SOUTHEASTERN WISCONSIN WATERSHEDS TRUST, INC.

Sweet Water

PRIORITY PROJECT LIST AND IMPLEMENTATION PLAN
For The
MENOMONEE RIVER WATERSHED
Of Southeastern Wisconsin

Prepared by
Menomonee River Watershed Action Team

November 2010

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I. ACKNOWLEDGEMENT

The Menomonee Watershed Action Team gratefully acknowledges the support of the Joyce Foundation and the work of all partners of and participants in the Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water) in seeing this process through. Thanks to everyone, the Menomonee WAT is that much closer to making positive things happen – for our communities and the lake and rivers on which we depend.

II. INTRODUCTION

This document is the product of a multi-year effort to collect scientific knowledge about the Menomonee River Watershed in Southeastern Wisconsin; to distill that information into a comprehensive, five-year Watershed Restoration Plan (WRP) for the river; and, finally, to review and refine the WRP into a concise implementation plan for years 2011 and 2012. This document presents the implementation plan, which outlines recommended short-term priority watershed restoration actions and focuses in more detail on particular short-term objectives that are now, or are soon to be, underway thanks to the leadership of the Watershed Action Teams, Sweet Water, and its partners.

In 2007, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) and the Milwaukee Metropolitan Sewerage District (MMSD), in collaboration with the Wisconsin Department of Natural Resources (DNR), completed the Regional Water Quality Management Plan Update partly to recommend the most cost-effective means of improving water quality over time. A Technical Advisory Committee made up of representatives of local and special-purpose units of government, agencies, academic institutions, and conservation organizations guided and reviewed the process to develop the regional water quality plan.

Regional stakeholders created a collaborative, umbrella organization, the Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water), to implement recommendations coming out of the Regional Water Quality Management Plan Update. In 2009, the MMSD began work on WRPs for both the Menomonee and Kinnickinnic River watersheds. The Menomonee River Watershed Restoration Plan refined the information presented in the regional plan by identifying specific actions requiring implementation to improve water quality in the Menomonee River and its tributaries. The WRP assessed pollutant loading at a scale of 18 individual assessment point areas, or drainage areas, in the Menomonee River watershed and identified a series of actions requiring implementation in each assessment point area to reduce pollutant loadings. Also, the WRP identified the most impaired assessment point areas, representing “hot spots” of pollutant loading. These areas were evaluated by ranking all assessment point areas by the amount of three different pollutant contributions to the Menomonee River per acre of land: fecal coliform, total suspended solids, and total phosphorus. The most impaired assessment point areas were determined by averaging the combined rankings of these pollutants (see Figure 1).

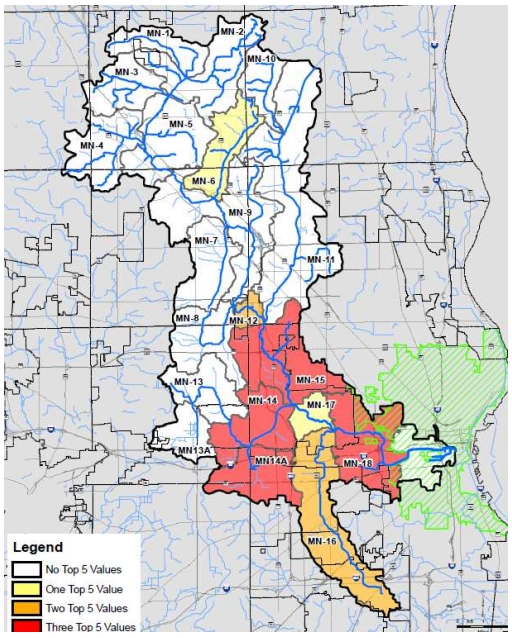

Figure 1: Most impaired sub-watersheds of the Menomonee River watershed.

Sweet Water invited the public to monthly meetings of the Kinnickinnic and Menomonee River Watershed Action Teams, at which consultants working with MMSD to develop the WRPs requested feedback. A broad range of local stakeholders

provided input that was key to the process of developing the WRP. The Menomonee River Watershed Action Team (WAT) was created for this purpose and, afterward, to implement recommendations of the WRP. The WAT includes community members, businesses, municipalities, citizens, and non-governmental organizations. Input provided by the WAT was supported by the Policy and Science Committees of Sweet Water, and as a result, three major focus areas emerged in the WRP: public health bacteria, habitat (including total suspended solids), and nutrients / phosphorus. During the process, it was clear that while water quality is important to area residents and stakeholders, wildlife habitat, aesthetics, and river access also are important and more "visible" concerns. Unlike issues surrounding water quality, the issues of habitat and aesthetics were not originally major focus areas of the WRP, but stakeholder input demonstrated their importance.

With the WRPs completed early in 2010, the Kinnickinnic and Menomonee River WATs have since been responsible for developing and implementing on-the-ground projects. In the March through September 2010 timeframe, a total of 15 Watershed Action Team meetings were held in the Menomonee and Kinnickinnic River watersheds, attracting a total of 350 attendees. The Menomonee River WAT held 9 meetings, attracting a total of 216 attendees. The timetable below summarizes the staging utilized by Sweet Water and its many partners to examine the priority actions recommended in the Menomonee River WRP by assessing their implications in the most impaired sub-watersheds of the Menomonee River.

Summary of 2010 Watershed Restoration Plan (WRP) Staging Timetable

April
The Menomonee River WAT tested out a mapping exercise where members identified potential restoration actions, projects, and programs in specific locations to implement the Foundation Actions (as identified in the WRPs) for the most impaired "hot spots" of the watershed. The meeting focused on the Menomonee River at Wauwatosa (MN-15 in Figure 1). The meeting was held in Wauwatosa at the University of Wisconsin-Extension, and about 25 people attended.

May-June
The Menomonee WAT hosted meetings in May and June bringing key actors and stakeholders in the watershed together to conduct modified versions of the April mapping exercise for two additional "hot spot" assessment point areas. This method led the Menomonee WAT to focus on the Lower Menomonee River in downtown Wauwatosa (MN-17) and the Menomonee Valley (MN-18). We also repeated the mapping exercise for the Menomonee River in Wauwatosa (MN-15) using the modified mapping exercise methodology. The WAT produced maps identifying potential restoration actions and projects within each "hot spot" assessment area. Where there were several geographic "hot spots" to choose from, participants self selected which area to focus on. People attending these meetings numbered 30 and 24 for the May and June meetings, respectively, and meetings were held at Hart Park in Wauwatosa and at Taylor Dynamometer in the Menomonee Valley.

July-August
The Menomonee WAT continued the mapping exercise for Underwood Creek (MN-14), the Upper Menomonee River in Butler (MN-12), and the Nor-X-Way Channel and Upper Menomonee River in Menomonee Falls (MN-6 and MN-9). In July, 22 people and 32 people in August attended meetings held at Elm Grove Village Hall and the Menomonee Falls Fire Station #3, respectively.

The Watershed Action Team co-chairs and other Sweet Water partners distilled the results of the mapping exercises. Several actions / projects identified in the mapping exercises can be extrapolated to the rest of the watershed, and others identify geographically specific project opportunities, which we

feel will lead to cost-effective watershed improvements. Comments from all mapping discussions were combined to produce a draft implementation plan for the watershed. The WAT co-chairs updated and sought input from the Sweet Water Science Committee on the process used to develop WRP implementation projects.

September
The Menomonee WAT met in September at the Zoofari Conference Center at the Milwaukee County Zoo to review and provide input on the draft implementation plan summary; 17 members attended that meeting. The WAT Chairs also met individually with local municipalities, Milwaukee County, and key state agencies such as Wisconsin Department of Transportation to discuss the draft implementation plans to ensure alignment with capital projects, regulatory compliance, and program priorities at public agencies. The Menomonee WAT also held a special meeting to discuss prioritizing habitat improvement projects. It was decided that more information needs to be compiled relating to biodiversity data in the watershed to ensure that any restoration efforts in the watershed "do no harm" to sensitive plant and animal species. In addition, the habitat subcommittee decided that the implementation plan should prioritize eroding bank areas and riparian areas where turf grass goes all the way to the river, as projects that could be started soon and hold little risk to causing harm to native plant and animal populations.

October
The WAT co-chairs presented the draft implementation plan to the Sweet Water Science Committee to obtain feedback on the development and prioritization of implementation projects. The draft implementation plan was presented to the Sweet Water Executive Steering Council on October 20 and was approved.

November and Beyond
The Implementation Plan will be presented to the full WAT for discussion at the November meeting and then will be submitted to the Joyce Foundation and other key local, regional, and state partners. At its November meeting, the WAT will plan a 'coming out' event in the Menomonee watershed for the implementation plan.

It is anticipated that regular WAT meetings will continue as this plan is implemented. Following an operations and reporting procedure outlined more fully in Section V below, each WAT meeting will include a review of currently-underway projects, an update on near-term funding opportunities and planned follow up to meet those deadlines, and a regular review of the implementation plan components to determine if any listed projects are good candidates for adoption, given evolving partnership and funding arrangements.

III. MENOMONEE RIVER WATERSHED PROJECTS

All projects listed below in bold have been determined to be higher priority projects that the Watershed Action Team, Sweet Water, and its partners will focus on implementing in 2011 and 2012. Funding, availability of project partners, and other vagaries will ultimately determine which projects move forward. Priority projects chosen for early-out implementation will be described in Section IV of this document.

Project Category	Assessment Area/s	Project Description
Data Collection & Mapping		
Data Collection & Mapping	**Multiple**	**Establish data collection, management and analysis capacity in conjunction with Science Committee, MMSD, and UWM Great Lakes Water Institute to meet SWWT project needs.**
Data Collection & Mapping	**Multiple, but especially MN 15/MN17/MN18**	**Work with appropriate public agencies (e.g. MMSD, Milwaukee County, City of Milwaukee, City of Wauwatosa, and other municipalities) to collect GIS-based stormwater drainage area maps and municipal outfalls and integrate data into SWWT GIS platform.**
Data Collection & Mapping	**Multiple**	**Identify and integrate parcel, property owner and land use/occupancy data into SWWT GIS platform.**
Data Collection & Mapping	Multiple	Work with WDOT and Milwaukee County to determine impacts of highway construction projects on the Menomonee River (Zoo interchange project, Interstate 94, Interstate 41, Interstate 45, etc.)
Data Collection & Mapping	MN 15, MN 14, MN 9	Work with Milwaukee County to determine impacts from Timmerman Airport and Milwaukee County golf courses on Menomonee River, including discharge locations and ways to minimize runoff.
Data Collection & Mapping	Multiple	Work with WDNR to collect industrial point source discharges within the Menomonee River Watershed, and integrate data with bacteria outfall testing information.
Data Collection & Mapping	Multiple	Work to align citizen-based and institutional water quality monitoring capacity and activities with SWWT project needs.

Data Collection & Mapping	MN 9, MN 6, MN 14, MN 18	Suggestions for new citizen monitoring locations: Northhills Golf Course (access may be an issue); Lilly Road and Manor Hills Blvd; Brownfield at Stouper; Monitor at County Line near Kohl's; West Allis to 115th and Burleigh and Elm Grove/New Berlin (follow up with Nicole Hewitt in New Berlin); test at Schlinger in Valley; expand more sites in the Menomonee Valley.
Pollutant Loading /Reduce sources of bacteria		
Pollutant Loading /Reduce sources of bacteria	**MN 14, MN 15, MN 16, MN 17, MN 18**	**MRK/GLWI currently testing from Burleigh to Hawley as well as portions of Underwood and Honey Creeks due to bacteria modeling results/high unknown sources of bacteria. Monitoring should be expanded upstream to Capitol Drive and downstream through Menomonee Valley to 33rd to capture areas of heavy recreational use in these areas (paddling and fishing), with a particular emphasis in Wauwatosa where many kids are playing in streams in Hoyt and Hart Parks.**
Pollutant Loading /Reduce sources of bacteria	**MN 6, MN9 (also MN 1-5, MN 10)**	**Agriculture Impacts: Survey needed to identify worst areas of agricultural land runoff in upstream portions of watershed (Menomonee Falls, Germantown, Mequon). High loading for TSS in Nor-X-Way Channel (MN 6).**
Pollutant Loading /Reduce sources of bacteria	**Multiple**	**Convene small technical group to develop a strategy that prioritizes "find and fix" activities based on results of recreational use surveys, data collection/mapping work, and existing bacteria loading data.**
Pollutant Loading /Reduce sources of bacteria	Multiple	Use DNR info on outfall ownership as gathered in NR 151 process to determine who can 'claim' each outfall, especially the problem outfalls, to help facilitation fixing problem pipes.
Pollutant Loading /Reduce sources of bacteria	MN 9/MN 12	Potential improvements to recreational use were identified: increase public access upstream of Waukesha County/Milwaukee County line, increase river/riverfront access in Butler/Menomonee Falls area, and connect Oak Leaf Trail with trails in upper watershed. Many other potential recreational use opportunities identified (see master list). Bacteria data should be considered in planning and implementation of these projects.

Pollutant Loading /Reduce sources of bacteria	MN 15, MN 17, MN 18	SWAN conduct pre and post survey on recreational use to determine whether water quality and access improvements have led to an increase in recreation
Pollutant Loading /Reduce sources of bacteria	Multiple	Work with DNR and municipalities to include bacteria monitoring and find/fix sources of bacteria in stormwater permit requirements.
Pollutant Loading /Reduce sources of bacteria	MN 15	Hartung area residential neighborhood needs attention for bacterial sources per Wauwatosa.
Pollutant Loading /Reduce sources of bacteria	MN 9, MN 14, MN 15, MN 17, MN 18	Waterfowl: Education about the importance of vegetative buffers seems to be the key for reducing fecal loading from waterfowl. Education should highlight good examples such as nuisance geese reduction in Washington Park and Elm Grove ponds after restoration efforts. This is a lower priority from a public health standpoint, but should work with Golf Courses and Milwaukee County to address problem areas, as well as work to reduce waterfowl in the Menomonee Valley Stormwater park.
Pollutant Loading /Reduce sources of bacteria	MN 9, MN 17, MN18	Pet Waste: Likewise, should encourage education about how to reduce fecal loading from pet waste. Poop Stations should be encouraged – targeting Wauwatosa and Valley and Menomonee Falls (MN 17, MN 18, MN 9), working with partners such as scouts and neighborhood associations to adopt as projects.
Stormwater management / green infrastructure		
Stormwater management / green infrastructure	**Multiple**	**Based on sewershed and stormwater catchment area mapping and parcel data, determine priority sewershed locations for clustered green infrastructure applications to manage stormwater quantity and quality.**
Stormwater management / green infrastructure	**Multiple**	**Work with Milwaukee County to meet county-wide NR216 stormwater management requirements. Identify opportunities to implement BMPs at Milwaukee County Park facilities, Milwaukee County Zoo, Jacobus Park Lagoon, Timmerman Airport, etc.**
Stormwater management / green infrastructure	MN 6	Industrial Park in Menomonee Falls, industrial park in Germantown: remove impervious surfaces, rain gardens, bioswales, help meet TSS reductions.
Stormwater management / green infrastructure	MN 15, MN 17, MN 18, MN 16	Work with City of Wauwatosa and City of Milwaukee to continue rain garden and downspout disconnection programs, Hart Park greenspace redesign.

Stormwater management / green infrastructure	MN 14, MN 13	Bishop's Woods, Sisters of Notre Dame, Reinders--might be opportunity for rain gardens and bioswales as demonstration projects, replace impervious surfaces with permeable pavers.
Stormwater management / green infrastructure	MN 15, MN17	Target houses built before 1956 for downspout disconnections (Tosa).
Stormwater management / green infrastructure	MN 16	Work with State Fair to identify opportunities for BMPs to address water quantity and quality issues, as well as O&M issues related to the Fair
Stormwater management / green infrastructure	Multiple	Conduct outreach to private companies with significant impervious surfaces to assess willingness to partner on BMP projects, including: Kohl's facilities in Menomonee Falls (MN 9); Dickinson Parcel (MN 9); Coca Cola on Brown Deer (MN 9); Quad Graphics (MN 9); Ernie von Schleidorn (MN 9); ADM Plant (MN 9/ MN 12); Pick N Saves; Burleigh Triangle; Industrial land along 124th in Butler (MN 12); Quad Graphics (MN 14); Mayfair Mall (MN 15); P&H (MN 18); Falk (MN 18); Briggs and Stratton (MN 15); Miller Brewery (MN 18).
Reduced Chlorides		
Reduced Chlorides	**Multiple**	**Convene multi-jurisdiction task force to compile local best practices for salt application. Assist with capacity to conduct workshops and disseminate information about alternatives and highlight successes (Wauwatosa, Brookfield, Menomonee Valley, etc.).**
Reduced Chlorides	Multiple	Identify high priority areas for applying chloride BMPs (e.g., appropriate residential areas, Milwaukee County Parks, public and private school facilities, and other institutional facilities throughout watershed.
Reduced Chlorides	MN 18	Menomonee Valley business parks use non-salt options already – are a possible source of education for other areas like Wauwatosa/upstream business parks.
Reduced Chlorides	MN18	Canal St., 35th, and 27th Streets all suffer native plant damage from salt spray—opportunity to work with the City of Milwaukee on salt spreading in the Valley (Tower Automotive using beet juice, need to investigate efficacy).
Reduced Chlorides	MN 18	Investigate Miller Park salt use and opportunities for salt reduction.
Riparian buffer restoration /enhancements		

Riparian buffer restoration /enhancements	**Multiple**	**Develop a strategy for near-term projects that focus on areas experiencing erosion, where turf grass can be replaced with native vegetation, and where invasive species have encroached into natural areas, with overall emphasis of "do no harm."**
Riparian buffer restoration/enhancements	**Multiple**	**Collect/assemble biodiversity inventory data to provide an additional layer of information to help prioritize areas where we should conduct riparian restoration projects, while still doing "no harm"**
Riparian buffer restoration/enhancements	**MN 11**	**Maintain and restore natural areas along the Little Menomonee River to: protect this hotspot of biodiversity and high quality habitat; remove and control invasive species; and maintain/plant native vegetation. Focus on reaches between Silver Spring and Brown Deer Rd--former Moss American/Kerr McGee Superfund Site.**
Riparian buffer restoration/enhancements	**MN 14, MN 15, MN 9**	**Reduce mowing and improve riparian corridors at public and private golf courses throughout watershed: Hanson Golf Course, Blue Mound County Club, Dretzka, North Hills, Wetmoor County Club, Currie Golf Course, etc**
Riparian buffer restoration/enhancements	MN 17, MN 18, MN 12, MN 14, MN 15,	Work with Milwaukee County Parks and Wauwatosa to reduce mowing, remove invasives, and plant native vegetation in Doyne, Hart, Hoyt, and Jacobus Parks, as well as along Menomonee River Parkways.
Riparian buffer restoration/enhancements	MN 9, MN 6	Improve buffers via planting trees and other vegetation in areas where turf grass goes to river, and reduce mowing to edge in parks in Menomonee Falls (e.g. Rotary, River Park Pond). Create connected corridor between Rotary Park and Lime Kiln Park, heading south to Butler.
Riparian buffer restoration/enhancements	MN 12, MN 13, MN 15, MN 18	Focus on erosion problem areas throughout the watershed; Granville Park (MN 12), Currie Park (MN15), north of Capital Ave (Mn 15), upstream of Elm Grove (MN13 and MN 14), below P&H Mining (MN18). Consult Milwaukee County Interfluve report for other badly eroding banks.
Riparian buffer restoration/enhancements	MN 13, MN 14,	Improve buffers along Dousman Ditch and Pilgrim Road in Brookfield and Elm Grove; improve buffers upstream of Elm Grove Village Hall, and along Underwood Creek Parkway (along bike path).

Riparian buffer restoration /enhancements	MN 17, MN 14	Opportunities for improving quality of natural areas at Milwaukee County Grounds, and for protecting/rezoning "economic development" areas adjacent to Ronald McDonald House/We Energies that are forested and high quality
Riparian buffer restoration/enhancements	MN 18	Support buffer restoration projects in Menomonee Valley, especially Airline Yards and adjacent to P&H and Falk properties
Fish passage /aquatic habitat improvements		
Fish passage /aquatic habitat improvements	**MN18**	**Restore fish passage within a 1,000 foot concrete-lined reach of the Menomonee River from Bluemound Road to Miller Brewery by removing concrete from the bottom, replacing with cobbles/boulders, and constructing riffles and pools.**
Fish passage /aquatic habitat improvements	**Multiple**	**Commission study of stream passage impediments/obstructions throughout the watershed to enable fish passage from Lake Michigan to existing high quality natural areas upstream that could be used for spawning/rearing.**
Fish passage /aquatic habitat improvements	**MN 17**	**Remove 5 low flow structures in Wauwatosa causing fish passage issues between Swan Boulevard and Harmonee Avenue during low water levels.**
Fish passage /aquatic habitat improvements	Multiple	Continue river clean-ups in problem areas.
Fish passage /aquatic habitat improvements	MN 9	Research obstructions in Menomonee Falls, including whether fish ladder could be built at the Falls itself, as well as barrier upstream of Grand Avenue.
Fish passage /aquatic habitat improvements	MN14	Remove box culvert in Elm Grove on Underwood Creek/daylight Underwood Creek.
Fish passage /aquatic habitat improvements	MN 18/Estuary	Address failing dock walls in Menomonee River Valley and downstream areas of the Estuary (e.g., including failing wall adjacent to Falk).
Fish passage /aquatic habitat improvements	MN 14, MN 16	Support concrete channel removal efforts on Honey and Underwood Creeks through education and advocacy.
Fish passage /aquatic habitat improvements	MN 18	Investigate opportunities to daylight and restore riparian buffers along Woods Creek, especially adjacent to Soldiers Home/Veterans Administration property.
Reduced nutrient inputs		

Reduced nutrient inputs	**Multiple**	**Private and public golf courses should be targeted for phosphorus reduction, including: Dretzka, North Hills, Westmoor Country Club, Bluemound Country Club, Hanson, and Currie golf courses. (Note this overlaps with riparian corridor priority)**
Reduced nutrient inputs	**Multiple**	**Milwaukee County Parks is a huge opportunity for reducing phosphorus in county parks and parkways along the rivers, as well as at Timmerman Airport. Determine if they are using Milorganite, and investigate opportunities to minimize fertilizer use, and increase buffers along Parkways, in Parks, and at Timmerman Airport.**
Reduced nutrient inputs	**Multiple**	**Investigate opportunities to reduce phosphorus from industrial cooling water discharges that contain an anti-corrosion inhibitor called orthophosphate (which is added to Milwaukee drinking water). Investigate regulatory issues involved as well as technological improvements available for reducing phosphorus used in water treatment process.**
Reduced nutrient inputs	Multiple	Work with Department of Transportation to identify areas to reduce fertilizer application and migration to surface water bodies.
Reduced nutrient inputs	Multiple	Monitor implementation of statewide phosphorus rules and phosphorus ban in fertilizers and detergents, and quantify impacts to local rivers. Assess phosphorus loading areas having the biggest impact on algal growth.
Recreational access improvements		
Recreational access improvements	**Multiple**	**Future recreational access projects should be implemented given opportunity and community interest, but should also be reviewed in light of bacteria data to eliminate any human exposure to bacteria that could pose public health risks (see master list of priority projects for suggested locations).**
Recreational access improvements	MN 14, MN 18	Increase recreational access to the Menomonee River and tributaries in conjunction with MMSD flood management/channel rehabilitation projects (Underwood Creek, Western Milwaukee Flood Management, concrete removal downstream Miller Brewery, etc.)

Recreational access improvements	MN 18	Investigate opportunities to improve river access from bridge upgrades along high speed rail route. There will also be a new bridge over existing railroad line at 26th St from Mitchell Park in 2012 as part of Airline Yards Project.
Recreational access improvements	MN 18, MN 16, MN 14	Investigate opportunities to improve river access as part of Hank Aaron Trail upgrades west of Miller Park/VA Hospital/State Fair Park to 124th and Blue Mound Road.
Education		
Education	**Multiple**	**Evaluate the results of SWWT Household Survey (fall 2010) and develop public education programming that responds to identified needs.**
Education	**Multiple**	**Develop a watershed-wide educational outreach program that increases awareness of pet waste contributions to pollution loading.**
Education	**Multiple**	**Work with municipalities, the Menomonee Stormwater Group, Counties, and private entities such as Miller Park to help them achieve educational and outreach requirements in their stormwater permits.**
Education	Multiple	Work with Milwaukee County Parks to provide pet litter management supplies and signage in high traffic areas within park system.
Education	Multiple	Storm Drain Stenciling needs to be continued (Wauwatosa now places stencils/stickers on all new drains—good example).
Education	Multiple	Facilitate more citizen action leaders in communities to encourage participation in local areas. Create database of volunteer-led projects for scouts, neighborhood associations, and community groups looking for involvement.
Education	Multiple	Outreach to private properties without riparian buffers watershed wide.
Science / research		
Science / research	Multiple	Research needed on alternative indicators to help identify and eliminate human sources of bacteria to the rivers.
Science / research	Multiple	In-stream bacteroides data is needed across the hydrograph, in order to better measure progress of reducing and eliminating human sources of bacteria in the future
Science / research	Multiple	Research means or tools to locate cost-effective stormwater management and green infrastructure BMPs at the subwatershed level.

Policy		
Policy	**Multiple**	**Engage stakeholders through the Watershed Action Teams in MMSD's process to create TMDLs and implementation plans for bacteria, phosphorus, and sediment in the Menomonee River watershed, in hopes of enhancing efforts to further improve water quality and ensure integration of TMDL effort with Watershed Restoration Plan implementation efforts.**
Policy	**Multiple**	**Evaluate the potential for watershed-based permitting to further improve water quality in the Menomonee River watershed, and assist watershed municipalities to create a framework for a watershed-based stormwater permit under the Wisconsin Pollutant Discharge Elimination System (WPDES).**
Policy	**Multiple**	**Pursue opportunities to further municipal progress toward meeting their NR 151/216 mandate to reduce total suspended solids (TSS) inputs to the Menomonee River system via trading of TSS reduction credits between municipalities.**
Policy	**Multiple**	**Evaluate opportunities for water pollution credit trading between point sources and/or between point and non-point sources of phosphorus, and seek specific opportunities to implement a pilot project on trading in the Menomonee River watershed.**
Policy	MN18	Miller Park must add some facilities to achieve compliance with 40% TSS removal by 2013—could be some opportunities for SWWT to help out at a high profile location that could highlight stormwater BMPS and educate large numbers of people. Address issues with maintenance crews blowing trash into the Menomonee River.
Policy	Multiple	Work with DNR and municipalities on the possibility of municipalities testing for bacteria as part of their NR216 permit-related efforts to identify illicit discharges. Work with them to enforce illicit discharge detection and elimination components of those permits.

IV. MENOMONEE RIVER WATERSHED PRIORITY PROJECTS: *EARLY-OUT* 2011/2012

The priority projects below were developed from the process described in the introduction and listed in Section III of this document. The projects target recommended actions in strategic locations to effectively implement the Menomonee River Watershed Restoration Plan. This list does not represent all of the actions needed to show water quality improvements watershed-wide, nor are the Priority Projects ranked in any way. Going forward, Sweet Water will seek to refine the process of further project development, as well as project implementation. Section V of this document describes Sweet Water's next steps.

1 – 3: Data Collection and Mapping

4. Title: Reducing bacterial loading in the Menomonee and Kinnickinnic Rivers

Timeline: January 2011-December 2012

Key partners: Milwaukee Riverkeeper, Great Lakes Water Institute, Sweet Water

Funding: Sample collection work: $192K
GLWI Lab Work: $XXX
Find and Fix: $1 million

Sources: $ 157,000 Joyce Funding for Milwaukee Riverkeeper sample collecting personnel from May 1, 2009 through April 2012. $35 K needed for May – December 2012. Potential funding: Joyce, Brico, Municipalities
Funding for GLWI lab work, and "Find and Fix" work from GLRI, Fund for Lake Michigan, Municipalities

Project Summary:
Bacterial loads in coastal waters in general and the Menomonee and Kinnickinnic Rivers in particular prevent us from achieving the swimmable goals set out in the Clean Water Act. While there are many sources of bacterial pollution, data indicate that for the Menomonee River in downtown Wauwatosa (approx. 10 mile area between Burleigh St. and Hawley Avenue), fecal contamination greatly exceeds what would be expected simply from storm water runoff. Modeling done for the Milwaukee Metropolitan Sewerage District indicates that, over a five-year period (1994-1999), fecal coliform levels in the Menomonee River, Wauwatosa, were ten- to 100-fold higher than would be expected from storm water runoff alone. This is in contrast with a more rural, upstream section of the Menomonee River where the models were good predictors of fecal coliform loads. This unknown source of bacteria is most likely coming from illicit connections and failing sewage/stormwater infrastructure. Likewise, the entire Kinnickinnic River Watershed has very high bacteria loading. Project partners propose a two year project, which includes continuing current testing of stormwater outfalls in both watersheds during dry and wet weather for *E. coli*, *Enterococci,* and *Bacteroides*, with a goal of getting 3 wet weather samples from each problem outfall and dry samples if outfalls are running. A small technical group will be convened of project partners to develop a strategy to find and fix problem stormwater pipes based on results of bacteria data, infrastructure condition information from MMSD and municipalities, and recreational use surveys in both watersheds (e.g., prioritizing fixing problem pipes in areas of aquatic recreation). Funding will then be provided for diagnostic testing in problem "sewersheds" (e.g., dye and smoke testing) and for fixing problem pipes in the most cost-effective way possible (e.g., Sanipour, pipe liners, pipe replacement, etc.).

Intended Outcomes:
Reduction of bacteria loading into the Menomonee and Kinnickinnic Rivers and tributaries, increased number of days when recreation in the rivers is safe, increased number of days when local rivers meet bacteria standards, improved public health, and more municipalities complying with the illicit detection and elimination requirements of their stormwater permits.

5. Title: Survey of agricultural runoff problem areas in upstream portions of the Menomonee River Watershed

Timeline: January 2011-December 2011

Key partners: Sweet Water, Milwaukee County, Ozaukee County, Washington County, MMSD & Conservation Fund staff, Germantown, Menomonee Falls, Mequon, Milwaukee Riverkeeper, UW-Extension

Funding: $100K

Sources: Funding from local foundations could leverage existing funding from Counties for creation of Land and Water Resource Management Plans that address agricultural impacts, as well as municipal funding for compliance with NR 151/NR 216 requirements.

Project Summary:
Project partners propose a year long project to survey agricultural runoff problem areas in the upstream portions of the Menomonee River Watershed. Although, the Sweetwater Menomonee River Watershed Restoration Plan identified one problem area (the Nor-X-Way Channel) that contributes heavy TSS loading, there is not detailed enough information to identify problem areas smaller than the subwatershed level. In addition, the Watershed Restoration Plan contained very little information about agricultural inputs from the upstream portions of the Menomonee. Milwaukee, Ozaukee, and Washington County all are in the process of creating Land and Water Resource Management Plans that contain information on agricultural inputs to the river. In addition, municipalities have dedicated funding to sedimentation modeling (e.g., SLAMM analysis) to comply with their stormwater permits/regulations as part of NR216/NR151 that contain finer detail about sediment loading into area waterways. In addition, Washington and Ozaukee County also have staff that work with local farmers to comply with agricultural runoff requirements, and they have more detailed information about problems and opportunities in the more agricultural areas of the watershed. MMSD/Conservation Fund also have good farmer contacts within their service area for farmers that have land with hydric soils, which are priority acquisition areas for the Conservation Plan/Greenseams programs. Ideally, one could fund a consultant or a partner group of Sweetwater to compile this information and come back with recommendations of problem areas of agricultural runoff that Sweetwater and its partners should work on addressing through better agricultural BMPs. These partners could then work with Counties to find funding for farmers to address problem areas through state and federal funding (e.g., Farm Bill, CRP, WRP, etc).

Intended Outcomes:
Decreased loading of sediment and nutrients into the Menomonee River. Increased number of agricultural BMPs installed, increased length of riparian buffer installed, number of farmers affected, etc.

6. Title: Milwaukee County Riparian Buffer Improvement Project

Timeline: July 1, 2011-June, 30, 2015

Key partners: Milwaukee County, Sweetwater, Park People?

Funding: $1,000,000

Sources: Wisconsin Coastal Management
GLRI
Fund for Lake Michigan
DNR Wildlife Management Grants
DNR Forestry Grants

Project Summary:
Milwaukee County Parks own a large amount of the riparian corridor along the Menomonee River and several of its tributaries. Improving the width and quality of riparian buffers on County-owned lands would help reduce nutrients as well as sediments entering the river. The County could also replace lawn areas with native vegetation, which would help minimize runoff. The County could also investigate minimizing or eliminating fertilizer use in certain areas of their parks and parkways adjacent to the river. The County should also be encouraged to minimize fertilizers in areas such as the Milwaukee County Grounds, the Milwaukee County Zoo and Timmerman Airport, which all discharge to the Menomonee River Watershed. Existing County staff could work with local volunteers to help improve riparian buffers, as well as contract out some of the restoration work. Riparian restoration is also important in context of dealing with expected mortality from the emerald ash borer, which could damage existing natural areas and their effectiveness in filtering pollutants before they reach local rivers.

Intended Outcome:
Intended outcomes from this project could include increased miles of improved riparian buffer, decreased nutrient and TSS loading from decreased fertilizer useage and/or improved buffers, etc. This project also provides opportunities to engage hundreds of local citizens and volunteers to help with restoration and reforestation activities, while improving water quality.

7. Title: Riparian Buffer Improvements and Phosphorus Reductions at Golf Courses along the Menomonee River

Timeline: March 2011-ongoing

Key partners: Milwaukee County Parks, private landowners, WATs, RRF, Milwaukee Riverkeeper, Park People

Funding: $200,000

Sources**:** WCMP, River Network (Miller Coors)

Project Category Addressed: Riparian Buffer Restoration/Enhancements, Reduced Nutrient Inputs

Project Summary:
Project will focus on establishing partnerships with both public and private golf courses in the Menomonee River Watershed and work towards improving riparian buffers and reducing nutrient loadings, with an emphasis on phosphorus. Golf courses that will be targeted include: Hanson Golf Course, Bluemond Country Club, Dretzka Golf course, North Hills Country Club, Currie Golf Course,

and Westmoor Country Club. Discussions with golf courses will focus on reducing mowing in riparian areas and encouraging planting of native vegetation along the Menomonee River. Efforts will also focus on golf courses reducing their use of phosphorus and other fertilizers in order to reduce nutrient loading. Partners will involve volunteers to help with riparian planting activities.

Intended Outcomes:
-Reduced phosphorus loading to Menomonee River.
-Improved riparian buffers in large golf courses; increased square feet of riparian buffer.
-Established working relationships with private/public landowners of golf courses.
-Education of golf course users about the benefits of improved riparian buffers and effects of reduced P loading on water quality, wildlife habitat, and aesthetic beauty.

8. Title: Menomonee River Fish Passage

Timeline: September 1, 2010-September 30, 2011

Key partners: MMSD, Milwaukee Riverkeeper, Trout Unlimited

Funding: $2,177,224

Sources: $200K USFWS Fish Passage Grant
$150K MMSD in-kind
$5,200 Milwaukee Riverkeeper in-kind
$6,024 Trout Unlimited in-kind
$16,000 SEWRPC in-kind
$1.7 Million NFWF and other MMSD grants?

Project Summary:
In 1965, the Menomonee River in Milwaukee County was deepened and lined with concrete for approx. 4,600 feet from N. 45th Street to approximately 500 feet south of Interstate 94 to improve flood carrying capacity. At the upstream end of this reach, a five food concrete spillway or drop structure was constructed to make a vertical transition between the natural channel upstream and new concrete lining downstream. This drop structure and 1,500 feet of concrete downstream were removed in 1999, which was thought to open up fish passage in this section of the river. Unfortunately, due to strong laminar flows, the area still poses a major impediment to fish migration from Lake Michigan to upstream portions of the Menomonee River and existing, high quality wetlands that could be used for spawning and rearing by potadromous fish. This project would restore fish passage within a 1,000 foot section of the Menomonee River by removing concrete from the 25 foot bottom; replacing concrete with cobbles/boulders/rock substrate; creating alternating riffles and pools; removing concrete from two-400 foot reaches of channel side slopes and retaining walls; and replacing concrete with combination of engineered and bioengineered floodplain.

Intended Outcomes:
This project will enable fish to access an additional 17 miles of the Menomonee River and 20 miles of its tributaries, as well as access a potential 3,700 acres of riparian wetlands upstream. It will also enhance the biological connectivity and genetic diversity of fish and other aquatic life communities between Lake Michigan, the Milwaukee River Estuary AOC, and the Menomonee River. It will enhance fish and aquatic life habitat along 1,000 feet of a concrete lined channel, and contribute to delisting of several AOC beneficial use impairments including degradation of fish and wildlife habitat and

degradation of fish and wildlife populations, as well as degradation of aesthetics and degradation of benthos. The project will also improve recreational fishing and paddling opportunities.

9. Title: Identifying Stream Passage Impediments and Opportunities to Address Aquatic Habitat Fragmentation in the Menomonee River Watershed

Timeline: July 1, 2011-June, 30, 2012

Key partners: Milwaukee Riverkeeper, Sweetwater, SEWRPC, DNR, municipalities, Milwaukee County, Ozaukee County, Washington County

Funding: $50,000

Sources: $25K Milwaukee Riverkeeper and partner in-kind
$25K applied for from WCMP. NOAA and USFWS likely sources of funding if WCMP funding not granted, and for removal of impediments

Project Summary:
Milwaukee Riverkeeper will identify partial and complete stream impediments along the natural mainstem reaches of the Menomonee and Little Menomonee Rivers, as well as major tributaries that are not concrete channelized or enclosed, and that provide access to higher quality natural areas that could be used for fish spawning or rearing. Removing obstructions to fish passage and restoring access to high quality natural areas will be the most cost effective way of increasing aquatic life diversity and productivity in the Menomonee River Watershed. This project will be a collaborative effort to: 1) identify, inventory, and document existing barriers (using SEWRPC data as a baseline); 2) analyze physical features of barriers and impacts on fish movement (e.g., partial or complete barrier) and channel stability; 3) prioritize barrier removals; 4) educate and involve the public in this process; and 5) work with local municipalities and counties to address these impediments in the future (e.g., fundraising for restoration activities/infrastructure retrofits, organizing volunteer work days to remove debris jams, etc).

Intended Outcomes:
The most tangible measurable outcome of this project is a report detailing locations of fish passage obstructions and opportunities for aquatic habitat restoration activities, as well as a prioritization of which problem areas should be addressed first to provide maximum benefit both for wildlife as well as water quality. We will also create a prioritized GIS layer geo-locating stream impediments, and develop a small brochure and outreach materials for both the Riverkeeper and Sweetwater websites. Ultimately, we hope this report leads to federal funding to remove fish passage impediments.

10. Title: Removal of Barriers to Fish Passage in Menomonee River

Timeline: July 1, 2011-June, 30, 2012

Key partners: MMSD, SEWRPC, Sweetwater, City of Wauwatosa

Funding: $2,973,538

Sources: $1,500,000 MMSD
Rejected by GLRI, but should be resubmitted.
Submitted to NOAA Open Rivers Initiative

Project Summary:
This project will remove/retrofit five existing low-gradient structures located between Swan Boulevard and Harmonee Avenue within the city of Wauwatosa. These five structures are obstructions to fish and aquatic life passage within the AOC. Removing or retrofitting these structures will allow fish and aquatic life to move more through this area during low flows. Along with other work being done in the river and throughout the watershed, this will improve reproduction, development and other life requisites; genetic diversity; access to over-wintering habitat; and access to food supplies. This project will directly contribute to the future delisting of three Beneficial Use Impairments within the Area of Concern:

- Loss of Fish and Wildlife Habitat
- Degradation of Aesthetics
- Degradation of Fish and Wildlife Populations

Progress towards delisting will be realized through improved conditions for fish and aquatic wildlife through habitat restoration and improved fish passage in the Area of Concern. The project, if funded, would also support the ongoing fisheries recovery program for lake sturgeon, walleye, northern pike and smallmouth bass being undertaken by the WDNR in the Milwaukee River Estuary. The project will also assist native and planted salmonid and trout species to successfully access increased reaches in the Menomonee River watershed during their seasonal spawning runs from Lake Michigan, thereby expanding recreational opportunities that currently have limited availability to urban anglers. This project also includes 5 years of pre and post monitoring.

Intended Outcome:
The removal of the five low-gradient structures will improve conditions for fishes and aquatic life through the removal of vertical obstructions that exceed fish swim or leap capabilities. Fish species would have improved access to historical upstream habitats necessary for reproduction, rearing and development. Other expected results include enhanced genetic diversity, access to over wintering habitat, access to food supplies, and improved water quality. The project will also improve safety for paddlers and create increased recreational fishing access. Measures of progress that will be considered for the project include the following:

- Miles of rivers reopened for fish passage
- Number of fish passage barriers removed or bypassed
- Number of lake trout, lake sturgeon, and other native species propagated
- Number of management plans implemented (recovery, fisheries, etc.)
- Percent of populations of native aquatic non-threatened and endangered (T&E) species that are self-sustaining in the wild
- Percent of T&E species that are stabilized or improved
- Percentage of habitat related BUIs removed from the AOC
- Improved aesthetics as received by public input

Ultimately the fish and wildlife species data collected will be used to support the delisting of habitat related BUIs in the Milwaukee Estuary AOC.

11. Title: Commission Task Force to Analyze Orthophosphate Alternatives

Timeline: January 1, 2011-December 31, 2011

Key partners: Sweetwater Policy Committee, SEWRPC, EPA, Milwaukee Water Works, Milwaukee Riverkeeper, AFSCME?

Funding: $ Negligible

Sources: EPA, Joyce Funding

Project Summary:
Two forms of phosphorus are common in surface waters—dissolved phosphorus and total phosphorus. Dissolved phosphorus is the form that is most readily taken up by algae and total phosphorus represents all the different forms of phosphorus that is contained in material dissolved or suspended within the water, including phosphorus contained in organisms and detritus. As algae decompose in local waterways, oxygen is consumed, often leading to localized problem areas and occasional fish kills. According to the SEWRPC Regional Water Quality Management Plan, since 1994 the mean concentration of total phosphorus has increased from upstream to downstream, increasing sharply after 1996. Prior to this time, concentrations of phosphorus tended to be lower in the estuary than in upstream sections of the river. The likely cause of increases in phosphorus in the upper portions of the estuary is from increases in phosphorus loads from facilities discharging non-contact cooling water drawn from municipal water utilities. Milwaukee Water Works began treating its water with an anti-corrosion inhibitor (to control release of copper and lead from old pipes in the water system) called orthophosphate in 1996. Similar increases in phosphorus were not seen in local rivers such as the Root River or in areas of the Milwaukee River where local water utilities do not use orthophosphate. Project partners suggest convening a task force to analyze the regulatory, technical, legal, fiscal, and public perception barriers to discontinuing use of this inhibitor or switching to another one that does not cause negative effects to local waterways.

Intended Outcome:
Ideally, results from the task force will be compiled in a report, and will hopefully lead to a change in anti-corrosion inhibitor for the City of Milwaukee, which could then be used as a pilot or test case for convincing several other utilities in southeastern Wisconsin (most of which discharge to the Milwaukee River) to also make this switch.

12. Title: Menomonee River Watershed Biodiversity Inventory and Habitat Restoration Plan

Timeline: May 2011-December 2012

Key partners: Milwaukee Riverkeeper, RRF, UW-Extension, WDNR, Milwaukee County

Funding: $300,000

Sources: GLRI, State Wildlife Grants, Fund for Lake Michigan, WCMP

Project Category Addressed: Data Collection and Mapping, Riparian Buffer Restoration/Enhancements

Project Summary:
Partners will create a Menomonee River Biodiversity and Habitat Restoration Plan. This project includes the collection of biodiversity inventory data throughout the Menomonee River watershed in order to help prioritize areas where riparian restoration projects should occur and maximize impact, while preventing unintended harm to terrestrial habitat. This project will fill a gap in the Sweetwater Watershed Restoration Plan and other implementation planning efforts by improving assessment of and metrics for living resources, especially wildlife and vegetation. While we have a lot of water quality data that helps us prioritize projects for reducing pollution loading, there is currently little baseline information regarding population health of birds, amphibians, reptiles, and vegetation species in the watershed. The

Restoration Plan will clearly articulate objectives and goals for habitat restoration for focal species, document existing species richness and identify key habitat connectivity and restoration opportunities, which will also improve water quality. This biodiversity information will help us prioritize restoration efforts identified in the Watershed Restoration Plan implementation planning efforts. We will implement several pilot restoration projects in Milwaukee County riparian areas, and engage stakeholders while outlining an overall strategy for funding future restoration projects. This project will also address 3 Milwaukee Estuary Area of Concern beneficial use impairments: Degradation of Fish and Wildlife Habitat, Degradation of Fish and Wildlife Populations, and Degradation of Aesthetics.

Intended Outcomes:
- A Biodiversity Vision will be created, including specific objectives for habitat restoration and quantifiable metrics for measuring progress.
- A landscape ecology assessment showing patterns of species richness, trends, and explaining concepts relevant to planning will be conducted.
- Important existing critical habitat areas will be identified along with enhancement opportunities and metrics.
- Potential restoration target sites will be identified for focal species and species of conservation concern, along with metrics for achieving maximum value.
- Two miles of degraded riparian habitat will be restored by removing invasive species, spatially targeted for maximizing biodiversity.
- Species richness will be increased, and high value habitat restoration sites identified, as well as crucial sites for habitat connectivity.
-Opportunities will be identified for improving biodiversity that can be implemented in future years in coordination with SWWT water quality improvement projects

13. Title: Enhancement and Maintenance of Little Menomonee River from Silver Spring Drive to Brown Deer Road (Former Moss American/Kerr McGee/Tronox Superfund Site)

Timeline: January 2011-January 2020

Key partners: RRF, Milwaukee Riverkeeper, WDNR, Milwaukee County, Park People and local Friends Groups, USEPA

Funding: $1 Million

Sources: WDNR State Wildlife Grants and Forestry Grants
Sustain Our Great Lakes and GLRI Funding
Fund for Lake Michigan
Milwaukee County in-kind

Project Category Addressed: Riparian Buffer Restoration/Enhancements

Project Summary:
In January 2009, Tronox (formerly Kerr-Mcgee and Moss American), the responsible party for the Superfund site, filed for bankruptcy, and federal Superfund money was used to finish the clean-up of the Little Menomonee River. Clean-up of the site includes, to date, removal of contaminated sediment, a reroute of several sections of river, restoration of all areas disturbed during the clean-up, and re-seeding cleared areas with native plants and grasses. As a result of the bankruptcy filing, funding for

maintenance of restoration (removal of invasives, native plantings, trash clean-ups) is limited. This site has been identified as a biodiversity hotspot containing high quality habitat and water quality. This project will take responsibility for habitat restoration maintenance, which includes removal and control of invasive species and native vegetation plantings. Focus will be on reaches between Silver Spring Drive and Brown Deer Road, which is the terminus of the former Moss American/Kerr McGee Superfund Site. The Little Menomonee River is entirely contained within the Milwaukee Estuary AOC. Partnerships will be developed to establish regular work days to conduct restoration activities.

Intended Outcomes:
-preservation of X acres of high quality habitat
-increased # of native species
-Removal of X units of invasive species
-Decreased TSS and nutrient loading
-established work days: 1/month
-Numbers of volunteers mobilized
This project will also contribute to delisting of several beneficial use impairments including degradation of fish and wildlife populations, degradation of fish and wildlife habitat, degradation of benthos, and degradation of aesthetics.

14. Title: Erosion control, stabilization of banks, and restoration of native vegetation along the Menomonee River

Timeline: March 2011-November 2012

Key partners: Milwaukee County Parks, City of Wauwatosa, City of Milwaukee, Village of Menomonee Falls, other municipalities/landowners, RRF, Milwaukee Riverkeeper, Friends of Lime Kiln Park, Sweetwater, WATs

Funding: $100,000-500,000

Sources**:** WCMP
Fund for Lake Michigan
WDNR 319 Funding, Forestry Grants, State Wildlife Grants

Project Category Addressed: Riparian Buffer Restoration/Enhancements, Reduced Nutrient Inputs

Project Summary:
This project consists of several smaller projects that can be implemented relatively easy and in the very near future. Milwaukee County Parks, City of Wauwatosa, City of Milwaukee, Village of Menomonee Falls, and other municipalities/landowners/NGOs will be critical partners in much of this work. Existing GIS layers and site visits will be used to identify and verify areas along the Menomonee River and its tributaries where significant erosion is occurring. Identified areas will then be categorized as either existing or potential and ranked according to severity of bank degradation in order to improve highly eroded banks and prevent the worsening of areas that have a high potential for serious erosion problems in the future. Milwaukee County's Interfluve bank stability study will also be referenced as part of the planning for this work. Focus for near-future projects should be in areas that are experiencing erosion and in areas identified by the Watershed Restoration Plans and municipal SLAMM analysis to be heavy loading areas for sediment. Bank restoration activities should include natural stabilization methods such as biologs, coir matting, and planting of native plant species, unless heavy armoring is

needed to protect infrastructure. In addition, areas where turf grass goes all the way to the streambank will be identified and prioritized for restoration based on potential for future erosion, and riparian buffers increased with native vegetation. Volunteers can be mobilized to help with bank stability work as well as restoration and planting efforts.

Intended Outcomes:
-Increased erosion control
-Increased riparian buffers using native vegetation
-Decreased loading of sediment into area rivers
-Increased compliance with NR216/NR151 requirements for municipalities and counties
-Increased numbers of mobilized volunteers

15. Title: Identify Recreation Access Improvement Project Opportunities

Timeline: January 2011– April, 2012

Key Partners: Sweetwater, WATs, Municipalities, RRF, Neighborhood and Community organizations, MMSD, Friends Groups

Funding: TBD

Sources: Existing Joyce Foundation funds, Municipal funding sources, Stewardship Funds, River Protection Grants

Project Category Addressed: Recreational Access Improvements, Education, Riparian Buffer Restoration/Enhancements

Project Summary:
Implementation of recreational access projects should be largely based on opportunity, community interest, and partnership opportunities; however, project priority should also be based upon minimizing the potential for human exposure to bacteria based on existing data. In the short-term, this project will create a list of potential access projects-- both potential access points and access improvement opportunities for existing access points. This list will be largely based upon input and recommendations from the community mapping sessions that were organized by the Menomonee WAT from April through September 2010. We will identify potential and existing projects on the Menomonee River that have an access component in order to begin one-on-one discussions with project partners (or potential partners) to determine opportunities for access projects, and how Sweetwater can help with those efforts. Riparian buffer restoration projects should also emphasize access, where appropriate.

Intended Outcomes:
--List of potential and existing recreational access projects, including key (potential/existing) partners, timeline, etc.
--Recreational access projects will be prioritized, funding efforts initiated.
--River access will be improved, and safe for humans based on low exposure to bacteria and human pathogens.

16. Title: Convene multi-jurisdictional task force to compile local salt use best management practices (as outlined in salt use plans) and build capacity to coordinate efforts resulting in reduced chloride in runoff.

Timeline: January 2011 – June 2011

Key Partners: Sweet Water WATs, WDNR, Municipalities, WDOT

Funding: $10,000

Sources: WCMP, municipalities, WDNR 319 Funding

Project Category Addressed: Reduced Chlorides

Project Summary:
The following Beneficial Use Impairments identified in the Milwaukee Estuary Remedial Action Plan document (WDNR, 1995) are affected (or potentially affected) by chlorides in the waterways:

- Degradation of benthos
- Degradation of fish and wildlife populations
- Degradation of fish and wildlife habitat
- Degradation of phytoplankton and zooplankton populations

Project Partners will work with the MS4s and the Wisconsin DOT to identify salt use plan components and identify opportunities for salt use reduction. The results of the this effort will be presented at a discussion forum that involves all jurisdictions, and which is facilitated to review reduction opportunities, identify municipal and state impediments to salt use reduction, and create a plan that reduces salt use to the greatest extent possible through coordination of efforts and improved BMP employment. The forum will also identify additional training needs for municipal, state, and county staff.

Intended Outcomes:
--Reduced salt application through enhanced communication among the MS4s and DOT.
--Improved communication between the groups regarding stormwater pollution abatement practices.
--Greater awareness of the municipalities and WDOT of each other practices as well as new BMP application and research.
--Advancing delisting of Beneficial Use Impairments in the Milwaukee Estuary Area of Concern.

17. Title: Reduce chloride through watershed wide utilization of salt application best management practices for municipalities, industry, residents and other property owners.

Timeline: June 2011 - ongoing

Key Partners: MS4s, UWM, Sweet Water, Neighborhood Associations, Roger Bannerman (WDNR), SEWRPC, Menomonee Municipal Group, Menomonee River Leadership Network, WATs

Funding: $30,000?

Sources: DNR 319 Funding, Menomonee Municipal Group

Project Category Addressed: Reduced Chlorides

Project Summary:
The following Beneficial Use Impairments identified in the Milwaukee Estuary Remedial Action Plan document (WDNR, 1995) are affected (or potentially affected) by chlorides in the waterways:

- Degradation of benthos
- Degradation of fish and wildlife populations
- Degradation of fish and wildlife habitat
- Degradation of phytoplankton and zooplankton populations

Project Partners will highlight successes in reducing salt application in the watershed (Wauwatosa, Brookfield, Menomonee Valley, etc.) and work to build capacity for municipalities, states, counties, private applicators and residents to reduce impacts of salt usage to the waterways. Capacity building will include discussion forums, webinars/workshops for municipal staff and private applicators through University of Wisconsin-Milwaukee. Sweet Water will assist with fundraising and evaluation of BMP chloride reduction success. Partners will research salt alternatives and if applicable, identify potential demonstration projects. Partners will work with SEWPC and WDNR will facilitate this research. Special workshops will be developed to target neighborhood and community organizations that focus on residential outreach and education.

Intended Outcomes:
--Enhanced understanding of impediments to reducing municipal salt use
--Number of commercial and municipal BMPs employed will increase
--Chloride loads will be reduced
--All appropriate municipal staff will receive salt application BMP training
--Identification and training of commercial salt applicators in the Watershed.
--Advancing delisting of Beneficial Use Impairments in the Milwaukee Estuary Area of Concern

18. Title: Facilitate development of citizen action leaders in communities to encourage participation in local areas river stewardship. Create a database of volunteer-led projects for scouts and community groups looking for involvement.

Timeline: Spring 2011 - ongoing

Key Partners: Watershed Action Team, Milwaukee Riverkeeper Senior Water Advocates Network, Wauwatosa Neighborhood Association Council, Menomonee Valley Partners, Neighborhood Associations, Milwaukee Estuary Area of Concern Citizen Advisory Committee, Girl Scouts of Wisconsin Southeast (GSWISE), Milwaukee County Council Boy Scouts of America, UW-Extension 4H Program, Faith-based organizations

Funding: $15,000 ?

Sources: WCMP, Foundations working with youth/faith based initiatives

Project Category Addressed: Recreational Access Improvements, Education, Riparian Buffer Restoration/Enhancements, Reduced Nutrient Inputs

Project Summary:
Create a Menomonee River Leadership Network (MeRLN) to develop and deliver training to enlist community leaders using Milwaukee Riverkeeper's Senior Water Advocates Network (SWAN) model. The resulting leadership would assist community groups to identify river stewardship projects and link

the projects to the Menomonee River Watershed Restoration Plan and Implementation Plan. The Leadership Network would work with Sweet Water to report accomplishments. Sweet Water will work with the MeRLN to develop a database that would log/identify projects and citizen groups that are implementers of projects. The database would also be used as a tracking tool to identify the WRP and AOC delisting goals projects would work to address.

Intended Outcomes:
--Develop a sustainable network of community watershed stewards.
--Creation of tool to track watershed projects and their ability to advance the goals of the Watershed Restoration Plan and the AOC delisting strategy.
--Increased engagement of community members in watershed restoration projects.

19. Title: Develop a watershed-wide educational outreach program that increases awareness of pet waste contributions to pollution loading.

Timeline: Spring 2011 – Spring 2013

Key Partners: MS4s in the watershed, Milwaukee County Parks, Milwaukee Riverkeeper, University of Wisconsin Extension, Sweetwater, 1000 Friends of Wisconsin, Veterinarians, ROMP (Residents for Off-leash Milwaukee Parks), MADACC (Milwaukee Area Domestic Animal Control Commission), Doggy Day Care providers, Dog Training providers, the Wisconsin Humane Society, pet food stores, Fromms (local pet food manufacturer), Milwaukee Pet Sitters, Neighborhood Associations, Libraries

Funding: $50,000 Total
50 stations at $500/pc = $25,000
Signage - $100/pc x 100 = $10,000
Misc education/events = $ 15,000

Sources: MS4s, Joyce Foundation, Wisconsin Association of Environmental Education (K-12 aspect), MMSD Stormwater Demonstration Grants

Project Category Addressed: Education and Reduced Nutrient Inputs

Project Summary:
Working together, partners will develop an outreach education program to strategically provide Pet Waste Pollution awareness and improved dog owner responsibility. This will be done by building off of existing programs and identifying gaps in delivery methods and targeted audiences. The program will integrate new aspects of the program based on the needs identified through the gap analysis. The project will assess current status of litter management supplies in pet-friendly parks. Based on the assessment, partners will enlist Parks' departments' staff to provide litter management supplies and signage in high traffic areas within the park systems. The program will enlist dog training/care/sitting providers to cover pet owner responsible actions as they relate to pet waste pollution. Program developers will research successful programs nation-wide and identify key messages and delivery methods to employ. The program will also work with the Sweet Water Science Committee to identify an evaluation tool that will provide quantifiable program outcomes, including reduction in runoff pollution (bacteria), and contribution to achieving delisting targets and goals of the watershed restoration plans.

Intended Outcomes:

- Greater awareness among pet care/food/training providers of the connection of pet waste to water quality.
- Partnership created with the pet care industry to enlist assistance with education to their customers.
- Improved water quality through reduction in bacteria from pet waste.
- Increased installation of litter management supplies and signage in all pet friendly parks.
- Create a pet litter pollution awareness campaign enlisting area schools and project partners.

20. Title: Outreach to Menomonee River Watershed riparian private property owners without buffers

Timeline: Winter 2010/Spring 2011

Key Partners: SEWRPC, River Revitalization Foundation, Municipalities, Sweet Water E.D., Watershed Action Teams, SWAN

Funding: $200k

Sources: WCMP
Existing educational materials from SEWRPC, UW-Extension, DNR, and Milwaukee Riverkeepercan be disseminated and used as in-kind match

Project Category Addressed: Riparian Buffer Restoration/Enhancements and Reduced Nutrient Inputs

Project Summary:
Project partners will identify private property owners without riparian buffers and create a database of contact information. Partners will work to target these property owners in outreach efforts to provide information on importance of riparian buffers and enlist their involvement in MeRLN. Partners will work with property owners to create riparian buffers or other BMPs as appropriate. The Sweet Water Executive Director would be enlisted to secure funding for identified buffer enhancement projects or other BMPs in coordination with other identified priority projects in this Plan. The project will highlight property owners who install buffers on their property through press releases to the regional media and inclusion in the Rivers Report and other Sweetwater materials. Ultimately, these educational efforts can lead SEWRPC or other identified entities to assess impact of installed riparian buffers on water quality and its reduction of nonpoint source loading and contribution to delisting beneficial use impairments.

Intended Outcomes:
--Enlist riparian property owners as a special MeRLN task force
--Secure funding for riparian buffer projects as identified in the Watershed Restoration Plan
--Implement riparian buffer restoration projects on private property as identified and new relationships developed with private riparian property owners.
--Reduction in runoff pollution from these identified private riparian properties

21. Title: Education and Outreach: Evaluate the results of SWWT Household Survey (fall 2010) and develop public education programming that responds to the identified needs.

Timeline: November 2010 – May 2012

Key partners: Sweet Water, 1000 Friends of Wisconsin, Root-Pike WIN, UW-Extension

Funding: Yet to be secured

Sources: Proposal submitted to Wisconsin Coastal Management Program for 2011 grant cycle
Joyce Grant match

Project Category Addressed: Education

Project Summary:
With the findings of the public survey of knowledge, behaviors, and attitudes regarding water resources and stormwater as a foundation, the partners propose to develop over an 18 month period a mass media campaign to reduce pollution from urban stormwater and nonpoint sources in the Lake Michigan watersheds of southeast Wisconsin. With over 60% of the pollutants now coming from stormwater, there is no simple end-of-pipe solution. The solution necessitates the engagement of the citizens throughout communities who assume the responsibility for stormwater generated on their own property and act to reduce its impact.

The survey having identified gaps in the general understanding of nonpoint pollution will enable outreach efforts to be crafted in such a way as to fill in the gaps in the understanding of individuals regarding the impacts of their actions and behaviors on the health of our waters. The campaign will build a greater understanding of the pollutants carried in stormwater and the corresponding actions and behaviors that individuals can do that will help advance water quality and protect our water resources. The ensuing campaign will promote those actions and behaviors that will help reduce pollutants carried by stormwater and reduce the quantity of stormwater entering our sewer systems. It will also develop a local waters literacy that not only addresses the challenge of improving water quality and resource protection, but will also strive to foster a greater sense of identity and civic pride associated to the improvement of water quality and protection of water resources. The Greater Milwaukee Watersheds have the potential to be recognized as a regional model for innovative, science-based approaches to nonpoint pollution that are embraced and championed by diverse neighborhoods and communities for whom healthy waterways and water resources are central for their quality of life. The outreach campaign is one effort of many that will help to make that potential, actual.

Intended Outcomes:
With focused educational and outreach efforts targeted to behaviors and issues prioritized in both the implementation plan for the restoration of the Kinnickinnic River and the findings of the survey, the partners will be able to craft messages and delivery methodologies to specific audiences for the desired behaviors. A targeted strategic campaign, responsive to residents' attitudes, will find more resonance in the residents than a broad, diffuse campaign. Targeted messages and communication of clear, stewardship actions can lead residents to specific changes in behaviors that will lead to improved health of our waters. The campaign will help to communicate that while the effects of individual actions may be incremental; when added together with the efforts of other individuals, the individual actions are accumulative and lead to large impacts. A major goal of such an outreach effort, in additional to the improvement in water quality, would be to foster the identity and practice of water stewardship in communities throughout our region.

22. Title: Ensure MS4's are implementing educational and outreach requirements in their Stormwater Permits, assessing what's being done & what more could be done and identifying how Sweet Water can assist.

Timeline: Current through May 2012

Key Partners: MS4s, 1000 Friends of Wisconsin, WDNR, UWEX, Sweet Water

Funding: Yet to be determined

Sources: Joyce Grant/current

Project Category Addressed: Education

Project Summary:
Currently 1000 Friends of Wisconsin is working with a group of municipalities in the Menomonee River Watersheds, the Menomonee River Group (MRG), to review, to advise, and to coordinate common efforts as related to education and outreach activities in support of their stormwater requirements under NR 216. The project brings needed education expertise to the MS4 staffs to assist in their planning and program efforts. The project outlined here will extend that effort to other municipalities within the watershed. Education and outreach plans will be reviewed, gaps identified, and new, potential program components outlined. The MRG plans to integrate the directives arising out of the Menomonee Watershed Restoration Implementation Plan and to incorporate those priorities into their education and outreach planning. This approach will be encouraged among other municipalities and MS4s throughout the watershed in order to build a basin-wide understanding and momentum on the issues and actions highlighted in the implementation plan thus engaging residents in those actions and topics of highest priorities. In this way, the resultant education and outreach plans will be integrated with the real work in the watershed, advancing water quality and water resource restoration through prioritized initiatives. Effort will be made to leverage and incorporate other education and outreach efforts in the basin such as the work of UWEX regarding the EPA's Areas of Concern as well as Sweet Water's proposed education and outreach campaign.

Intended Outcomes:
This project will help unify and streamline efforts of individual municipalities enabling them to not only meet their state stormwater permit requirements but also to advance a new, regional way of thinking and acting related to our water resources. This project will encourage the development of cohesive messages and the promotion of key behaviors to residents throughout the Menomonee River Watershed.

This in turn will help to build a common water culture based in water stewardship within the watershed, and by extension, the region. The messaging across boundaries exemplifies and underscores the message that water knows no boundaries. The stewardship of our waters can become a focus of common interest and the improvements of water quality a common goal by which we can come together as communities and a region.

The engagement of the MS4 entities within Menomonee Watershed will facilitate a more widespread understanding of, buy-in, and participation in the Menomonee Restoration Implementation Plan hence advancing efforts associated with prioritized actions and behaviors.

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V. NEXT STEPS

Adaptive Management as an Ongoing Approach

The implementation plan we have outlined is based on an adaptive management approach. As a collaborative organization with many partners and a lack of clarity concerning future project implementation funds, Sweet Water will need to be nimble in its ongoing planning efforts. We will have to choose project priorities from the rosters cited above as potential funding and other considerations unfold. Sweet Water will provide a coordinating role in the future projects, especially those detailed in Section IV, but the leadership role on particular projects will need to be determined on a case-by-case basis as opportunities for funding support and partnerships become clear. Sweet Water will need to adapt to the latest options and realities on an ongoing basis. The following recurring meeting cycles demonstrate how the adaptive management efforts of Sweet Water will be reviewed and its programs adjusted.

Bi-Monthly Sweet Water Steering Council Updates/Review

The Sweet Water executive director and leaders of the Watershed Action Teams (WATs), Policy, Science, and Communications Committees will provide the Steering Council with an update on their plans and implementation efforts at each meeting, reporting on progress, challenges, and needed program adjustments.

Quarterly Grant Review Meetings

To provide a higher level of planning predictability, Sweet Water grant funding meetings are planned on at least a quarterly basis, but to be held more frequently as condition or opportunities warrant. Those meetings will include Sweet Water's executive director and grant writer, in addition to key representatives of each of Sweet Water's WATs. The goal of those sessions is to scan the upcoming grant funding cycles to determine if particular Sweet Water projects meet grantor criteria for support.

Quarterly Joyce Partner Meetings and Updates

As part of the reporting structure for the Joyce Foundation, the Joyce partners under the Sweet Water umbrella will meet to review progress on the benchmarks set forth in the proposal to the foundation. The updates provided at those meetings will then be discussed verbally with the Joyce Foundation and/or submitted in writing, per the grant agreement in force.

Semi-Annual Meetings with Key Stakeholders

To insure a higher level of interagency cooperation and collaboration, Sweet Water will organize at least semi-annual project review meeting with its key regional water quality stakeholders. Those stakeholders include the Wisconsin Department of Natural Resources, the Milwaukee Metropolitan Sewerage District, SEWRPC, the Wisconsin Department of Transportation, Milwaukee County (Parks and Transportation/Public Works), and major municipalities in the Sweet Water watersheds. Hosting regular meetings will help to reduce the number of missed opportunities for more effective cooperation on projects of mutual benefit.

Annual Reevaluation of Priority Projects

The various meetings mentioned above provide ample opportunity to revisit the Menomonee River Watershed Priority Projects, detailed in Section IV of this document. The Sweet Water executive director and leaders of the WATs will evaluate the status of all priority projects. In addition, all Menomonee River Watershed Projects (i.e. Section III) will be reviewed for their potential to be included as priority projects. The Priority Projects (i.e. Section IV) will be revised annually by October 1.

VI. APPENDIX

1. Menomonee River Watershed Restoration Plan Executive Summary (contains map of sub-watersheds referred to in this plan)
2. Map of Pollutant Hotspots by Sub-watershed in the Menomonee River Watershed
3. Foundation Actions Table from the Menomonee River Watershed Restoration Plan
4. Complete List of Menomonee River Watershed Projects