunate and unsafe water conditions in our lake communities. TMLIA is committed to coordinated efforts with surrounding counties to improve water quality in the region. A LiDar system would greatly enhance the capabilities and planning in St. Croix County through more immediate and accurate data collection. Having access to this technology can enhance the ability of St. Croix County to manage land and water resources throughout the county.

Tainter Menomin Lake Improvement Association supports St. Croix County in securing a LiDar system to provide more advanced and informative data to guide the management of our resources in a more dynamic manner. Land and water resource decisions made in St. Croix County directly affect the water quality flowing into Dunn County. TMLIA supports the request of a LiDar system for St. Croix County.

Sincerely,

Ron Verdon, President  
Tainter Menomin Lake Improvement Association, Inc.

July 22, 2013

Brett Budrow, Land Information Manager/ LIO  
St. Croix County Planning & Zoning  
1101 Carmichael Rd  
Hudson, WI 54016

RE: Wisconsin DNR Lake Planning Grant

Dear Mr. Budrow:

The St. Croix River Association (SCRA) is pleased to write in support of the planning grant application submitted by the St. Croix County Planning & Zoning Department to obtain highly accurate elevation data using Light Detection and Ranging technology (LiDAR). The collection of highly accurate data is crucial as we move forward with implementation of a water quality plan and targeted land management strategies in the St. Croix River valley.

SCRA was formed in 1911, and our mission is to protect, restore and celebrate the St. Croix River and its watershed. The SCRA is the only existing organization with a watershed-wide scope able to focus on both sides of the river and both the upper and lower portions of the basin. While the St. Croix is designated an outstanding water resource by both Wisconsin and Minnesota, in 2009 it was listed as one of America's Most Threatened Rivers. It was listed because of burgeoning development and unwise zoning and land management practices, and the associated watershed degradation that comes with these issues. On top of that, Lake St. Croix has been officially listed as impaired. Subsequently, a TMDL has been written for the watershed and is in the final stages of approval. SCRA has been involved with the Basin Team that created the TMDL.

SCRA is committed to partnering with others to step up resource protection efforts. We are very supportive of the goal of this planning grant; *to provide agricultural producers, developers, and resource managers a highly accurate elevation model to identify and mitigate critical areas to improve and protect water quality in St. Croix County and thereby the St. Croix River.* This project is logical in timing and scope, and not only compliments the work already completed, but a critical tool needed to efficiently and effectively implement sound development practices in the urban and rural landscape.

Sincerely,



Deb Ryun  
Executive Director