

2015

# Stockbridge-Munsee Community Wetland Program Plan



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5/11/2015

## **Background**

The Stockbridge-Munsee Community's (Tribe) Wetland Program (WP) was established in 2011 with the support of a Wetland Program Development Grant (WPDG) from the Environmental Protection Agency (EPA). The first task was to develop a Wetland Program Plan (WPP).

The purpose of WPPs are to assist states and tribes in planning and implementing a sustainable wetland program and to better communicate each program's intent and needs to the EPA. This enables the EPA to more effectively develop, target, and deliver technical support and other assistance to the tribe to achieve wetland program goals. The WPP can also inform potential partners and stakeholders that may share the tribe's goals and want to collaborate on plan implementation.

The Tribe successfully secured EPA WPDG funding to carry out wetland program priorities in 2011 & 2013, and will continue to submit proposals to expand the wetland program as needed.

The Tribe's WPP was first drafted in 2012. Though WPPs are typically valid for 5 years, the program staff has decided to revise the plan early to better reflect the priorities and needs of the program. These priorities have come into sharper focus as a result of work completed under the first 4 years of the current tribal work plan.

The purpose of this document is to provide the Stockbridge-Munsee Tribal Council (Council) with information about recent and planned wetland program activities, and to articulate the WP priorities for the next 5 years. Following Council approval, the content related to WP priorities, needs and proposed actions will be submitted as a WPP update for EPA's review and approval.

## **Recent Wetland Program Activities**

Environmental Department staff identified the need for a wetland program following the completion of an impaired watershed assessment in FY 2011 (see Appendix A). That study investigated three principle questions, including: *What wetland resources can be restored to decrease the impact of non-point pollutants of concern?*

The wetland program was launched to coordinate with the Stockbridge-Munsee Water Resource Program (WRP) to identify opportunities for wetland restoration and improve the quality of impaired waters. To achieve this goal, the WP needed to learn more about the existing and potentially restorable wetlands on and upstream of the reservation.



## I. Wetland Mapping Project:

The first major accomplishment of the WP was the completion of the Tribe's wetland mapping project: "A Landscape-Scale Wetland Functional Assessment and Identification of Potential Wetland Restoration Sites for the Stockbridge-Munsee Community". The assessment was completed in cooperation with St. Mary's University of Minnesota Geospatial Services and covered all watersheds that overlap the Stockbridge-Munsee Community reservation boundaries (Fig. 1).

### Evaluating Current Wetlands:

The assessment described the characteristics of existing wetlands, including where they are located and what ecological functions they perform in the watershed (e.g., flood control, water quality improvement, and wildlife habitat). The assessment improves understanding of the benefits tribal members and lands received from nearby wetlands and can be used to inform the tribe's decisions about land protection, acquisition, and development.

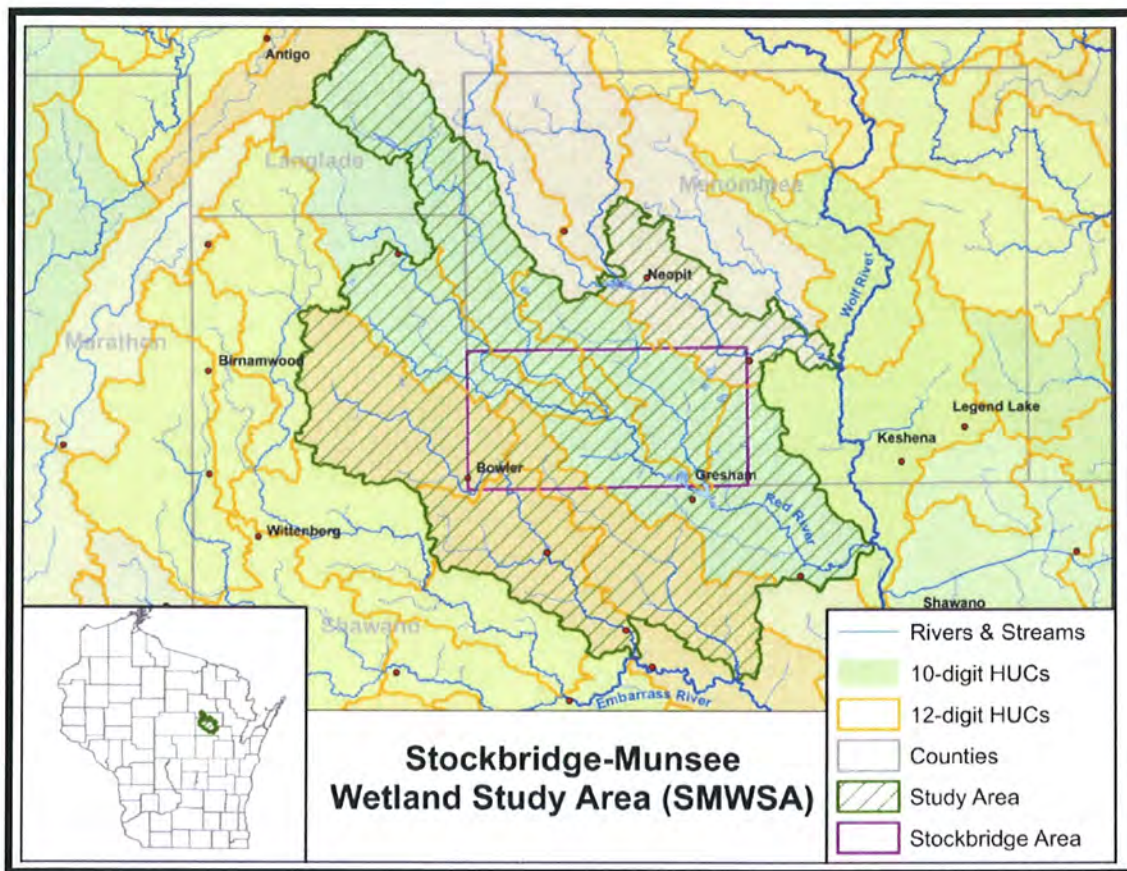


Figure 1. Stockbridge-Munsee Wetland Study Area in Langlade, Menominee and Shawano Counties in Wisconsin.



### Potentially Restorable Wetlands:

The assessment also described historic wetland conditions using 1930s aerial photography and identified and ranked potential wetland restoration sites. A total of 178 sites were identified through photo interpretation and analysis (Fig 2). Program staff conducted field assessments in the summer of 2014 to ground-truth the spatial data and to refine the ranked list of potentially restorable wetland (PRW) sites based on field conditions. This effort culminated with the identification of priority areas which the program would target for wetland restoration (Fig 3).

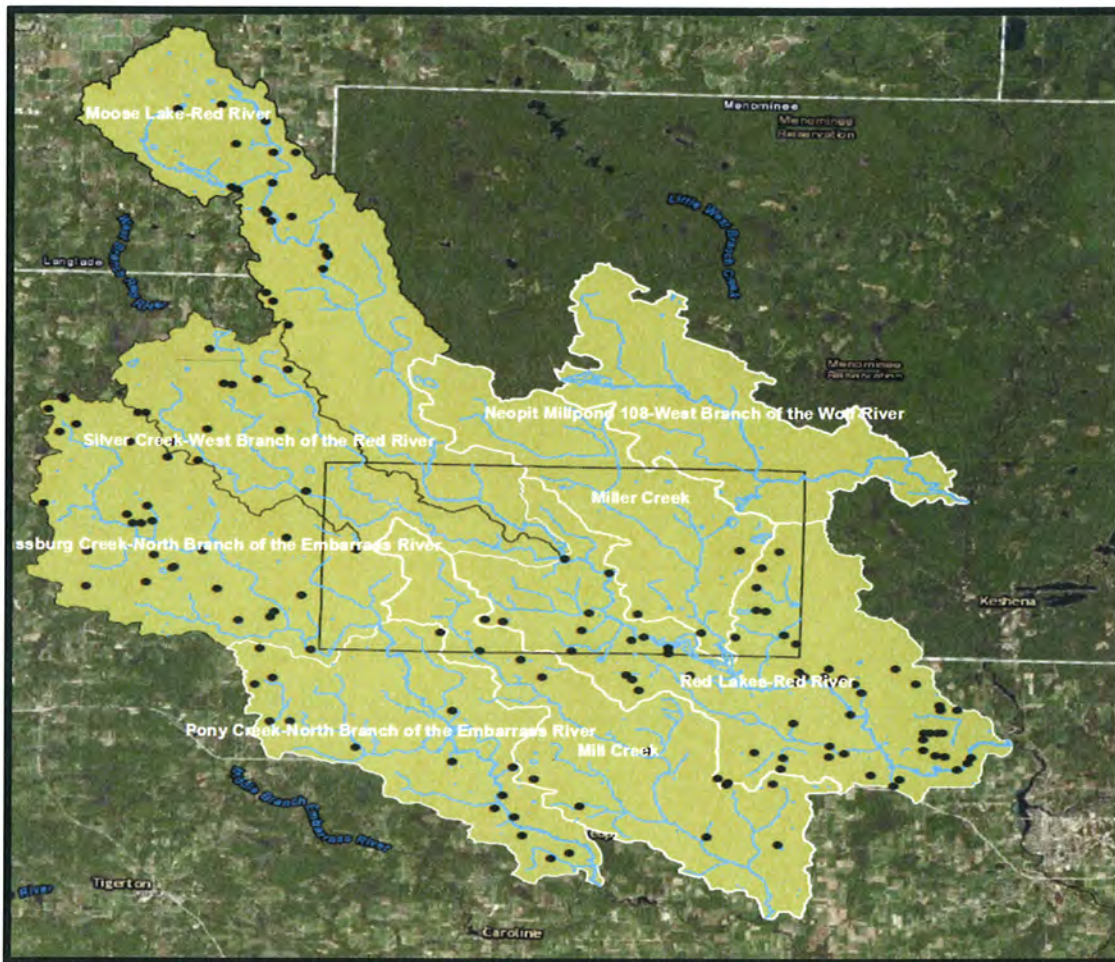


Figure 2. Black points represent top ranking PRW sites within the study area. The watersheds are defined with white. The Stockbridge-Munsee Community historic reservation boundary is shown in black.



*Priority Areas:*

The priority areas (Fig. 3) include three watersheds within the study area; Moose Lake-Red River, Silver Creek-West Branch of the Red River and Strassburg Creek-North Branch of the Embarrass River. Portions of the Town of Red Springs, located within the historic tribal boundary have also been included. A 2005 Nitrate study completed by the Tribe revealed several sections of the township with elevated nitrate concentrations caused by agricultural activities. The Tribe has since acquired many of the agricultural fields within the township, creating the opportunity to restore many of the historical wetlands filled in or drained for agricultural use.

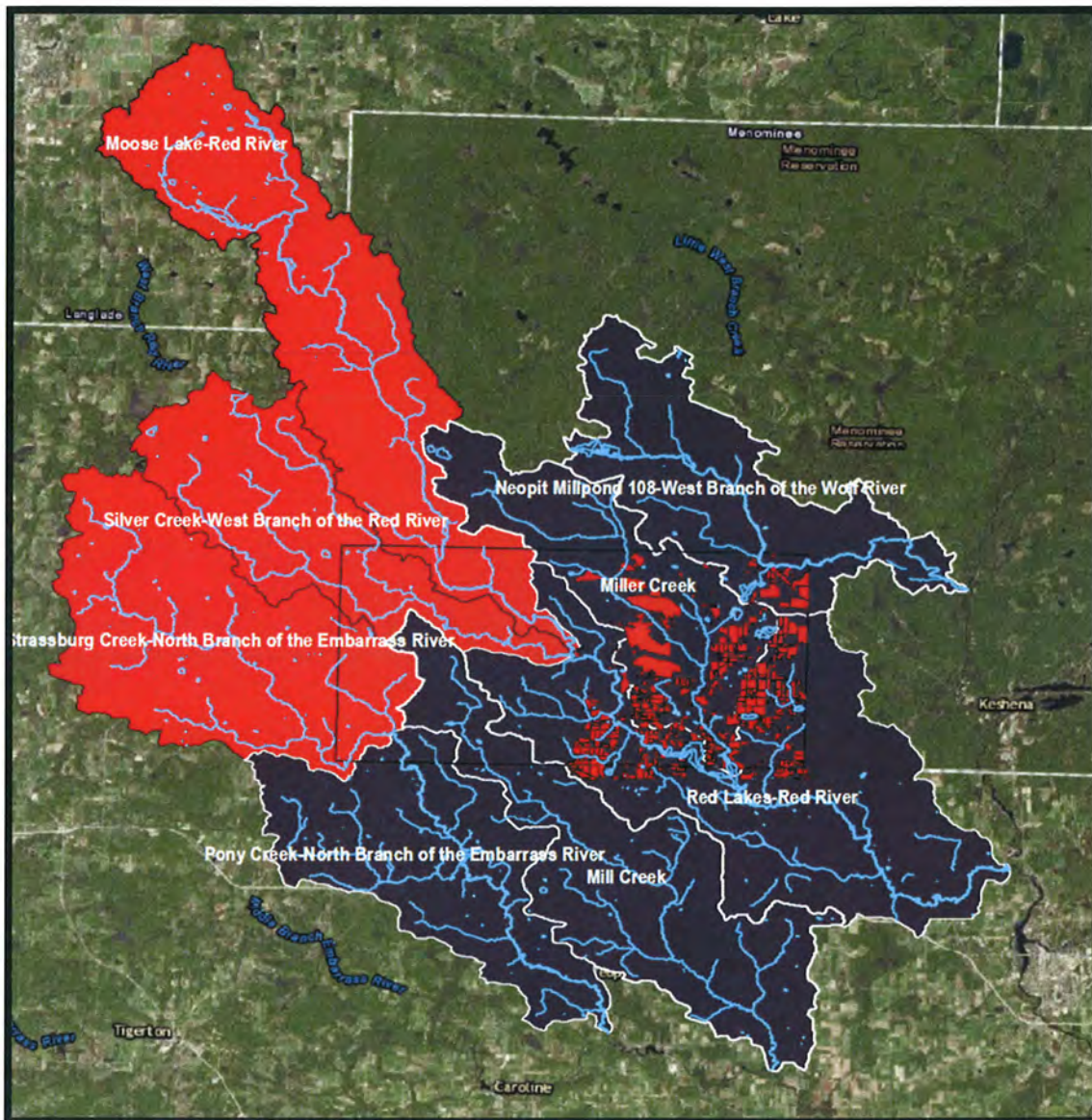


Figure 3. Priority areas targeted within the study area for wetland restoration.

## **2. Partnership Development**

### *Wetland Summit:*

In August of 2014 the WP hosted a wetland summit in partnership with the Wisconsin Wetlands Association. The purpose of the summit was to convene local and regional conservation professionals to present the methods and findings of the wetland mapping assessment, and to identify opportunities to collaborate on priority wetland restoration projects. Approximately 19 current and potential partners participated in this event.

### *Practitioners Working Group:*

On March 16, 2015, WP staff convened a subset of the summit participants for more in-depth discussions about potential collaborations and recommended approaches for implementing the tribe's wetland program priorities. The group recommended the following two items as the next most important steps for the developing the Tribe's WP:

1. To select and build 1-3 wetland restoration demonstration projects on Tribally owned lands within the reservation boundaries.
2. To establish a 30-Year Tribal Wetland Conservation Plan to guide on- and off-reservation wetland restoration work and associated outreach.

The meeting culminated with partners agreeing to attend future wetland program planning meetings and to provide assistance with the development and implementation of a 30-Year Tribal Wetland Conservation Plan.

## **3. Wetland Restoration Demonstration Sites**

The WP is actively working to restore 3 wetland demonstration sites on the reservation. At the present, the WP is working with partners from the Fish and Wildlife Service and NRCS to begin construction on two projects in spring of 2015. These collaborations are helping WP staff build knowledge on wetland restoration planning and techniques. The WP will promote these projects to show the type of wetland work that can be achieved within the community and to help build tribal and neighboring community support for future restoration efforts within the study area. The WP expects to complete restoration of 2-3 wetland sites by 2018. Additional details on current wetland demonstration projects are provided in Appendix B.

## 4. Protecting and Managing Forested Wetlands

The WP has partnered with the U.S. Forest Service Northern Research Station to develop an experimental design for a study to evaluate and mitigate potential impacts of Emerald Ash Borer (EAB) of Tribal black ash swamps. The WP also provide ongoing support to help the Tribe's Forestry Department identify wetlands in proposed timber harvest areas and implement best management practices to avoid, minimize, monitor, and record forestry related wetland impacts.

### *Next Steps*

WP staff intends to apply for an EPA WPDG to support: development of a 30-Year Tribal Wetland Conservation Plan; GIS training for WP staff; a black ash/EAB impact and mitigation study, and other priorities identified through internal discussions with the Tribe's forestry staff.

To ensure that these and other future expected wetland program activities are eligible for EPA WPDG funding, it is necessary to update the Tribe's current work plan to an approved WPP. The revised work plan and proposed WPP is attached. The content of the proposed WPP conforms to EPA Guidelines as described in Box I.

### **Box I. EPA Core Elements of an Effective State and Tribal Wetlands Program**

The EPA drafted the *Core Elements of Effective State and Tribal Wetlands Program*, also called the *Core Elements Framework (CEF)*, in 2008 to support state and tribal wetland program development. The CEF identifies the following four core elements that comprise and strengthen effective wetland programs.

1. MONITORING AND ASSESSMENT
2. REGULATORY ACTIVITIES INCLUDING 401 CERTIFICATION
3. VOLUNTARY RESTORATION AND PROTECTION
4. WATER QUALITY STANDARDS FOR WETLANDS

EPA strongly encourages states and tribes to develop Wetland Program Plans (WPP) that address some or all of these core elements. To help them do so, EPA developed and released guidelines on how to develop a WPP based on the CEF. Those guidelines include a list of program building activities states and tribes' can choose from based on their specific program goals.

([http://water.epa.gov/grants\\_funding/wetlands/upload/2009\\_03\\_10\\_wetlands\\_initiative\\_cef\\_full.pdf](http://water.epa.gov/grants_funding/wetlands/upload/2009_03_10_wetlands_initiative_cef_full.pdf))

The Stockbridge-Munsee Community has elected to design the wetland program based on the CEF to strategically build, advance, and achieve wetland program goals.



## **Stockbridge Munsee Community Proposed Wetland Program Development Plan 2015 - 2020**

### *Vision Statement:*

The mission of the Tribe's WVP is to reestablish the character and function of wetlands within and outside of the reservation to provide adequate water supply and quality to Tribal members, and to maintain and improve adequate fish and wildlife habitat.

### *Tribal and Watershed Needs:*

The primary concerns of the Tribe are to; maintain and improve adequate water supply and quality for its tribal members, to maintain and improve fish and wildlife habitat as it relates to our cultural identity, and to provide sufficient food supply to many families on the reservation. Addressing these concerns will require restoration of wetlands and forests which were once extensive but suffered substantial losses due to conversion to agricultural land. It is the goal of the Tribe and WVP to reverse the historical loss of timber and wetland resources not only to gain the services and benefits these resources provide, but to re-establish the ecological character and landscape of the reservation.

### *Wetland Program Goals:*

- To preserve the extent and functions of wetlands that are intact and benefitting Tribal members.
- To enhance Tribally-owned wetlands that are degraded from historical and ongoing land uses.
- To restore Tribally-owned wetlands that were historically converted and are located in positions that will improve water quality and fish and wildlife habitat on Tribal lands.
- To restore non-tribally owned wetlands that are positioned upstream and will help improve water quality and fish and wildlife habitat on the reservation.
- To build capacity for WVP work.

### *Strategies:*

1. Improve knowledge of wetland location and function
2. Develop a *30-Year Tribal Wetland Conservation Plan*
3. Restore wetland acreage and function
4. Improve wetland protection
5. Build wetland program capacity

### **Existing Program Actions and Needs:**

The tables below outline the proposed actions and activities WVP staff will, or may pursue in the next 5 years to advance the strategies outlined above.



**Core Elements Addressed:**

The actions and activities listed in Strategies 1-4 are designed to improve the Tribe's WP primarily in the areas of Monitoring & Assessment and Voluntary Wetland Restoration & Protection. Strategy 5 addresses coordination of Regulatory Activities. Citations for the specific core elements and objectives to be addressed by WP proposed actions are included in the tables below.

***Strategy #1: Improve knowledge of wetland location and function:***

Actions and activities carried out to support this priority fall mostly in the realm of wetland mapping, assessment and monitoring. This work is ongoing, relies on best available science and technology, and provides the foundation for all of the Tribe's other WP work.

Actions	Activity	Timeframe
<p><b>A. Define/refine wetland monitoring and assessment objectives and strategies.</b> [Monitoring Obj. (1)(b)]</p>	<ol style="list-style-type: none"> <li>1) Expand current Wetland Monitoring Strategy (appendix C) to insert or update monitoring objectives on topics including but not limited to: forested wetland management, wetland restoration outcomes, wetland restoration potential, identification of rare or sensitive species and impacts to wetlands from invasive species, climate change and other threats.</li> <li>2) Update data sets as they become available such as LiDAR and local land use data to enhance wetland maps to track extent, condition and status of wetlands.</li> <li>3) Evaluate effectiveness of the wetland monitoring and assessment program by consulting with neighboring tribes and workgroup. Other technical support can be provided from WCTAC, Fish and Wildlife Service, and consult EPA when needed.</li> </ol>	<ol style="list-style-type: none"> <li>1) Expand EAB monitoring pre and post infestation to include 1,000 acres from 2015-2020.</li> <li>2) 2015-ongoing</li> <li>3) Prior to project planning and implementation, Bi-annual partner meetings.</li> </ol>
<p><b>B. Monitor wetland resources as specified in strategy.</b> [Monitoring Obj. (2)(b)]</p>	<ol style="list-style-type: none"> <li>1) Continue monitoring potentially restorable wetlands, as needed, to evaluate project viability (invasive species reduction, land use changes)</li> <li>2) Collaborate with Forestry Department to develop EAB monitoring strategy.</li> <li>3) Monitor for the introduction or spread of invasive species such as the Emerald Ash Borer or changes in vegetative community following disturbance (e.g., loss of black ash, impacts from timber roads).</li> <li>4) Develop and implement monitoring plans for restoration and enhancement projects.</li> <li>5) Coordinate with Tribal Depts., other tribes, and partners on the development of new wetland data sets.</li> </ol>	<ol style="list-style-type: none"> <li>1)2015-ongoing</li> <li>2)2015</li> <li>3)2015-2020</li> <li>4)3 plans on tribal land complete prior to 2018, 2-5 within priority area complete prior to 2020.</li> </ol>
<p><b>C. Track monitoring and assessment data and wetland boundary determinations in a system that is accessible and integrated with other state or tribal data.</b> [Monitoring Obj. (2)(d)]</p>	<ol style="list-style-type: none"> <li>1) Georeference new wetland data as it is gathered and promote its availability for use by Tribal land managers, foresters, and other partners. Data will include updated wetland boundaries, wetland project status, status of invasive species and will be used for project planning across tribal departments and businesses.</li> </ol>	<ol style="list-style-type: none"> <li>1) 2016-ongoing</li> </ol>
<p><b>D. Analyze monitoring data to inform decision making.</b> [Monitoring Obj. (2)(e)]</p>	<ol style="list-style-type: none"> <li>1) Analyze changes in wetland extent or condition relative to reference conditions and program goals; yearly time meander vegetation surveys, water level data from onsite monitoring wells at sites and from other departmental data (CFI, Surface water monitoring).</li> <li>2) Document wetlands status and trends (extent and condition) for use in program planning, reporting, partner updates, etc.</li> </ol>	<ol style="list-style-type: none"> <li>2016-ongoing</li> </ol>



## **Strategy #2: Develop a 30-Year Tribal Wetland Conservation Plan**

Actions and activities under this strategy support the creation of a plan to guide how the Tribe will prioritize and implement on- and off-reservation wetland protection and restoration efforts. This planning process is needed to further evaluate the findings from the Wetland Mapping Project (pg 2) and to ensure that the information is effectively used by the Tribe, and tribal partners to achieve WP goals. The identification of community and landowner outreach strategies will be essential to the successful implementation of the final plan.

Actions	Activity	Timeframe
<p>A. <i>Develop geographically-defined wetland protection, restoration, and management plans. [Monitoring Obj. (3)(d)]</i></p>	<ol style="list-style-type: none"> <li>1) <i>Establish a process for integrating Tribal and partner input and data to determine on- and off-reservation priorities for the protection, restoration, and management of various wetland types (i.e., forested wetlands, floodplain wetlands, headwater wetlands) and functions.</i></li> <li>2) <i>Set measurable short (by 2020) and long-term (by 2045) goals for on- and off-reservation increases in wetland acreage and function, program will work with workgroup composed of local and regional agencies and stakeholders to develop and complete 30 wetland conservation plan.</i></li> <li>3) <i>Develop strategies to refine the prioritization of restoration sites using new tools and data (i.e., LiDAR) as they become available.</i></li> </ol>	<p>1)2016</p> <p>2) wetland conservation plan completion 2017</p> <p>3)2016-2017</p>
<p>B. <i>Consider watershed planning, wildlife habitat, and other objectives when selecting restoration/protection sites. [Vol. Prot./Rest. Obj. (1)(b)]</i></p>	<ol style="list-style-type: none"> <li>1) <i>Establish priorities related to protection and improvement of existing wetland functions (e.g., water quality improvement).</i></li> </ol>	<p>1)2016-2017</p>
<p>C. <i>Establish goals that are consistent or compatible across relevant agencies. [Vol. Prot./Rest. Obj. (1)(a)]</i></p>	<ol style="list-style-type: none"> <li>1) <i>Convene Tribal, agency, and local government partners to identify shared priorities and opportunities (development of county conservation plans, tribal wetland conservation plan, identified receptive landowners) to collaborate on project implementation and evaluation.</i></li> </ol>	<p>1)2015-ongoing</p>
<p>D. <i>Establish partnerships to leverage additional protection and restoration and funding. [Vol. Prot./Rest. Obj.(2)(a)]</i></p>	<ol style="list-style-type: none"> <li>1) <i>Convene Tribal, agency, and local government partners to identify shared priorities and opportunities to collaborate on project implementation and evaluation.</i></li> </ol>	<p>1)2015-ongoing</p>
<p>E. <i>Provide clear guidance on appropriate restoration and management techniques and success measures. [Vol. Prot./Rest. Obj. (1)(c)]</i></p>	<ol style="list-style-type: none"> <li>1) <i>Establish general guidelines for the restoration and management of wetlands by resource type.</i></li> <li>2) <i>Establish general performance standards for the restoration of wetlands by type and function.</i></li> </ol>	<p>1)2015-ongoing</p>
<p>F. <i>Promote wetland understanding and engagement.</i></p>	<ol style="list-style-type: none"> <li>1) <i>Develop a landowner outreach strategy to encourage restoration of privately owned wetlands.</i></li> <li>2) <i>Develop a Tribal outreach strategy to increase awareness of the Tribal WP and to promote engagement on the implementation of the 30-year plan.</i></li> <li>3) <i>Develop a community relations strategy to increase awareness of the Tribal WP and to promote engagement in the implementation of the 30-year plan.</i></li> </ol>	<p>1)2015-2016</p> <p>2)2015-2016</p> <p>3)2015-2016</p>



### Strategy #3: Restore wetland acreage and function

Actions and activities under this strategy represent how the Tribe will leverage the information generated under Strategy #1 (*Improve Knowledge of Wetland Location and Function*) and Strategy #2 (*Develop a 30-Year Tribal Wetland Conservation Plan*) to protect and restore wetland resources on and upstream from the Stockbridge-Munsee Reservation.

Actions	Activity	Timeframe
<p>A. Increase wetland acreage through restoration (re-establishment). [Vol. Rest. Obj. (3)(a)]</p>	<ol style="list-style-type: none"> <li>1) Develop restoration and management plans to re-establish wetlands consistent with guidance established in 30-year plan.</li> <li>2) Track restoration performance as prescribed in 30-year tribal wetland conservation plan; evaluate measurable gains (e.g. percent reduction of invasive species cover, establishment of native vegetation, wildlife presence) and analyze vegetative surveys, water level data.</li> </ol>	<p>1)2015-ongoing</p> <p>2) biannually, monthly if necessary.</p>
<p>B. Improve natural wetland conditions and functions. [Vol. Rest. Obj. (3)(b)]</p>	<ol style="list-style-type: none"> <li>1) Develop restoration and management plans to restore or enhance wetland condition and function consistent with guidance established in 30-Year plan.</li> <li>2) Work with Land Management Dept. and Tribal Council to restore historical wetlands on appropriate leased crop lands when current leases are complete to create adequate wildlife habitat corridors and reduce nitrate pollution in groundwater.</li> <li>3) Coordinate with Tribal, agency, non-governmental, and local government partners on strategies to preserve, restore, or mitigate the loss of rare, valuable, or threatened wetlands (e.g., drained wetlands, black ash wetland systems).</li> <li>4) Track wetland enhancement performance as prescribed in 30-year plan.</li> </ol>	<p>1)2015-ongoing</p> <p>2) Participate in monthly joint staff meetings, land committee meetings and bi-monthly meetings with land management.</p> <p>3)2015-ongoing</p> <p>4)2015-ongoing</p>
<p>C. Establish partnerships to leverage more restoration. [Vol. Rest. Obj. (3)(c)]</p>	<ol style="list-style-type: none"> <li>1) Collaborate on the design, implementation, and monitoring of priority wetland restoration projects. <b>Thurner Lane project: NRCS, Paiser Farm: Fish and Wildlife Service (assisting with design of project), Cemetery Scrape: funding source still not identified.</b> Will collaborate with Tribe, other landowners any necessary partners for design, establish monitoring plan, funding source and long term management.</li> </ol>	<p>1)2015-ongoing</p>
<p>D. Modify restoration/protection techniques as needed. [Vol. Rest. Obj.(4)(c)]</p>	<ol style="list-style-type: none"> <li>1) Utilize monitoring and adaptive management to ensure restoration and management objectives are met.</li> </ol>	<p>1) Upon completion of demonstration sites 2016-2018 and continually as sites are restored.</p>

### Strategy #4: Improve Wetland Protection

Actions and activities under this strategy recognize the needs and opportunities for wetland program staff to support the development, implementation, and enforcement of policies and practices that encourage the avoidance and minimization of on-reservation and upstream wetland impacts.

Actions	Activity	Timeframe
<p>A. <i>Establish and institutionalize long term protection using mechanisms such as, incentives, purchase of land title, or easements to protect wetlands. [Vol. Rest. Obj. (2)(b)]</i></p>	<p>1) <i>Use Tribal land designations to protect existing and recently restored wetlands and update. Work with Legal Dept. to change designation when necessary, Forestry Dept. to extend wetland reserve boundaries when identified. Tribal land use layer to help with land, water, and forest management planning.</i></p> <p>2) <i>Track wetland components of Tribal fee to trust applications.</i></p>	<p>1)2015-ongoing</p> <p>2)Prior to each land purchase, remain involved if land use changes.</p>
<p>B. <i>Coordinate among agencies &amp; programs to reduce duplicative efforts. [Regulatory Obj. (2)(e)]</i></p>	<p>1) <i>Develop Standard Operating Procedures for the avoidance, minimization, and tracking of wetland impacts from timber harvest and other Tribal land management activities.</i></p> <p>2) <i>Coordinate with Tribal Forestry, Land Management, and other Departments to integrate wetland policies and procedures into the implementation of other management plans and ordinances.</i></p> <p>3) <i>Provide wetland technical support and advice to other departments, agencies, and private landowners.</i></p>	<p>1)2015-ongoing</p> <p>2)2015-ongoing</p> <p>3)2015-ongoing</p>



## Strategy #5: Build capacity for wetland program work

Actions and activities under this strategy will help the Tribe build the skills, knowledge, and partnerships needed to increase the extent and impact of future WP work. Progress in this area will be essential to the successful implementation of the Tribe's 30-year wetland conservation plan.

<b>Actions</b>	<b>Activity</b>	<b>Timeframe</b>
A. <i>Establish partnerships to leverage additional protection, restoration, and funding. [Vol. Prot./Rest. Obj (2)(a)]</i>	1) <i>Convene local natural resource professionals to provide input on the 30-year tribal wetland conservation plan.</i>	1)2015-ongoing
	2) <i>Seek opportunities to secure funding and technical support from wetland restoration agencies and organizations.</i>	2)2015-ongoing
	3) <i>Collaborate (schools, universities, other Tribes) on applications to secure funding for collaborative restoration projects.</i>	3)2015-ongoing
B. <i>Build knowledge to support WP activities.</i>	1) <i>Secure training on how to evaluate and work with wetland spatial data.</i>	1)2015-2016
	2) <i>Secure training on the identification of Emerald Ash Borer infestation and other trainings to improve knowledge of forested wetland management.</i>	2)2015
	3) <i>Spend time in the field with experienced wetland restoration practitioners and participate in wetland restoration training opportunities.</i>	3)2015-ongoing
C. <i>Hire part-time or permanent staff and skilled contractors help carry out priority activities (e.g. invasive species control)</i>	1) <i>Use seasonal field crews to support wetland monitoring and management activities.</i>	1)2015-ongoing
	2) <i>Continue to use grant-supported project funding to hire contractors to help facilitate and evaluate WP activities and performance.</i>	2)2015-ongoing
D. <i>Engage the community in wetland education and conservation activities.</i>	1) <i>Promote WP activities and accomplishments to Tribal community through Tribal and local media.</i>	1)2015-ongoing
	2) <i>Distribute information and encourage visitation of wetland demonstration sites to Tribal and other landowners within the study area.</i>	2)2017, upon completion of demonstration sites
	3) <i>Host events to encourage Tribal members and residents of surrounding communities to learn about wetlands and WP activities.</i>	3)2015-ongoing

### **Milestones:**

- By 2017, the Tribe's WVP will have finalized a 30-year Tribal Wetland Conservation Plan that guides preservation, restoration, enhancement, monitoring, and outreach activities.
  1. Hire private contractor to complete plan, based on wetland mapping project, wetland summits, workgroup direction.
  2. Submit to partners, local and regional natural resource staff for comment, host final meeting to gain approval from others within the study area and Tribe.
- By 2018, the Tribe's WVP and partners will have completed the initial design and construction of 2-3 demonstration restoration projects that showcase the appeal and effectiveness of restoring wetlands on and near Tribal lands.
  1. Three demonstration sites have already been selected; Thurner Lane, Paiser Farm and Cemetery Scrape.
  2. Thurner Lane has been visited by other natural resource staff from other agencies and Tribes to design monitoring and design for wetland restoration. Project funding has been approved from NRCS and program will continue to work with NRCS to develop low maintenance design of wetland.
  3. Paiser Farm, Tribe has partnered with Fish and Wildlife Service for project design. The department is currently working with Tribe to take land out of agriculture designation.
  4. Cemetery Scrape, dominated by several invasive species, needs to be treated prior to doing any planting or additional work.
- By 2018, GIS training of staff will be complete, wetland dataset update protocols will be in place, and the GIS wetland layer will be used in forest management and timber sale review.
  1. 2015 begin GIS Training (if funding is available).
- By 2018, the WVP will have in place EAB monitoring protocols and begin implementation of experimental silvicultural and restoration practices to offset the effects of black ash mortality caused by EAB.

1. A set of monitoring sites have already been selected. The current Tribal budget does not allow purchasing supplies to carry out study. Program will continue to seek funding opportunities for this project.
  2. Secondary sites are also in place, to begin monitoring to expand extend of infestation and prioritize management areas once black ash is lost.
- By 2020, the Tribe's WWP will have performed or assisted with the restoration of 2-5 PRW sites located within priority area.
    1. Tribe has made contact with several landowners with PRW on their land. Tribe will continue to work with landowners and NRCS to pursue projects.
  - By 2020, the Tribe's WWP will develop standard operating procedures (SOPs) for addressing wetland issues on timber sales. The SOPs will assist in the implementation of the Tribe's Forest Management Plan.
    1. Tribe will work with Forestry dept. to develop SOPs.
    2. SOP will be shared with Forestry Committee for input and approval.
    3. SOP will be submitted to Council for final approval.



## Appendix A: Baseline Surface Water Monitoring/Wetland Program Establishment

Previous baseline surface water monitoring and data collection site data completed by the WRP recognized a number of watersheds associated with Tribal land which appeared to be impaired by concentrations of phosphorus, sediment, or pathogens. The primary impact to downstream Tribal waters is nonpoint sources, particularly agricultural operations, contributing the nutrients, sediment and pathogens to local streams.

Previous monitoring revealed spikes in phosphorus concentrations (greater than 75 ug/L) and sediment concentrations (greater than 30 mg/L) as well as numerous E.Coli (greater than 225 colony forming units) incidences in three western HUC 12 watersheds that overlap the Stockbridge-Munsee Tribal boundary. Nutrients alter the biological makeup of many streams and contribute to degradation downstream of the Tribal community. Pathogens decrease the beneficial uses of watersheds by limiting the safety of local rivers for swimming and by impacting the health of wildlife which utilize the water for part of their life cycle. Sediment buries stream habitat and decreases the diversity of structure. Impacted watersheds have swimming areas where full body submergence takes place and accidental ingestion could occur. Elimination of pathogenic materials is important within the watersheds.

The WRP utilized Section 106 Clean Water funds to complete an impaired watershed assessment in FY13/14. The assessment included a network of 30 distributed sites and two fixed sites throughout western watersheds that overlap the tribal boundary: Silver Creek-West Branch of the Red River, Strassburg Creek-North Branch of the Red River, and Pony Creek-North Branch Embarrass River. The distributed sites were monitored for physical, chemical, and biological water quality parameters to better identify impaired waters and to build a stronger foundation for protection and restoration. Distributed sites that demonstrated degradation, but lacked impairment, have been further investigated for restoration and best management practice needs.

<i>Principle Study Questions</i>	<i>Alternative Actions</i>
<i>Are excessive amounts of nutrients, sediment, and E. Coli present in parts or all of the Silver Creek-West Branch of the Red River, Strassburg Creek-North Branch of the Embarrass River and Pony Creek –North Branch of the Embarrass River HUC 12 Watersheds?</i>	<ol style="list-style-type: none"> <li>1. <i>The watersheds are not impacted: no action will be taken.</i></li> <li>2. <i>Numerous locations are impacted. Isolate potential sources and present information to jurisdictional decision makers.</i></li> <li>3. <i>Numerous locations are impacted. Source cannot be isolated by study framework. Incorporate into future study.</i></li> </ol>
<i>What is the impact of climate change on flow patterns, storm intensity and the delivery of contaminants to watersheds of concern?</i>	<ol style="list-style-type: none"> <li>1. <i>The watersheds are not impacted by climate change: no action taken.</i></li> <li>2. <i>Flow and precipitation patterns are changing in scale and frequency; consult technical contacts for additional support.</i></li> </ol>
<i>What wetland resources can be restored to decrease the impact of non-point pollutants of concern?</i>	<ol style="list-style-type: none"> <li>1. <i>The watersheds are not impacted: no restoration is needed.</i></li> <li>2. <i>Source areas are identified and restorable wetlands are present. Quantify extent and condition of restorable wetlands.</i></li> <li>3. <i>Source areas are identified, but restorable wetlands are not present. Develop alternative best management practices to reduce nonpoint source contamination</i></li> </ol>

## Appendix B: Wetland Demonstration Projects

**Miller Creek Wetland Restoration Project:** In June of 2011, the Stockbridge-Munsee Community purchased 52 acres of abandoned rail bed property and 8 acres of the right-of-way. Abandoned in 2000, the previous owner, Wisconsin Central LTD, removed the structures that consist of the permanent way; leaving behind the ballast, sub ballast and subgrade components. The remaining rail bed components created a 20-30 feet wide, 6-20 feet high, barrier which extends seven miles throughout the Stockbridge-Munsee Community Forest and divides an entire line of wetlands and streams. The placement and construction of the rail bed over 100 years ago created several infractions to the ecological integrity and character of these natural resources.

The project proposal submitted to the National Fish and Wildlife Foundation's Sustain Our Great Lakes Program in 2012 successfully received funding in the amount of \$525,000. The project goals are to restore and enhance portions of the wetland and stream crossings by installing additional culverts to return connectivity between 258 acres of wetlands and 2 miles of stream habitat that are disturbed and fragmented by the rail bed. Project completion is expected fall of 2015.



**Miller Creek Camp 1 Site:** 96 acre Palustrine System comprised of scrub shrub vegetation with a patchy distribution of swamp conifers. Conifer stumps and coarse woody debris are common and distributed throughout the wetland, which suggests the site was historically composed of northern white cedar (*Thuja occidentalis*) and mixed with black spruce (*Picea mariana*), white pine (*Pinus strobus*), and eastern hemlock (*Tsuga canadensis*). Alterations in wetland hydrology from the rail bed transformed the previously forested wetland into a nearly continuous bed of sedges and tag alder (*Alnus incana*).

The site also contains a stretch of Miller Creek, once a natural meandering stream habitat that flowed through the east and west portions of the wetland. Construction of the rail bed restricted and channelized Miller Creek to the west side of the tracks, which caused alteration to the hydroperiod, or flooding regime, on either side of the tracks. Several different age classes of dead conifers still remain on the west side of the rail bed due to changes in flooding frequency. Site objectives and goals are to restore the hydrologic connectivity of the stream and wetland complex and return Miller Creek to stream's original channel. Restoration will recreate stable habitat for native cool and cold water species, support the physiology and wetland function of wetland plants, and redefine species composition to a natural community.



**Cemetery Scrape Phase II: Forested Wetland Restoration:** The project site, historically a forested wetland has been filled for agricultural use. The Tribe purchased the property and it no longer in production. A portion of the fill has been removed, creating two wildlife scrapes in the field. However, the project was not completed and has been taken over by non-native species such as Reed Canary Grass (*Phalaris arundinacea*) and Canadian Thistle (*Cirsium arvense*). The wetland program has assumed responsibility for completion of the project and now has the ability to implement and maintain the project site. The remaining tasks to be completed at this project site are to reduce and eventually eliminate non-native species, remove remaining fill from historical wetland areas, and to replant the site with native plant and tree species. The site has already been partially completed, however does not provide adequate habitat.

The current proposal has been submitted for potential funding to remove the remaining fill from 1.2 acres of historical wetland, reshape spoil from previous wetland scrape, create two additional berms, scrape the surface where non-native seed bank has not been eliminated.

**TOTAL PROJECT SITE AREA: 8 ACRES  
EXISTING WETLAND AREA: 1.8 ACRES  
TOTAL WETLAND AREA UPON COMPLETION: 3 ACRES**

Trees will be planted to create needed shade for wetland habitat, improve wildlife nesting, and reduce non-native plant species. The site, historically a cedar dominated wetland is unlikely to successfully return to its historical conditions. The proposed tree selection of semi mature Bur Oak (*Quercus macrocarpa*), Swamp White Oak (*Quercus bicolor*), and small pockets of Sycamore (*Plantanus sp*), found in areas slightly south of the reservation have already been successful in other restoration sites within the county and are considerate of climate change. The project site will also be supplemented with Hemlock (*Tsuga Canadensis*) and Tamarack (*Larix laricina*), which is not included in requested funding, but will be relocated to project site from other areas of the reservation.



**Existing wetland scrape at project site completed in 2008.**



APPENDIX C  
WETLAND MONITORING APPROACH

## Monitoring Approach to Preserve and Restore Wetlands

Wetlands serve an important role in maintaining water quality. Wetlands help to maintain stream flow, moderate water temperatures, reduce downstream flooding and minimize water quality concerns in surface water and groundwater. They do this by intercepting, storing, and slowly releasing rain and snow melt. At the same time, the plants within the wetland are taking up excess nutrients and contaminants and settling out sediment.



Alex Brute collecting ground water measurements from monitoring well installed with HOBO water level logger at PRRR site located in Red Springs.

Not only do they provide these functions in terms of water quality, but they also provide fish and wildlife habitat as migration corridors, nesting habitat, food, protective cover, etc. The wetlands within and adjacent to the Reservation benefit popular species such as deer, bear, trout, wood ducks, etc.

Efforts to preserve and restore wetlands within priority zones are made with a goal to reduce surface water and groundwater contamination.

### Reasons for assessing and monitoring potentially restorable wetlands:

- Wetland identification and determination
- Determine duration, depth and flow of water, surface or subsurface
- Wetland boundary determination
- Assessing wetland functions dependent upon hydrologic regime
- Assess potential for wetland restoration or creation
- Determine success of wetland restoration or replacement
- Determine the historic vegetative cover type to help guide restoration plans

### Soil Seed Bank Analysis

Soil seed bank composition is a helpful tool in determining the plant community that existed in a wetland prior to degradation. The results can offer clues as to how water once influenced the wetland (recharge, discharge, etc.), as well as to help create construction plans for potentially restorable sites. We collect soil from the historic wetland layer, sometimes under several feet of fill. The soil is then dried in a lab, poured through a series of sieves and all seed are extracted for identification. If we cannot identify the seeds in our lab, they are sent to the Oregon State University Seed Lab for identification.



Installing a staff gauge to monitor surface water levels within a riparian area.

### Rapid Assessment

We use the Wisconsin Rapid Wetland Assessment Methodology to evaluate the extent to which a specific wetland performs a given function. The full range of wetland functions and values are covered. The presence or absence of specific characteristics are used to determine the importance of each functional value for a site. For our project, we have completed rapid assessments at over 50 potentially restorable wetland sites within the watersheds of the North Branch Embarrass River, West Branch Red River and the Red River.



## Potentially Restorable Wetlands on Tribal Land

In recent years, the Tribe has put forth considerable effort into reacquiring land within the historic reservation boundary. Much of the land that was lost has been farmed for over a half century. Many wetlands that existed on the land were filled in or plowed over, so that many of the original wetlands exist under many feet of overburden and/or erosion.

So was the case with the property located north of Gresham on Big Lake Road, acquired by the Tribe in 2007. Over 200 acres in size, the majority of the property had been utilized for agriculture since the early 1900's. Many Wetlands were either filled in or altered, changing the way they function in the landscape.



Big Lake Road property

Once new lands are acquired by the Tribe, efforts are made to restore the agricultural fields back to historical conditions



Aerial photo does not show an indication of historic soil.

Recently, aerial photos dating back to 1938 became available to the Tribe, helping to identify historic wetland sites. In 2014, three of these sites were chosen to receive intensive monitoring efforts, with plans for future restoration based on monitoring results.

Monitoring wells were placed within the three sites, utilizing automated HOB0 data loggers to collect subsurface water levels. The data loggers were placed an average of eight feet below ground level within a 1 1/2 inch slotted PVC pipe. The



Installing monitoring wells.

goal of the monitoring wells is to determine how the water level fluctuates and flows throughout the course of a year. This data will be used to guide restoration plans.



Example of information from HOB0 data logger.

Bore holes were excavated down to the historic layer of wetland soil (organic muck) throughout the sites to determine the depth of overburden. The estimated amount of overburden is an important consideration for restoration efforts.

Samples of the historic wetland soil were collected from the bore holes as well to search for seeds of vegetation that once grew in the wetland. Collected seeds were sent in to Oregon State Seed Lab for identification. Seeds were identified to genus when possible. This information will help piece together what vegetative cover type existed historically.

During the monitoring and restoration, invasive plant species are managed to ensure that native vegetation has the opportunity to thrive. In 2014, reed canary grass was chemically treated at monitoring sites on the Big Lake Road property. Long term management strategies will take place on all restoration and monitoring sites to maintain their quality and functionality.

### Circle Drive Restoration Project

Circle drive restoration site is located just to the south of the Big Lake Road property, along circle drive. Prior to the Tribe reacquiring the land, the circle drive property was an agricultural field that had a series of drain tiles added throughout the years of farming. These tiles significantly altered the hydrology flowing through the property.



Circle drive restoration site at beginning of restoration construction.

In 2011, plans were created to remove the drain tiles and restore the historic hydrology of the property. Excavation and construction of the restoration took place the following year, and the project was completed by the end of 2012.



Circle drive restoration in 2012.

Management is continuing on the circle drive restoration site to eliminate invasive plant species, establishing a diverse native population of plants. The site is now frequented by many migratory birds throughout the year for both nesting and feeding. It also holds an abundance of reptiles and amphibians that were absent from the property prior to the restoration.