

Strategic Implementation Plan for St. Clair River and Lake St. Clair



**US Army Corps
of Engineers** ®

Detroit District

December 2011

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Strategic Implementation Plan for St. Clair River and Lake St. Clair

1. Strategic Implementation Plan (SIP) Purpose

Section 426 of the Water Resources Development Act (WRDA) of 1999 (P.L.106-53) authorized the Secretary of the Army to develop the St. Clair River and Lake St. Clair Comprehensive Management Plan for the restoration and protection of the system's habitats.

In response to this authority, the development of a comprehensive management plan was initiated in FY01. The resultant *St. Clair River and Lake St. Clair Comprehensive Management Plan (MP)*, dated June 2004, was developed in collaboration with U.S. Federal, state, and local agencies, with input from Canadian Federal, provincial, and local agencies, as well as other stakeholders in the Lake St. Clair-St. Clair River watershed. The plan was developed through a four-part, binational structure, including a Project Management Team, an Advisory Committee, Technical Workgroups, and a Canadian Writing Team.

Additional binational coordination occurred via the framework established under the April 17, 1998 *Four Agency Letter of Commitment for the Areas of Concern* shared by the U.S. and Canada. It is an agreement among the U.S. and Canadian Federal, state, and provincial governments that outlined roles and responsibilities relative to restoring the beneficial uses in shared Areas of Concern, including Detroit, St. Clair and St. Marys rivers. This was later supplemented by an agreement to include Lake St. Clair in the framework.

WRDA 2007 provides the additional authorization and, along with supplemental Implementation Guidance from CECW-PM, to produce this *St. Clair River and Lake St. Clair Strategic Implementation Plan (SIP)*. The SIP identifies the process in which identified restoration initiatives are organized, prioritized and to be implemented under the auspices of the original MP. The SIP also contains the prioritized initiative list along with cost estimates, project sponsors and potential project partners.

The SIP will be provided to Congress and state and Federal agencies to convey the Partnership's sense of priority in implementing the priorities outlined in the MP. Congressional supporters and Federal agency staff intend to use the SIP as the official document of implementation priorities for the Lake St. Clair Watershed.

The Partnership's Federal, state and local members will work together to implement the SIP. The Partnership will use the SIP in discussions with state and federal funding agencies to identify projects that align well with state and federal interests. Sponsors with projects that are determined to be of local interest only and not likely to receive state or federal assistance will receive the assistance of

the Partnership in modifying the project to make it more consistent with state and federal interests, or assist in identifying interested local partners for the project.

Development of the SIP is a requirement of law in order to become eligible for additional appropriations for protecting and restoring the Lake St. Clair watershed. WRDA of 2007 authorized up to \$20 million in federal funding for ecosystem restoration projects that are consistent with the MP and fall within the mission areas of the Army Corps.

The SIP is intended to ensure a coordinated implementation process through a variety of mechanisms, including future WRDAs, GLRI (Great Lakes Restoration Initiative), other Federal and state programs, and local initiatives.

2. Strategic Implementation Plan (SIP) Authorization

Sec. 426, WRDA 1999, (P.L. 106-53), was amended by Sec. 3089, WRDA 2007, (P.L. 110-114). Subsection (c), (d) and (e) read as follows:

“(c) IMPLEMENTATION OF ST. CLAIR RIVER AND LAKE ST. CLAIR MANAGEMENT PLAN.—

“(1) IN GENERAL.—The Secretary shall—

“(A) develop a St. Clair River and Lake St. Clair strategic implementation plan in accordance with the management plan;

“(B) provide technical, planning, and engineering assistance to non-Federal interests for developing and implementing activities consistent with the management plan;

“(C) plan, design, and implement projects consistent with the management plan; and

“(D) provide, in coordination with the Administrator of the Environmental Protection Agency, financial and technical assistance, including grants, to the State of Michigan (including political subdivisions of the State) and interested nonprofit entities for the Federal share of the cost of planning, design, and implementation of projects to restore, conserve, manage, and sustain the St. Clair River, Lake St. Clair, and associated watersheds.

“(2) SPECIFIC MEASURES.—Financial and technical assistance provided under subparagraphs (B) and (C) of paragraph (1) may be used in support of non-Federal activities consistent with the management plan.

“(d) SUPPLEMENTS TO MANAGEMENT PLAN AND STRATEGIC IMPLEMENTATION PLAN.—In consultation with the Partnership and after providing an opportunity for public review and comment, the Secretary shall develop information to supplement—

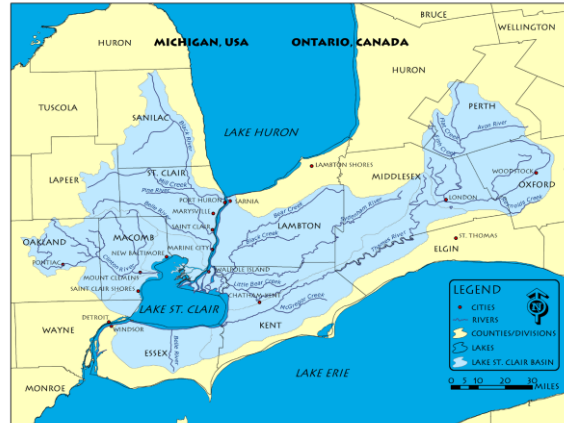
“(1) the management plan; and

“(2) the strategic implementation plan developed under subsection (c)(1)(A).

“(e) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this section \$20,000,000”.

3. Location and Congressional District

Located between lakes Huron and Erie, Lake St. Clair is the smallest lake in the Great Lakes system. While it is not one of the five Great Lakes, it is a vital binational resource that provides a wide array of benefits to millions of U.S. and Canadian residents. The lake is heavily used for fishing, boating, swimming, hunting, drinking water and other purposes. It is among the most biologically diverse ecosystems in North America and provides critical habitat for fish and migrating waterfowl, particularly in the St. Clair River delta, the largest coastal delta in the Great Lakes.



The St. Clair River and Lake St. Clair lie in the districts of Carl Levin (D-MI), Debbie Stabenow (D-MI), Candice Miller (R-MI-10), Sander Levin (D-MI-12), Hansen Clark (D-MI-13).

4. History & Overview of Problem

The St. Clair River-Lake St. Clair system is a binational resource that provides drinking water to over 4.5 million nearby residents and recreation for millions. The River and Lake support a federal connecting channel for deep draft navigation. This water resource is vital to thousands of industrial facilities and businesses and homeowners in southeastern Michigan and southwest Ontario.

For nearly a century, human uses of the system have altered the natural processes and impaired the quality of the waters and beneficial uses due to bacterial contamination, algae and aquatic plant growth, invasive species, degradation and loss of habitat and wetlands, PCB and mercury contamination of sediments, contaminant spills, and tainted fish. Nonpoint source pollution, sewer overflows and leaking septic systems have caused beach closures. Shoreline modifications and agricultural activities have altered natural habitat and reduced wetland acreage. Industrial discharges have contributed toxic pollutants to the lake and its sediments. In addition, aquatic nuisance species, such as the Zebra Mussel, have substantially changed the lake's ecosystem.

In response to these problems, Congress enacted Section 426 of WRDA 1999, which authorized the U.S. Army Corps of Engineers (Corps) to develop a comprehensive Management Plan (MP) for Lake St. Clair and the St. Clair River. The Corps and the then-established binational Partnership of U.S. and Canadian Federal agencies, Walpole Island First Nation, local governments and watershed stakeholder groups completed the Corps-led MP in 2001.

After extensive research and consultation with agencies and the public, the Corps released the final MP in 2004. While the MP also reflects the Canadian watershed perspective on Lake St. Clair, the document and its recommendations are primarily directed at the U.S. side of the watershed. The plan includes 110 recommendations related to the system's restoration and protection. The recommendations have been prioritized into six key areas, and priority projects have been developed. The primary concerns include 1) Phragmites control; 2) habitat protection; 3) establishing a real-time monitoring system; 4) integrating modeling with monitoring; 5) eliminating illicit discharges from Lake St. Clair; and 6) development of a Lake St. Clair Watershed Information Management System. Implementation has already begun on the local level in several areas.

Initial funding for implementing the MP recommendations has already been provided, through the development of this SIP. The development of this comprehensive SIP and consistent funding will provide a means to maintain the current momentum and multi-level interest in implementing management activities to restore the river and lake.

Environment Canada (EC) is also in the process of developing a Canadian Implementation Plan for the parallel *Lake St. Clair Canadian Watershed Plan* that complements the Corp's MP. The Canadian Watershed Plan summarizes environmental conditions in Canada's portion of the Lake St. Clair watershed, describes environmental programs, and identifies key management issues. Local coordination in Canada is being led by the Canadian Lake St. Clair Watershed Coordination Council, which conducted an extensive consultation process to develop recommendations and an implementation strategy. The recommendations focus on nine key areas: 1) Land Use including nonpoint source pollution and stormwater management; 2) Commercial Navigation and Recreational Boating; 3) Sources and Loads; 4) Human Health; 5) Habitat Biodiversity; 6) Fishing and Hunting; 7) Monitoring; 8) Scientific Studies and Data Management; and 9) Governance. The Canadian Implementation Plan will be referenced by the Partnership during the development of the SIP.

5. Development of the SIP

The June 2004 MP proposes a general suite of recommendations for restoring, protecting and managing the U.S. portion of the Lake St. Clair watershed. Not all identified and ranked projects can be immediately implemented, however, and many will require further refinement among relevant agencies and interested parties. Additionally, the projects may not merit equal attention.

The Army Corps, and the Partnership has developed this strategic implementation plan -- consistent with the Water Resources Development Act of 2007 to efficiently protect and restore the St. Clair River and Lake St. Clair. The SIP development process is founded on the Partnership's desire not to rank all the projects. Only those projects that qualify for Army Corps Ecosystem Restoration authorities were ranked. Members felt that upfront ranking of all projects could taint some projects and reduce the odds of them getting funded.

The SIP was developed by two groups, the full partnership which provided input and assistance where needed, and the SIP Development Team – a subset of the Partnership which prepared the document. The SIP Development Team consists of the following agencies: Army Corps, U.S. EPA, Michigan Department of Environmental Quality, SEMCOG, Macomb County Public Works Office, St. Clair County Health Department, and the Oakland County Water Resources Office.

The SIP is designed to be an iterative document that identifies those projects that implement recommendations of the MP addressing impairments to the watersheds, in particular in Chapter 4 - Habitat and Biodiversity, as well as other recommendations that deliver significant ecosystem benefits. Other MP priorities considered in the SIP include actions to address stormwater management, bacteria reduction, the increased application of technology in the protection of the lake and river, and increased recreational opportunities in the watersheds.

The SIP evaluates an array of projects that were submitted by the Lake St. Clair stakeholders, describes the criteria used to evaluate the projects, identifies specific projects that may be implemented by the Corps using its authorities, as well as projects that may be implemented through other local, state and federal authorities. The SIP also initially prioritizes the projects consistent with the goals of the MP, in an integrated approach guided by Army Corps watershed planning principles and guidelines.

The SIP includes an estimated cost of each ranked ecosystem restoration project selected for implementation eligibility, describes quantitative outcomes and ancillary benefits and identifies lead and (if applicable) assisting partners of each project. Input from, and collaboration among the Partnership members was, and continues to be, vital throughout development of this SIP.

The next step was to make the SIP projects “operational” by identifying potential funding sources. This process consisted of a binning of the projects according to funding opportunities for which they qualify. In some cases, existing initiatives and programs provided a platform for refining and implementing selected projects. As part of this process, agencies must assess their authority, capabilities, and available resources in relation to each (or portions) of the projects. The U.S. Federal agencies involved in the development of the MP have agreed to adopt the SIP as well as those elements of the MP most relevant to their mission and work within available agency resources and programs to achieve the vision of a healthy St. Clair River and Lake St. Clair. In addition, the Corps has responded to requests for assistance that fall within its authorities and mission areas.

There are implementation projects that potentially have no single lead to coordinate the implementation because funding is administered by several agencies and through different programs within the agencies, with no single agency having jurisdiction over the others relative to funding decisions. Assessing

the appropriate path for implementation is a function of the SIP Development Team.

During the ranking process, each of the ecosystem restoration eligible projects were identified either as a single focused restoration or multifaceted (addresses more than one issue.) Based on these two categories the Army Corp is now developing a strategic timing schedule to guide implementation of each project. The development and maintenance of a master schedule will continue to assist in resource planning (budgetary, manpower, equipment and critical path).

5a. SIP Cost Sharing

All cost-sharing for developing the SIP (per paragraph 3b. of the Implementation Guidance) is 75% Federal, 25% non-Federal. The official non-Federal sponsor for this SIP is the Southeast Michigan Council of Governments (SEMCOG), a quasi-governmental organization that represents the Detroit-area city, village and township governments in regional affairs.

The SIP non-Federal cost-share may be provided in cash, Work-in-Kind (W-i-K) or a combination of cash and WIK credit equaling 25% of the SIP development costs. SEMCOG and the non-Federal Partnership that they represent prefers to provide their non-Federal share through the provision of in-kind services and materials (W-i-K). Army Corps and US EPA activities involved with establishing the Partnership (as discussed in Section 4 of this SIP) was fully Federally-funded.

5b. SIP Work-in-Kind Crediting

The Corps and SEMCOG, with input from the Partnership, determined and tracked the eligible value of Work-in-Kind (W-i-K) contributions (subject to the conditions and limitations contained in the SIP cost sharing agreement) for the development of the SIP. The general limitations and conditions for W-i-K credit are listed below:

Only in-kind contributions determined by the Corps to be integral to the project will be considered eligible for credit in development of the SIP. These must be contributions determined to be reasonable and allowable in order to be credited toward the non-Federal sponsor's cost share. For procedures and guidelines on determining if the in-kind contributions are allowable toward the development of the SIP, refer to EC 1165-2-208 dated 6 June 2008 for Corps guidance on W-i-K, and OMB circular A-87.

Acceptance by the Detroit District of in-kind contributions is subject to a review or formal audit, as applicable.

Fully-burdened costs for labor for travel to, attend, and prepare for meetings to develop the SIP shall be eligible for W-I-K credit. Allowable work hours spent developing materials and planning associated works towards the development of the SIP shall also be eligible for W-I-K credit at the fully-burdened rate.

The value of any materials provided by the non-Federal sponsor will be the costs incurred by the non-Federal sponsor for such materials, or the market value of such materials if the purchase cost incurred is not available.

5c. SIP-Specific Tasks

The overarching reasons for creating the SIP are as follows:

1. *To evaluate and identify a list of priority initiatives for implementing the MP based on Partnership and public input, Corps Planning Guidance, available Corps funding and other federal authorities, to create a five-year schedule to strategically execute the initiatives to be implemented, and to plan for resources.*
2. *To create estimates of costs, durations and draft scopes for each of the initiatives selected for initial implementation.*
3. *To support implementation of the MP recommendations by identifying those projects that can be implemented through the ecosystem restoration Authority and expediting their implementation through the submittal of the SIP to Corps-HQ and Assistant Secretary of the Army for Civil Works for approval.*

Specifically, the tasks to develop the SIP included the following:

Task 1 – Establish the Lake St. Clair Partnership

This task involved significant coordination by the Corps and SEMCOG with partnership agencies and organizations. A formal Partnership Agreement is the deliverable product for this task, which is attached to this document as Appendix A.

Task 2 – Conduct Open Partnership and Meetings

This task involved conducting public meeting(s) during the development of the SIP in order to get participation and input from Partnership and other interested parties regarding implementation of the MP. This task was ongoing concurrently and was directly in support of the development of the draft SIP.

Task 3 – Evaluate and Prioritize Candidate Projects for Implementation

A set of criteria and procedures were used for evaluating the MP recommendations to identify projects to include in the SIP. The evaluating criteria and procedures were developed and approved by both the Partnership and SIP Development Team. The complete evaluation process, including criteria are included latter in this document.

Task 4 – Estimates of Costs, Benefits and Outcomes

Prioritized projects were further analyzed to develop estimates of study or implementation costs versus the benefits and outcomes of each action/project. This task also identifies which Partners could potentially participate in the implementation of the project, based on funding and emerging initiatives such as the Great Lakes Restoration Initiative. Finally, the Partnership developed a prioritized implementation matrix based on the amount of qualitative benefit of each in relation to the other candidate projects. This matrix will assist in identifying funding resources needed for each project and how much of the cost-share may need to be supplied through cash or W-i-K contributions.

Task 5 – Finalize Draft SIP and Submit for Corp’s Agency Technical Review

The Corp’s Detroit District and Partnership conducted final review and comment before submitting the SIP for a required Corps Agency Technical Review (ATR). This is mandated by Corps policy as cited in Engineering Circular 1165-2-209, paragraph 15.b, which specifically states that "All decision and implementation (including this Implementation Plan) documents are required to undergo ATR".

Task 6 – Address ATR Comments on the SIP and distribute to Corps HQ and the Partnership

The Partnership and Corp’s Detroit District will address ATR comments to the reviewer’s satisfaction, then the final SIP will be forwarded to Corps Headquarters for concurrence and submission to the Assistant Secretary of the Army for Civil Works (ASA(CW)) for their approval. Once finalized, Corp’s Detroit District will distribute the approved SIP for adoption and use.

6. Lake St. Clair/St. Clair River Protection and Restoration Partnership

The Lake St. Clair/St. Clair River Protection and Restoration Partnership was appointed by US EPA to serve as the U.S. Lake St. Clair Coordinating Council in 2005. The Partnership is responsible for implementing the Management Plan. The Partnership is composed of representatives of local, state and federal agencies, non-governmental agencies, associations, and universities.

As described in WRDA 2007, the priority for the Corps (as mandated by law) has been to "...establish and lead a partnership..."; i.e. the U.S. Lake St. Clair Watershed Partnership (including, but not limited to) the Southeast Michigan Council of Governments (SEMCOG), the U.S. Environmental Protection Agency (USEPA), The U.S. Geological Service (USGS), the National Oceanic and Atmospheric Administration (NOAA), the State of Michigan and local governments, to develop a SIP to map out the implementation of the 110 recommendations ("implementations"). Goals to be achieved during the establishment of the Partnership have included soliciting local commitment, developing sustainable funding options and establishing a formal process for collaboration.

The Lake St. Clair/St. Clair River Protection and Restoration Partnership was established by Partnership Agreement in May 2011 to serve as the "Partnership"

for developing and implementing the SIP, as required in Section 3089 of WRDA 2007. The Partnership, including the Corps, US EPA, and SEMCOG, coordinated the development of this SIP. The full Partnership, facilitated through SEMCOG, consists of the following agencies, entities and organizations:

Macomb County Board of Commissioners
Macomb County Planning and Economic Development
Macomb County Public Works Office
Macomb County Health Department
City of Mount Clemens
Ray Township
Chesterfield Township
City of St. Clair Shores
Clinton River Watershed Council
Clinton River Public Advisory Council
Huron Clinton Metropolitan Authority
St. Clair County Health Department
St. Clair County Metropolitan Planning Commission
St. Clair County Drain Office
St. Clair County Parks and Recreation Commission
St. Clair County Community Foundation
Clay Township
Ira Township
Cottrellville Township
Harsen's Island St. Clair Flats Association
City of Marysville
St. Clair River Binational Public Advisory Council
Domtar Industries
Oakland County Water Resources Office
Rochester Hills
Six Rivers Regional Land Conservancy
Oakland University
Eastern Michigan University
SEMCOG
Michigan Department of Environmental Quality
Michigan Department Natural Resources
Michigan Sea Grant
U.S. Army Corps of Engineers (Corps)
U.S. Environmental Protection Agency
US Geological Survey Great Lakes Science Center
U.S. Geological Survey Michigan Water Science Center

6a. Partnership Agreement

The document formally establishing the Lake St. Clair/St. Clair River Protection and Restoration Partnership (the Partnership) is a *Partnership Agreement*, which was signed by numerous governments and organizations after the formal SIP cost-share agreement was signed by SEMCOG and the Detroit District (executed May 24, 2011) The Partnership Agreement is found in Appendix A. The Partnership includes non-Federal entities that can provide work-in-kind that can officially count towards the non-Federal cost-share of developing the SIP.

Although the Partnership Agreement is non-legally-binding, it establishes a good-faith commitment of the non-Federal and Federal Partners to work collaboratively toward the common goal of restoring and protecting the St. Clair River and Lake St. Clair.

6b. Role and responsibilities of the Partnership

The Partnership conducted public and stakeholder meetings within the watershed; to present information targeted at key audiences; to educate them about the MP and SIP, and what can be done at the local level to protect and restore the lake through development of the SIP. These meetings were also used to solicit input and information from stakeholders regarding prioritization and/or scope of future implementation activities.

The first task of the Partnership in developing the SIP was to establish standards, criteria and methods for assessing and evaluating projects. The Partnership developed five priority categories from the MP that assisted in evaluating the projects for placement in the SIP. The following five priority areas were determined to provide the greatest level of benefit in protecting and restoring the Lake St. Clair resource:

- Conserve and restore habitat,
- Stormwater management (through retrofits) to reduce pollutants,
- Identify and reduce sources of bacteria,
- Use of technology in protecting and restoring Lake St. Clair, and
- Enhance public use of Lake St. Clair Watershed.

The SIP was developed to be an on-going (iterative) five year list of implementation priorities that are critical to delivering significant benefits in the restoration of the Lake St. Clair Watershed. The SIP evaluates a range of alternative courses of action, describes the criteria used to evaluate the alternative approaches, and identifies specific projects or actions that may be implemented by USACE using its authorities, GLRI (Great Lakes Restoration Initiative), and other federal and state funding programs. The SIP also prioritizes the projects or actions consistent with the goals of the MP, in an integrated approach guided by USACE watershed planning principles and the Partnership.

The SIP also includes an estimated cost, outcomes and duration of each prioritized project selected for implementation, describes implementation plans for each high-ranking priority project and identifies lead and assisting partners. Input from, and collaboration among the Partnership members was vital in developing the SIP.

This SIP can only be effective if all three levels of government are fully engaged as Partners. The priority projects are diverse and may require funding from multiple State and Federal and local sources to implement in total. Regarding funding availability, there is no single lead to coordinate the piecemeal implementation because the funding is administered by several agencies and different programs within the agencies, with no single agency having jurisdiction over the other relative to funding decisions. Successful implementation of the priorities, will require a coordinated effort among relevant agencies, the Partnership and interested parties develop an implementation strategy using the available federal and state funding programs.

The Partnership then established the project submittal process. Lake St. Clair Watershed stakeholders submitted projects to SEMCOG electronically over SEMCOG's website.

Specific implementations were assessed and separated into specific or grouped projects under the categories as discussed above, depending on the scope and magnitude of each. Implementations (projects) that could be grouped to benefit from "economics of scale" were also identified. Lead and support agencies, as they step forward as supporters of each of the implementations, are listed as potential non-Federal sponsors, and scopes developed to determine needed resources. If applicable, additional information is linked with each of the implementations as listed below:

- Real Estate Requirements
- Environmental Requirements
- Phases of Implementation / Acquisition Plans
- Operations and Maintenance Requirements

The Partnership, led by the Development Team, has been responsible for the conduct of open stakeholder meetings within the watershed; to present information targeted at key audiences; to educate them about the MP and SIP, and what can be done at the local level to protect and restore the lake through development and execution of the SIP. These meetings also solicited input and information from the stakeholders regarding prioritization and/or scope of future implementation activities.

A key component in implementing management strategies for the St. Clair River and Lake St. Clair is improving water quality. The institutional framework for managing water quality is complex. Managing and protecting the River and Lake is a shared endeavor among Federal, state and local agencies. The Federal

structure of the U.S. political system divides authority for government functions between Federal and state governments. Environmental and resource management responsibilities – whether they involve regulation, enforcement, inspections, cleanup, monitoring, or public assistance – are mandated by governments in various ways, such as Federal, state and local statutes and executive orders. These mandates are, in turn, implemented at multiple levels by a variety of government agencies. In some cases, authority for administering Federal environmental laws is delegated to state agencies.

7. Relationship of SIP to Great Lakes Regional Plans

The SIP contains the priority projects for protecting, restoring and enhancing the Lake St. Clair Watershed that are consistent not only with the *St. Clair River and Lake St. Clair Comprehensive Management Plan* (the MP) – but also relate to one or more of the other regional plans such as the Great Lakes Restoration Action Plan, Lake Erie LaMP, St. Clair River Remedial Action Plan, Clinton River Remedial Action Plan, and subwatershed plans established pursuant to the Phase II Stormwater Permit.

The SIP was developed under the auspices of the U.S. Army Corps of Engineers and U.S. EPA under the authority of Section 3089 of the Water Resources Development Act of 2007. \$20 million is authorized under WRDA 2007 for ecosystem restoration projects that are consistent with the MP. In addition to the WRDA authorization, the U.S. EPA administers the Great Lakes Restoration Initiative (GLRI) – a significant presidential budgetary appropriation focused on restoring the Great Lakes ecosystem. Sixteen other federal agencies such as the Army Corps, U.S. Fish and Wildlife Service NOAA, U.S. Geological Survey, U.S. Forest Service, Natural Resources Conservation Service (of USDA), U.S. Park Service, receive GLRI funds from U.S. EPA to capitalize their internal programs.

These other federal agencies also receive a significant amount of other funds from congress through funding provisions in other laws enacted to protect our nation's natural resources.

In addition to federal opportunities, the Michigan Departments of Natural Resources (DNR) and Environmental Quality (DEQ) offer a number of funding opportunities for both planning and implementation purposes. The DNR, offers, among others, two programs for developing the recreational resources of the state. First, the Michigan Natural Resources Trust Fund (MNRT) provides funding for land acquisition and recreational development. Second, the DNR administers the U.S. Park Service's Land and Water Conservation fund (LWCF) for developing recreational opportunities in Michigan.

The DEQ, offers, among others, three programs for protecting water quality, coastal assets and natural resources of the State of Michigan. First, DEQ administers the Section 319 Nonpoint Source funding program of the Clean Water Act, providing funding for nonpoint source planning and implementation projects.

Second, Michigan Coastal Zone Management Program provides funding for planning and implementation of projects to protect and develop coastal assets as well as natural resources. Third, the Michigan State Recycling Fund program provides limited grants and low interest loans for installation of low impact development and green infrastructure projects as well as repairing and upgrading local municipal wastewater collection and treatment systems.

8. Listing Projects in the SIP

The SIP is a document that is mandated to be developed under Section 3089 of the Water Resources Development Act of 2007 as a first step in implementing the management plan. The document, contains a five-year list of implementation projects that conveys the Partnership's sense of priority in implementing the *St. Clair River and Lake St. Clair Comprehensive Management Plan*. The SIP will be provided to Congress and other state, federal and local stakeholders to assist them in determining funding priorities.

Projects listed in the SIP, were first evaluated for project readiness, feasibility, and sustainability. Projects that meets these criteria are listed in one of three categories in the SIP:

- Projects Consistent with Management Plan Priorities,
- Projects Consistent with Management Plan Priorities and Eligible under WRDA, and
- Other Lake St. Clair/St. Clair River Projects.

a) Projects consistent with plan priorities: Projects that are consistent with the Management Plan priorities are listed in alphabetical order within the SIP along with pertinent information that will assist those interested in collaboration and implementation. These projects include all ecosystem restoration projects regardless of whether they qualify for Army Corps Ecosystem Restoration Authorities as identified in the WRDA authorization. Funding for projects listed under this category will be sought through other funding mechanisms as well such as the Great Lakes Restoration Initiative, as well as grants and other assistance through agencies such as the Army Corps of Engineers, NOAA, U.S. Department of Agriculture, US Fish and Wildlife Service, U.S. Forest Service, Michigan Department of Natural Resources and Michigan Department of Environmental Quality, etc.

b) Projects consistent with plan priorities and eligible under Army Corps ecosystem restoration authorities: Projects listed here are eligible for funding under the Army Corps of Engineers Ecosystem Restoration Authorities – Section 206 Aquatic Ecosystem Restoration and Section 506 Great Lakes Fishery and Ecosystem Restoration would be eligible for funding as identified in the WRDA authorization. Projects listed under this category will be ranked and listed in priority order.

c) Other Lake St. Clair/St. Clair River projects: Projects that are not consistent with the Management Plan priorities are listed in alphabetical order

under this category along with pertinent information about the projects that will assist funding agencies in the selection process. Funding for these projects will be sought through mechanisms such as the Great Lakes Restoration Initiative, as well as grants and other assistance through agencies such as the U.S. EPA, or Army Corps of Engineers, etc.

9. Submission of Projects

A solicitation package was distributed to Lake St. Clair stakeholders (local governments, counties, subwatershed groups, Public Advisory Councils, Watershed Councils, land conservancies, associations and regional, state and federal agencies) on June 15, 2011 with instructions for submitting projects, criteria for assessing and ranking projects, how the projects will be listed in the SIP and the project solicitation period.

Projects were accepted from June 15, 2011 through August 26, 2011. All projects were submitted to the Partnership via an on-line submission form on SEMCOG's Website.

Seventy-one (71) projects were submitted to the Partnership by Lake St. Clair stakeholders during the 2.5 month submittal period. A complete listing of all projects received is found in Appendix C.1.

10. Evaluating Projects to be Included in the SIP

Evaluation of the projects was performed through a collaborative effort by the Partnership, which includes the SIP Development Team.

Projects eligible for submission to the SIP were assessed up to three times during the project evaluation process. The process included: 1) An initial screening of all projects for eligibility for inclusion into the SIP document (restoration/protection oriented); 2) An evaluation of how well the projects meet the MP priorities, and 3) a screening and priority ranking for those projects that are candidates for Corps authorities for Ecosystem Restoration, Planning Assistance to States, GLFER or other standing authorities.

Initial Evaluation Criteria

Projects were only considered for inclusion in the SIP if they met the following three criteria:

- *Readiness*: Is the implementation ready to initiate (letter of request) within the next 12 months?
- *Feasibility*: Addresses such issues as: a reasonable, worthy project; eligible project partners have been identified with funding capability; and real estate is in control of project partners, or can be obtained through purchase.
- *Sustainability*: Actions or events that have or will take place to ensure the continuation of the project outcomes (e.g. on-going maintenance of storm

water practice). Potential projects need to be sustainable with minimal operations and maintenance requirements post-implementation.

In order to be listed in the SIP, a specific project must receive a “Yes” for all criteria listed below. For example, if five of the six criteria under the three categories receive “Yes”, but one criterion receives a “No”, the project failed to be included in the list of priority projects in the SIP.

Readiness

- The project can be initiated in the next 12 months?

Feasibility

- The project scope is clear and understandable?
- Project partners needed for implementation have been identified and committed?
- The project real estate is in control of project partners, or could be reasonably obtained?
- Project benefit versus cost appears favorable?

Sustainability

- project outcomes can be reasonably achieved and sustained?

Review for Consistency with MP Priorities

In developing the SIP prioritization process, plan priorities were developed to further evaluate project submissions based on benefit to the St. Clair River, Lake St. Clair and their watersheds. The MP priorities are as follows:

- Conserve and restore habitat,
- Stormwater management through retrofits,
- Identify and reduce sources of bacteria,
- Use of technology in protecting and restoring Lake St. Clair, and
- Enhance public use of Lake St. Clair Watershed.

The MP priorities were developed based on a review of the issues while being responsive to the recommendations of the *St. Clair River and Lake St. Clair Comprehensive Management Plan* (MP) while relying on the collective technical and institutional knowledge of Partnership members.

An overarching principle used in selecting the plan priorities is that “*the MP priorities need to recognize the value of the water and natural resources in enhancing the public use of the St. Clair River, Lake St. Clair and their watersheds*”.

The full matrix of the *Projects Consistent With The Management Plan Priorities* including the candidate projects that have been proposed by, and to, the Partnership to-date, can be found in Appendix B.

Determining Eligibility for Corps Assistance

The initial assessment, listing and ranking was performed by the Partnership SIP Development Team consisting of members from Corps, US EPA, MDEQ and SEMCOG, as well as the full Partnership. In order to be a high-priority project considered for Corps assistance in the SIP, the project must be in the Federal Interest, be in a Corps mission area or eligible for another Corps authority, and have a potential willing and able non-Federal sponsor. Those projects meeting these requirements will be ranked as a higher priority by the SIP Development Team and the Partnership.

Initial Assessment to be Considered for Corps Assistance

A) Meets Corps definition of ecosystem restoration (or other standing Corps authority).

The Corps ecosystem restoration missions are authorized under Section 206 of WRDA 1996 *Aquatic Ecosystem Restoration* and Section 506 *Great Lakes Fishery and Ecosystem Restoration* (GLFER) of WRDA 1996. There are other existing ecosystem restoration and protection authorities available, but the authorities listed here are the most commonly–used standing authorities in the Great Lakes region.

Under Section 206 of the Continuing Authorities Program, the Corps may plan, design and build projects to restore aquatic ecosystems for fish and shoreline riparian plants and wildlife. The objective is to restore degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition. This will involve consideration of the ecosystem's natural integrity, productivity, stability and biological diversity.

In situations where a more natural condition cannot be achieved, projects that improve the existing condition would be considered. Modifications to improve the habitat, such as increasing the dissolved oxygen levels in the stream, would provide conditions more conducive for sustaining a fishery. Projects must be in the public interest and cost effective and are limited to \$5 million in Federal cost.

Section 506 (GLFER) authorizes the Corps to cooperate with other Federal, state, and local agencies and the Great Lakes Fishery Commission to plan, implement, and evaluate projects supporting the restoration of the fishery, ecosystem, and beneficial uses of the Great Lakes, with 35 percent matching funds from non-Federal project sponsors.

Projects conducted under this program have included wild rice restoration, marsh and pond restoration, estuary ecosystem and wetland restoration, fish passage and dam removal, river restoration, and nesting bird island restoration.

Section 22 (Planning Assistance to States) of WRDA 1974, as amended, provides authority for the Corps to assist the States, local governments, and other non-Federal entities in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. Individual studies, of which there may be more than one per State or Tribe per year, generally cost \$25,000 to \$75,000. These studies are cost shared on a 50 percent Federal-50 percent non-Federal basis.

Section 22 can encompass many types of studies dealing with water resources issues. Types of studies conducted in recent years under the program include the following:

- Water Supply and Demand Studies
- Water Quality Studies
- Environmental Conservation/Restoration Studies
- Wetlands Evaluation Studies
- Dam Safety/Failure Studies
- Flood Damage Reduction Studies
- Flood Plain Management Studies
- Coastal Zone Management/Protection Studies
- Harbor/Port Studies

B) Ability to provide 50 percent local cost share for feasibility study and 35 percent local cost share for design and construction in either cash or in-kind services.

Ranking Criteria

Those projects that met the definition of Ecosystem Restoration and whose sponsors provide the required local match were evaluated by the Development Team and Partnership according to the three criteria below. Each project was evaluated and scored for prioritization purposes – based on a 100 point maximum score – in relationship to the other candidate projects.

- **Level of benefit to Lake St. Clair/St. Clair River (60 points maximum)**
Extent of project benefit with specific measurable outcomes (e.g., acres of wetland restored, linear feet of shoreline restored, tons of pollutant loadings removed).
- **The Project supports additional aspects of the MP (20 points maximum)**
The project addresses additional recommendations in the plan beyond ecosystem restoration (e.g. pollutant removal, public health, public education/outreach, etc.)

- **Ranking by Partnership (20 points maximum)**

The average ranking by the Partnership based on qualitative level of benefit, including amount of Partnership support, proximity to impairment areas, continuity for migratory/spawning activity, resource scarcity in the region, etc.

11. Project Implementation Priorities

Seventy one (71) projects are included in the SIP. The projects were assessed several times and ranked (if required). The projects are listed in Appendix C accordingly:

- Appendix C-1 Alphabetical listing of *All Project Titles* in the SIP.
- Appendix C-2 Alphabetical listing of *Projects that are Consistent With the Management Plan Priorities* with the following information for each project: watershed/AOC location, stated outcomes, plan priorities addressed, additional aspects of plan addressed by project, estimated cost, and funding opportunities.
- Appendix C-3 Listing of *Eligible Projects in Ranking Order for Corps Ecosystem Restoration Assistance* with following information for each project: watershed/AOC located, stated outcomes, plan priorities addressed, additional aspects of plan addressed by project, estimated cost and funding opportunities.
- Appendix C-4 Alphabetical listing of *Other Lake St. Clair and St. Clair River Projects* with the following information for each project: Watershed/AOC located, *stated outcomes, estimated costs, and funding opportunities.*

12. Implementation Strategy

The Partnership will work with project sponsors in developing a realistic implementation strategy. This includes a series of meetings with state and Federal agencies to develop interest and support in the projects.

The Partnership will use the SIP in discussions with state and federal funding agencies such as: U.S. EPA, Army Corps of Engineers, NOAA, U.S. Fish and Wildlife Service, U.S. Department of Agriculture, U.S. Forest Service, National Fish and Wildlife Foundation, Michigan Department of Natural Resources and Michigan Department of Environmental Quality. The purpose of these discussions will be to identify projects that align well with state and federal interests and those that will likely be implemented by local partners or stakeholders. The Partnership will assist sponsors of local interest projects in either modifying their projects to align better with state and federal interests or identifying potential partners for the projects. In addition, the Partnership will provide assistance to sponsors of priority projects in developing project descriptions and scope of services.

13. Project Initiation and Budget

Following submittal of the SIP for HQ-Army Corps approval, project staff will begin evaluating priority projects in preparation for funding discussions with the various state and federal agencies identified in section 11 above. Staff will review the funding objectives of the major federal and state funding programs in preparation for this initial evaluation. A likely cost-share scenario will be developed for each project based on a preliminary list of funding opportunities of which the project may qualify.

As soon as the SIP is approved, Army Corps will begin initial evaluation of ranked candidate projects for ecosystem restoration funding. Initial work includes determining if a federal interest in the project exists and what the likely cost-share between non-federal sponsor and Army Corps would be.

14. Development of Preliminary Strategy and Assumptions

In developing the implementation strategy for the projects contained in the SIP, project staff will work with federal and state agency staff in identifying a list of projects that are consistent with state and federal interests and those which are of special interest to the agencies. The meetings will be used for dialogue between agencies and project sponsors. Agency staff will provide input to the sponsors on what they are looking for in a successful application. Based on discussions with state and federal agency staff a series of options with assumptions and pros and cons as well as a preferred option will be developed for the project sponsors.

The Army Corps evaluation of candidate projects will describe the normal assumptions used for the implementation of projects under its Ecosystem Restoration Authorities and related guidance. The summary should highlight any anticipated deviations from the normal project initiation requirements.

15. Project Initiation Milestones

Sponsors and partners will develop project descriptions and scope of services for the SIP projects. Preliminary budgets can be included and milestones developed at this point. The Partnership will provide assistance to sponsors of priority projects that need help in developing the project scope. At this point, sponsors will have a selected funding opportunity from a federal or state agency.

The Army Corps evaluation of candidate projects for ecosystem restoration funding which are ready to move forward with an identified non-federal sponsor will also include an estimated schedule for a project's implementation from feasibility study through planning, design and construction.

16. Updating the SIP

The SIP is a 5-year iterative document which will be reviewed minimally, on an annual basis or more frequently, depending on evolving conditions and level of implementation activity creating the need to add or remove projects.

STATEMENT OF CERTIFICATION

Strategic Implementation Plan for the St. Clair River and Lake St Clair

This is to certify that the undersigned have reviewed and concur in the scope, structure, and cost estimate presented in the Strategic Implementation Plan for the St. Clair River and Lake St Clair. The undersigned also certify the technical competency and experience of the Corps members of the Product Development Team.

Terry Long
Chief, Plan Formulation Branch

Jim Galloway
Chief, Planning Office

Larry Pawlus
Chief, Project Management Office

Scott Thieme P.E., PMP
Deputy District Engineer

APPENDIX A

Executed Partnership Agreement

PARTNERSHIP AGREEMENT FOR THE LAKE ST. CLAIR/ST. CLAIR RIVER PROTECTION AND RESTORATION PARTNERSHIP

PURPOSE:

The purpose of this partnering agreement is to establish the Partnership identified in Section 3089 of the Water Resources Development Act of 2007 (P.L. 110-114); the U.S. Army Corps of Engineers “shall establish and lead a partnership of appropriate Federal agencies (including the Environmental Protection Agency) and the State of Michigan (including political subdivisions of the State),

- A) to promote cooperation among the Federal, State and local governments, and other involved parties in the management of the St. Clair River and Lake St. Clair watersheds, and
- B) to develop and implement projects consistent with the management plan.”

Developing these collaborative working relationships will enable the leveraging of resources for the restoration and protection of the St. Clair River and Lake St. Clair. These leveraged resources will be used to enhance the Partnership’s ability to secure funding, including funds allowed by law through the Water Resources Development Act of 2007, the Great Lakes Restoration Initiative and other sources of assistance.

MISSION:

The mission of the Partnership is to realize a healthy St Clair River and Lake St. Clair watershed by protecting, restoring and enhancing the natural resources of the system through cooperative management among governments, associations, business, educational institutions and individuals residing in the watersheds.

PARTNERSHIP:

The Lake St. Clair/St. Clair River Protection and Restoration Partnership is a collaboration consisting of representatives of local, county, regional, state and federal agencies, non-governmental organizations, associations, and academic institutions.

PRIORITY AREAS:

The Partners intend to implement the recommendations of the Management Plan that address such issue areas as: Environmental Health of the Watershed, Habitat and Biodiversity, Human Health, Land Use, Fisheries, Recreational Boating and Commercial Navigation, and Monitoring. Initial implementation activities will focus on five priority planning areas of the Management Plan. Once formed, the Partnership will review the priority planning areas on an

annual basis. Based on consensus, the priority areas will be revised and updated as needed. The priority planning areas are:

- *Conserve and restore habitat*: Improving the quality of the St. Clair River, Lake St. Clair and their watersheds will require the presence of quality natural habitat for fish and wildlife. This will result in expanding habitat quantity and diversity, which has been reduced by urbanization and development. Further, protecting natural habitat creates opportunities for enhanced eco-tourism, educational and recreational activities that also generate employment opportunities as part of the new Blue Economy.
- *Stormwater management through modifications*: Runoff from Southeast Michigan's existing impervious surfaces and agricultural sources contribute large pollutant loading of nutrients to Southeast Michigan's waterways including the St. Clair watersheds.
- *Identify and reduce sources of bacteria*: Bacteria from the intestines of humans or animals (such as *E coli*) are a recognized public health concern that often result in beach closings or the issuance of a TMDL (Total Maximum Daily Load) for a water body (i.e. lake, river, creek, drain, etc.). A TMDL for *E coli* brings increased federal or state regulation resulting in further local regulatory programming and expenses that will be borne by the communities that use the water body.
- *Use of technology in protecting and restoring the St. Clair River and Lake St. Clair*: Technology such as monitoring, modeling and observing systems provides a significant amount of information that can improve decision-making in the protection and restoration of the St. Clair River and Lake St. Clair.
- *Enhance public use of the St. Clair Watershed*: New recreation and ecotourism opportunities that generate interest of the local residents and tourists from afar in the St. Clair River and Lake St. Clair and its watershed will be part of this changing economic pattern. This shift to a blue economy will be characterized by increased access to the St. Clair River, Lake St. Clair and its tributaries for recreational opportunities. A public that has access to, and uses the resource, will engage in its protection.

BENEFITS TO THE PARTNERS

The Partners agree that the following represents benefits to the members and the resource:

1. Scarce fiscal resources are focused on projects with greatest value added on protecting and restoring the St. Clair watersheds;
2. The probability of securing funding and successful project implementation are enhanced;
3. There is a culture of collaboration and inclusiveness on what is best for the watershed;
4. Partners play a role in determining plan and project priorities;
5. The Partnership serves as a one-stop-shop for identifying and managing priorities of the Management Plan;
6. The Partnership will provide input to funders and Congressional delegates on implementation funding capabilities;
7. Assist in meeting goals of the Great Lakes Water Quality Agreement, including water safe for drinking and swimming, while providing abundant fish and wildlife safe for consumption.

INTENT OF SIGNATORY PARTIES

By signing this Agreement parties voluntarily intend to participate in the partnership process and work to implement the Management Plan's priorities and stated outcomes of the Strategic Implementation Plan through the following activities:

- Participating in planning and implementation activities,
- Assisting in developing and implementing the Strategic Implementation Plan,
- Providing technical expertise when appropriate,
- Promoting the Partnership to others within the community or organization, and
- Supporting projects that benefit the St. Clair River and Lake St. Clair watersheds.

NON-BINDING DOCUMENT

It is understood and agreed by the undersigned that nothing in this Partnership Agreement obligates any signatory to: expend resources either now or in the future, enter into any contract, assistance agreement, interagency agreement, or to incur other financial obligations. This Agreement does not limit, or in any way restrict, the statutory or contractual obligations of the signatories in carrying out their private and/or public responsibilities.

THE PARTNERING AGREEMENT

Progress in achieving the intent and purpose of the Partnering Agreement will be reviewed annually. Further, the Partnership Agreement will be reviewed and updated every five years to ensure it reflects current members and priorities of the Partnership. Any party may terminate their participation in the Agreement through written notice to the Partnership.

Name/Title *Jim M. S. J.* Date : June 22, 2011
Representing: Township of Clay

Name/Title *Mike Brown* Date: June 29, 2011
Representing: St. Clair County Environmental Health Division

Name/Title *Walter D. Vorburg* Date: July 1, 2011
Representing: Macomb County Board of Commissioners

Name/Title *David C. Williams* Date: July 7, 2011
Representing: Huron Clinton Metropolitan Authority

Name/Title *Charles H. Miller* Date: July 11, 2011
Representing: Harsen's Island/St. Clair Flats Association

Name/Title *J. M.* Date: July 11, 2011
Representing: Oakland County Water Resources Commissioner

Name/Title *Polly Mares* Date: July 11, 2011
Representing: St. Clair County Community Foundation

Name/Title *Patty Troy* Date: July 12, 2011
Representing: St. Clair River Binational Public Advisory Council

Name/Title *Anthony V. Marrocco* Date: July 19, 2011
Representing: Macomb County Public Work Commissioner

Name/Title *[Signature]* Date: July 19, 2011
Representing: Clinton River Watershed Council

Name/Title *Mark A. Richardson* Date: July 19, 2011
Representing: Clinton River Public Advisory Council

Name/Title *[Signature]* Date: July 20, 2011
Representing: Six Rivers Regional Land Conservancy

Name/Title *[Signature]* Date: July 20, 2011
Representing: Eastern Michigan University

Name/Title *[Signature]* Date: July 20, 2011
Representing: St. Clair County Drain Commissioner

Name/Title *Christine J. Jeffer* Date: August 8, 2011
Representing: Domtar, Inc.

Name/Title *Charles R. Bolon* Date: August 10, 2011
Representing: Township of Ray

Name/Title *[Signature]* Date: August 11, 2011
Representing: Township of Chesterfield

Name/Title *[Signature]* Date: August 12, 2011
Representing: City of Rochester Hills

Name/Title *Wash. A. Brochu* Date: August 12, 2011
Representing: St. Clair County Parks and Recreation Commission

Name/Title *[Signature]* Date: August 15, 2011
Representing: Southeast Michigan Council of Governments

Name/Title *[Signature]* Date: August 16, 2011
Representing: Township of Ira

Name/Title *Benjamin M. Hughes* Date: August 17, 2011
Representing: City of St. Clair Shores

Name/Title *[Signature]* Date: August 19, 2011

Representing: City of Mount Clemens

Name/Title *Russell M. Strod* Date: August 24, 2011
Representing: USGS Great Lakes Science Center

Name/Title *Elizabeth Hay-Chrislewski* Date: August 25, 2011
Representing: Michigan Department of Natural Resources

Name/Title *Alicia D. Sully* Date: August 15, 2011
Representing: Michigan Department of Environmental Quality

Name/Title *Michael C. Lamm* Date: September 1, 2011
Representing: U.S. Army Corps of Engineers – Detroit District

Name/Title *D. David Newton* Date: September 2, 2011
Representing: Oakland University

Name/Title *James P. Suter* Date: July 19, 2011
Representing: Macomb County Department of Planning and Economic Development

Name/Title *Thomas H. Raymond* Date: July 18, 2011
Representing: Cottrellville Township

Name/Title *Walter R. Lund* Date: September 9, 2011
Representing: USGS Michigan Water Science Center

Name/Title *Markson M. Murphy* Date: September 14, 2011
Representing: St. Clair County Metropolitan Planning Commission

Name/Title *[Signature]* Date: September 27, 2011
Representing: Michigan Sea Grant

Name/Title *[Signature]* Date: October 11, 2011
Representing: City of Marysville

Name/Title _____ Date _____
Representing _____

Name/Title _____ Date _____
Representing _____

Name/Title _____ Date _____
Representing _____

Name/Title _____ Date _____
Representing _____

APPENDIX B

Management Plan Priorities

Projects submitted will be categorized based on their consistency with MP priorities. The MP priorities with rationale and project examples follow:

Conserve and Restore Habitat

Rationale: Improving the quality of the St. Clair River, Lake St. Clair and their watersheds will require the presence of quality natural habitat for fish and wildlife. Protecting and restoring natural habitat enhances biodiversity and population stability while enhancing eco-tourism and recreational activities that generate economic opportunities as part of the new Blue Economy. Further, the benefits of reduced pollutant loadings will be marginalized if there are insufficient buffer zones and greenspace that also supports wildlife. The reduced land values and reverted properties are providing for additional conservation opportunities.

Example Projects: These projects will focus on protecting and restoring high impact habitat sites for restoring fish and wildlife diversity and quantities in area streams and rivers, dam removal and stream restoration, and restoration of wetlands. These restoration efforts will also provide improved recreational and eco-tourism opportunities.

Examples of these projects include:

- Invasive species (Phragmites) removal from Metro Beach MetroPark
- Harrison Township 155-acre wooded wetland remnant
- Partridge Creek Commons – Remnant Oak Opening restoration
- River Voss Fish and Wildlife Habitat Restoration Project
- Meldrum Drain Fish and Wildlife Habitat Restoration and Conservation Project

Stormwater Management through Retrofits

Rationale: Runoff from Southeast Michigan's existing impervious surfaces exceeds 1 trillion gallons annually – delivering 3 million pounds of phosphorus and 500 million pounds of sediment to the region's waterways. The volume and water quality impacts include:

- Reduced water quality,
- Less groundwater recharge,
- Loss of fisheries and habitat,
- Increased flooding and property damage, and
- Decreased recreational opportunities.

Much of the storm water management activity is focused on reducing runoff from future development. But, future development will likely be limited due to current and anticipated economic conditions. Thus, the most benefit in reducing pollutant impacts from runoff would be realized from retrofitting existing land uses with green

infrastructure. At this point there is little financial support from existing federal or state programs for green infrastructure retrofits.

Nutrients from rural sources such as runoff from farm fields contribute large pollutant loadings to Southeast Michigan's waterways including the Lake St. Clair watershed. Within Lake St. Clair, nutrients have been identified as a problem in the Clinton River subwatersheds, the Salt River, Marsac Creek, Swan Creek, Beaubien Creek and Swartout Creek of Anchor Bay. The county drains and natural waterways of Anchor Bay often originate in rural townships where farm fields contribute significant nutrient loadings.

Example projects:

- Green infrastructure and low impact development projects
- Green infrastructure in road right-of-ways
- Native vegetation buffer projects in rural subwatersheds

Identify and Reduce Sources of Bacteria

Rationale: Bacteria from the intestines of humans or animals (such as *E coli*) are a recognized public health concern that often results in beach closings or the issuance of a TMDL (Total Maximum Daily Load) for a water body (i.e. lake, river, creek, drain, etc.). Bacterial loadings in water bodies can seriously impact human health, and can also lead to beach closings. Beach closings can then lead to missed opportunities for public recreational use and public awareness of the natural resource value of the Lake, along with potential lost revenue for area businesses.

A TMDL for *E coli* brings increased federal or state regulation resulting in further local regulatory programming and expenses that will be borne by the communities that use the water body. Water bodies in the Lake St. Clair Watershed with TMDLs for pathogens include the Clinton River and its tributaries, Crapau Creek, Vanderverne Drain, Salt River, Memorial Beach, MetroBeach, St. Clair River, Marsac Creek, and Swartout Creek. There is a public expectation that beach closings and TMDLs will be reduced and the public's use of the Lake St. Clair resource improved.

Monitoring would be an eligible item under this plan priority but only for individual project assessment of effectiveness, not for broad based identification of environmental trends.

Example projects:

- IDEP projects
- On site disposal system remediation projects
- Wildlife control projects
- Collaborate with conservation districts in rural watersheds to make improvements to confined feed operations, etc.

Use of Technology in Protecting and Restoring Lake St. Clair

Rationale: Advancing technology, used in monitoring systems and model development, aids in the collection, development and dissemination of near real-time, high-resolution data and information that can improve decision-making for the protection and restoration of the St. Clair River and Lake St. Clair. Some of this technology is now being used in the watershed.

Monitoring that can detect the presence of chemical or spill in the water and provide concentration information that could assist in tracing the chemical back to its origin, is an important technology for protecting public health. A significant amount of environmental monitoring occurs each year in Southeast Michigan's waterways, including the Clinton, Lake St. Clair and the St. Clair Rivers by county health departments, drain and public works offices. However, the system should be expanded, combined and improved.

Existing technology could support modeling that generates a graphic representation of a water body with an accurate simulation of water current flow and direction based on observed wind speed and direction. Such a model could project the path of a contaminant plume and/or trace the plume back to its source, and would have significant water quality and public health benefits.

Accurate observing systems that measure flow speed and direction, wind speed and direction, precipitation, water temperature, Ph, salinity and turbidity – provide the data necessary to model an aquatic scenario and support numerous planning and engineering endeavors.

Example projects:

- Contaminant assessment,
- Source water protection,
- Post project assessment,
- Comprehensive (trend identification),
- Projecting beach closings due to pathogen bacteria,
- Emerging chemicals (pharmaceuticals, fire retardants, pesticides, chlorinated paraffins),
- Identification of aquatic sites for habitat protection and restoration,
- Boating safety,
- Commercial navigation, and
- Integrating HECWFS
(Huron to Erie Connecting Waterways Forecasting System) with real-time monitoring.

Enhance Public Use of Lake St. Clair Watershed

Rationale: Southeast Michigan is currently undergoing the largest restructuring of its economy since the great depression. Business, local government, and other stakeholders are collaborating to position the region to take advantage of the Blue Economy. The Blue Economy will utilize the water resources and coastal assets of the

region for economic opportunities to generate new commercial and employment opportunities.

New recreation and eco-tourism opportunities in Lake St. Clair and its watershed that attract residents and tourists from near and afar will be part of this changing economic pattern. This shift to a Blue Economy will be characterized by easier and more access to Lake St. Clair and its tributaries for recreational opportunities. A public that has access to, and uses the resource, will more likely engage in its protection. Conservation of high value habitat areas is also beneficial as both local and regional eco-tourism assets. These protected conservation areas have other economic benefits including:

- stabilizing property values as the Lake and its watershed becomes more of an eco-tourism draw, and
- Serves as sites to facilitate ecosystem education and outreach, creating support for further involvement and avocation.

Example projects or actions:

- Water-based recreation and ecotourism opportunities in Lake St. Clair and its tributaries
- Establishment of blueway corridors
- Purchase land for public access.

APPENDIX C - 1

Appendix C-1 Alphabetical listing of all project titles in the SIP.

All Project Titles from Lake St. Clair Database (71 projects)

- #137 Addison Dryden Drain Wetland Preservation, Bank Stabilization and Habitat Restoration
- #165 Anchor Bay Watershed Fish & Wildlife Habitat Restoration Plan and Implementation
- #194 Black Creek Marsh Land Acquisition
- #230 Black River Riverbank Stabilization and Habitat Restoration
- #139 Brandon Oxford Drain Wetland Protection and Habitat Restoration
- #140 Brown Drain Sediment Removal, Bank Stabilization and Habitat Restoration
- #158 Building Collaborations to Manage Phragmites around Lake St. Clair
- #179 Cairns Field Stormwater Retrofit/CSO Control
- #180 City of Mount Clemens Lake St. Clair Shoreline Habitat Restoration
- #193 Clinton River AOC Watershed Remediation Through Grow Zones
- #187 Clinton River Fish Habitat Restoration Project
- #226 Clinton River Green Corridor Habitat Restoration
- #160 Clinton River Restoration at Sylvan Lake Outlet
- #146 Clinton River and Lake St. Clair Green Infrastructure Assessment, Design and Implementation
- #70 Contaminated Source ID and Assessment in Clinton River AOC
- #231 Cottrellville Township St. Clair River Shoreline Restoration
- #93 Determining and Implementing Stable Channel Design Criteria
- #78 Eliminating E. Coli Sources Impacting Beach Closures
- #135 Enhancements to the Huron Erie Corridor Waterways Forecast System (HECWFS) for Expanding Decision-Support Applications
- #144 Expanded Illicit Discharge Elimination Program (IDEP) Southeast Oakland County Communities
- #168 Ferry Drain Sediment Removal, Bank Stabilization and Habitat Restoration
- #126 Galloway Creek Fish Passage Restoration Project
- #185 Habitat Restoration through Large Woody Debris Removal- Phase 1
- #143 Hamilton Relief Drain Sediment Removal, Bank Stabilization and Habitat Restoration
- #169 Harrington Drain Habitat Restoration
- #149 Harsens Island Blue-way (waterways) Phragmites Management & Control
- #133 Harsens Island Conservation & Recreation Area
- #59 Illicit Discharge Elimination Program (IDEP)
- #166 Implementing Green Streets in the Lake St. Clair Watershed
- #215 Inwood Road / Stony Creek Storm Water Improvements
- #167 Lake Level Control Structures Flow Monitoring Clinton River
- #189 Lake St. Clair Phragmites Management Partnership
- #147 Low Flow Improvements Study -- Clinton River Main Subwatershed
- #148 Mainland Drain Project Wetland Creation and Stream Restoration
- #210 Metro Beach Marsh Restoration Phase 3
- #202 Metro Beach Parking Lot Reconstruction Phase 2
- #178 Mount Clemens Ice Rink Stormwater Retrofit/CSO Control
- #91 North Branch Clinton River Wetland Restoration & Protection
- #219 North Branch Flood Plain Restoration
- #120 Oakland University Stormwater Retrofit Project
- #229 Off-line Wetland Treatment System for Pelton Creek Drain

#154 Otter Drain Sediment Removal, Bank Stabilization and Habitat Restoration
#186 Paint Creek Fish Passage Restoration Project
#177 Partridge Creek Commons Habitat Restoration
#234 Phase I -- Upper St. Clair River Habitat Restoration
#192 Phragmites control through biofuel production
#235 Professional Training in Aquatic Habitat Restoration Techniques
#162 Red Run Drain Contaminated Sediment Removal
#159 Red Run Drain Sediment Removal
#161 Red Run Drain Stream Bank Stabilization
#141 Restoration & Improvements to Harsen's Island Conservation Area
#236 Restoration of Chesterfield Island Park
#96 Restoration of Fish Spawning Habitat in the St. Clair River
#232 Restoration of the Marine City Drain
#79 Restoring Fish Passage in the Red Run Headwaters
#107 Road Salt Impact on Clinton River AOC
#157 Roseville Clinton Harrison Relief Drain Water Quality and Habitat Improvement Project
#65 Safeguarding Our Drinking Water Real Time Monitoring
#163 Sinking Bridge Drain Wetland Enhancement
#55 St. Clair River Shoreline Restoration Phase 2
#207 St. Clair Shores Floating Vegetation Remedial Implementation
#206 St. Clair Shores Floating Vegetation Study/Design
#60 Sterling Heights Household Hazardous Waste Outreach
#94 Sterling Relief Drain Habitat Restoration
#217 Stony Creek Floodplain Habitat Restoration/ Invasive Species Removal
#164 Update of Oakland County Design Standards for Storm Water
#233 Updating Lake Huron Direct and St. Clair River Direct Watersheds Management Plans
#145 Village of Leonard Sewage Disposal Alternative Evaluation
#220 Water Quality Assessment of the North Branch of the Clinton River, Wolcott Mill Metropark
#218 Wolcott Mill dam removal and shoreline stabilization
#199 Yates Roadside Park fish habitat restoration and angler access

Appendix C-2

Projects Consistent With Management Plan Priorities

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
#137 Addison Dryden Drain Wetland Preservation, Bank Stabilization and Habitat Restoration Sponsor: Oakland County Water Resources Office Contact: Jim Wineka jwineka@oakgov.com	North Branch Clinton River	Protection and enhancement of wetland habitat Invasive Species Control Stream bank protection Land / Easement Acquisition	√						\$500,000
#165 Anchor Bay Watershed Fish & Wildlife Habitat Restoration Plan and Implementation Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Anchor Bay	A plan for the restoration of fish and wildlife habitat in approximately 100 miles of Anchor Bay tributaries and as well as implement control on two acres of invasive Phragmites, and restore 3,175 feet of Meldrum Drain's channel.	√	√			√	Public education/outreach, Planning/assessment	\$750,000
#194 Black Creek Marsh Land Acquisition Sponsor: Huron Clinton Metroparks Contact: Paul Muelle paul.muelle@metroparks.com	Clinton River	113 acres of wetland protected through public ownership	√				√		\$400,000
#230 Black River Riverbank Stabilization and Habitat Restoration Sponsor: Domtar Industries, Inc. Contact: Christine Loeffler christine.loeffler@domtar.com	Black River/St.Clair River	Restore 2,100 feet of riverbank habitat; control approximately 1 acre of invasive Phragmites; reduce pollutant loadings of sediment.	√	√					\$900,300
#139 Brandon Oxford Drain Wetland Protection and Habitat Restoration Sponsor: Oakland County Water Resources Office Contact: Jim Wineka jwineka@oakgov.com	Clinton River	Protection and enhancement of wetland habitat Invasive Species Control stream bank restoration Land / Easement Acquisition	√	√					\$1,000,000
#140 Brown Drain Sediment Removal, Bank Stabilization and Habitat Restoration Sponsor: Oakland County Water Resources Office Contact: Jim Wineka jwineka@oakgov.com	Upper Clinton Watershed	Reduced stream bank erosion Reduced sediment transport and deposition 2,000 +/- lineal feet of restored stream bank	√	√					\$600,000
#158 Building Collaborations to Manage Phragmites around Lake St. Clair Sponsor: Southeast Michigan Council of Governments Contact: William Parkus parkus@semcog.org	Clinton River/Anchor Bay	Development of a long-term strategy for controlling Phragmites around Lake St. Clair	√					Public education/outreach, Planning/assessment	\$150,000

Appendix C-2
Projects Consistent With Management Plan Priorities

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		including institutional arrangements among numerous agencies and organizations. The project also includes management of Phragmites on 90 acres within the Salt River Watershed.							
#179 Cairns Field Stormwater Retrofit/CSO Control Sponsor: City of Mount Clemens Contact: Chuck Bellmore <i>cbellmore@cityofmountclemens.com</i>	Clinton River	Remove combined sewer overflows into the Clinton River to reduce the levels of <i>E.coli</i> .		√	√			Pollution prevention	\$110,000
#180 City of Mount Clemens Lake St. Clair Shoreline Habitat Restoration Sponsor: City of Mount Clemens Contact: Chuck Bellmore <i>cbellmore@cityofmountclemens.com</i>	Lake St. Clair	Eliminate 450 feet of abandoned fishing pier, restore natural lake currents and reduce sediment accumulation along the shoreline, install two fish habitat structures, remove Phragmites along 415 feet of shoreline and 450 feet of fishing pier, and install native vegetative buffer along 415 feet of shoreline.	√	√					\$168,000
#193 Clinton River AOC Watershed Remediation Through Grow Zones Sponsor: Clinton River Watershed Council Contact: Michele Arquette-Palermo <i>michelle@crwc.org</i>	Clinton River	Create 15,000 lineal feet of riparian vegetative zone. Reduce sediment loading and nutrient input.	√	√				Public education/outreach	\$168,000
#187 Clinton River Fish Habitat Restoration Project Sponsor: City of Rochester Hills Contact: Roger Moore <i>moorer@rochesterhills.org</i>	Clinton River	Restoration of 3,500 feet of Clinton River channel including addition of spawning gravel/cobble riffles, deep scour pools, mainstem holding water, off-channel overwintering pond, cover, vegetated riparian zones, restoration of fish passage to 1,350 feet of a headwater stream, reduction in sediment by 300 tons/year	√					Recreation, and Public education/outreach	\$1,600,000

**Appendix C-2
Projects Consistent With Management Plan Priorities**

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
#226 Clinton River Green Corridor Habitat Restoration Sponsor: Clinton River Watershed Council Contact: Anne Vaara anne@crwc.org	Clinton River	Restore 4,983 linear feet of streambank or over 92 acres of habitat	√				√	Stormwater management, Technology, Public education/outreach	\$150,000
#160 Clinton River Restoration at Sylvan Lake Outlet Sponsor: Oakland County Water Resources Office Contact: Jim Wineka jwineka@oakgov.com	Clinton River	Reduced stream bank erosion, reduced sediment transport and deposition, 200 +/- lineal feet of restored streambank and improved public access	√	√			√		\$500,000
#146 Clinton River and Lake St. Clair Green Infrastructure Assessment, Design and Implementation Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Clinton River	Green infrastructure assessment sediment loading reductions, habitat restoration BUI removal in the Clinton River Area of Concern, stormwater runoff volume and pollutant loading reductions, air pollutant reductions, estimates of carbon storage and sequestration, replanting trees in these urban priority areas assists towards restoring the diverse, functional and healthy urban tree canopy cover that once existed.	√	√				Pollution prevention, Public education/outreach, Planning/assessment	\$1,000,000
#70 Contaminated Source ID and Assessment in Clinton River AOC Sponsor: Oakland University Contact: David Newlin newlin@oakland.edu		GIS maps of contaminants for the Clinton River watershed at Utica. PCBs, PAHs/semivolatiles, and trace elements quantified in at least 50 sediment/suspended sediment/soil/water samples + limited porewater Equilibrium Partitioning (EqP) analysis. Monitoring of suspended sediments by GC/MS to evaluate any high concentrations of previously unknown chemicals in the Clinton				√		Pollution prevention, Toxics, Habitat restoration	\$25,000

Appendix C-2
Projects Consistent With Management Plan Priorities

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		River. TOC, grain size, mineralogy of soils and sediments. Peer reviewed publications.							
#231 Cottrellville Township St. Clair River Shoreline Restoration Sponsor: Cottrellville Township Contact: Tom Raymand griz54@att.net	St. Clair River	Restoration of 200 feet of St. Clair River shoreline with soft engineering and natural shallow-water habitat; management of approximately 1 acre of invasive Phragmites; New public access to the St. Clair River for fishing, boating, birdwatching and other recreation.	√				√		\$975,000
#93 Determining and Implementing Stable Channel Design Criteria Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Lake St. Clair, Anchor Bay, Clinton River, Lake St. Clair Direct Drainage	The new criteria will result in many miles of stable open drain improvements throughout the County that will reduce bank erosion, allow for native plant buffers, riparian habitat, spawning habitat, and minimize long-term maintenance resulting in improved water quality in the Clinton River and Lake St. Clair watersheds.	√	√		√	√	Public education/outreach, Planning/assessment	\$125,000
#78 Eliminating E. Coli Sources Impacting Beach Closures Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Lake St. Clair, Lake St. Clair Direct Drainage	Eliminate approximately 1 million gallons per year of pollution impacting Lake St. Clair, Reduction of beach closures ,Improved perception of Lake St. Clair water quality	√		√		√	Stormwater management, Public education/outreach	\$748,000
#135 Enhancements to the Huron Erie Corridor Waterways Forecast System (HECWFS) for Expanding Decision-Support Applications Sponsor: Michigan Sea Grant Contact: Jennifer Read jenread@umich.edu	St. Clair River, Anchor Bay, Lake St. Clair	Improved efficiency and effectiveness in decision-making on a variety of management issues.				√			\$100,000
#144 Expanded Illicit Discharge Elimination Program (IDEP) Southeast Oakland County Communities Sponsor: Oakland County Water Resources Office Contact: Jim Wineka jwineka@oakgov.com	Clinton River	Based on similar results in 2008, up to 2,000,000 gallons of raw sewage per year can be expected to be			√		√	Pollution prevention, Toxics	\$800,000

Appendix C-2
Projects Consistent With Management Plan Priorities

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		eliminated from the Clinton River / Lake St. Clair.							
#168 Ferry Drain Sediment Removal, Bank Stabilization and Habitat Restoration Sponsor: Oakland County Water Resources Office Contact: Jim Wineka jwineka@oakgov.com	Clinton River	Reduced stream bank erosion Reduced sediment transport and deposition 1,200 +/- lineal feet of restored streambank	√	√					\$400,000
#126 Galloway Creek Fish Passage Restoration Project Sponsor: Oakland University Contact: Ryan Giorio giorio@oakland.edu	Clinton River	1,000 ft of stream restoration 65 tons/yr of sediment reduction Restore floodplain along 300 ft of tributary	√	√					\$850,000
#185 Habitat Restoration through Large Woody Debris Removal-Phase 1 Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Clinton River	Remove an estimated 1,000 tons of LWD from the Clinton River and its tributaries. Train approximately 100 municipal workers and volunteers on the correct LWD management techniques. Restore habitat conditions for approximately 50 miles in the main, middle and north branches of the Clinton River.	√				√	Stormwater Management, Recreation, Public education/outreach	\$500,000
#143 Hamilton Relief Drain Sediment Removal, Bank Stabilization and Habitat Restoration Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Clinton River	200 +/- feet of streambank restoration and erosion protection Sediment removal (3,000 cu yd +/-)	√				√		\$500,000
#169 Harrington Drain Habitat Restoration Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Clinton River	Improved water quality (reduced turbidity, nutrients), Public education, riparian residents 750 tons/yr sediment reduction, 2.25 tons phosphorus reduction, 50 acres of invasive species management/native plant re-vegetation 6 miles of channel restored	√	√				Public education/outreach	\$2,850,000
#149 Harsens Island Blue-way (waterways) Phragmites Management & Control Sponsor: Clay Township Phragmites Management Advisory Board Contact: Bernard Licata licata@comcast.net	St. Clair River , Anchor Bay	Dramatically improve over three miles of riparian waterways for recreational opportunities, and for fish	√				√	Recreation, Public education/outreach	\$500,000

**Appendix C-2
Projects Consistent With Management Plan Priorities**

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		and wildlife habitat.							
#133 Harsens Island Conservation & Recreation Area Sponsor: Harsens Island Conservation Association Incorporated Contact: Bernard Licata licata@comcast.net	St. Clair River, Anchor Bay	Acquisition of approximately 440 acres of unique and rare native community. This includes 50 acres of Great Lakes Marsh, 50 acres of wet-prairie, 125 acres of wet-mesic prairie, and 120 acres of wet-mesic flatwoods and oak openings.	√				√		\$8,000,000
#59 Illicit Discharge Elimination Program (IDEP) Sponsor: Macomb County Health Department Contact: Steve Lichota steve.lichota@macombcountymi.gov	Clinton River, Lake St. Clair Direct Drainage	Improvement in the water quality of surface waters and reductions in beach closures			√				\$800,000
#166 Implementing Green Streets in the Lake St. Clair Watershed Sponsor: Southeast Michigan Council of Governments Contact: Amy Mangus mangus@semcog.org	Lake St. Clair, Anchor Bay, Clinton River	1000 acres of stormwater managed from roadways; 17,000 lbs of Total Suspended Solids; 100 lbs Total Phosphorus; 600 lbs Total Nitrogen		√				Bacteria reduction	\$900,000
#215 Inwood Road / Stony Creek Storm Water Improvements Sponsor: Huron Clinton Metroparks Contact: Paul Muelle paul.muelle@metroparks.com	Clinton River	Improved water quality of the Stony Creek, reduced storm water runoff, reduced sedimentation, improved fish and macro invertebrate habitat	√	√			√	Pollution prevention, Recreation, Public education/outreach	\$220,000
#167 Lake Level Control Structures Flow Monitoring Clinton River Sponsor: Oakland County Water Resources Office Contact: Jim Wineka jwineka@oakgov.com	Clinton River	Reduce peak flow and manage low flow in the Main branch of the Clinton River	√				√	Stormwater management, Habitat restoration	\$300,000
#189 Lake St. Clair Phragmites Management Partnership Sponsor: Clay Township Phragmites Advisory Board Contact: Chris Bilewicz cbile@yahoo.com	St. Clair River and Anchor Bay	Restoration of 450 acres of wetlands and outreach and assistance to three neighboring communities (collectively, the four communities account for approximately 80 percent of the Phragmites around Lake St. Clair.)	√					Public education/outreach	\$850,000
#147 Low Flow Improvements Study – Clinton River Main Subwatershed Sponsor: Oakland County Water Resources Office Contact: Jim Wineka jwineka@oakgov.com	Clinton River Main	Improved Clinton River flow management, Improved aquatic habitat	√				√	Planning/assessment	\$250,000

**Appendix C-2
Projects Consistent With Management Plan Priorities**

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
#148 Mainland Drain Project Wetland Creation and Stream Restoration Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	Reduced peak flow Reduced stream bank erosion Reduced sediment transport and deposition 500 +/- lineal feet of restored streambank 13 +/- acres of new or restored wetland habitat	√	√				Pollution prevention	\$3,000,000
#210 Metro Beach Marsh Restoration Phase 3 Sponsor: Huron Clinton Metroparks Contact: Paul Muelle <i>paul.muelle@metroparks.com</i>	Clinton River	113 acres of wetland restored	√				√	Recreation, Public education/outreach	\$150,000
#202 Metro Beach Parking Lot Reconstruction Phase 2 Sponsor: Huron Clinton Metroparks Contact: Paul Muelle <i>paul.muelle@metroparks.com</i>	Clinton River	Reduction of 8 acres of impervious surface, reducing untreated storm water, improved water quality of the swimming beach (E.coli reduction), increased esthetics, increased vegetative stormwater BMPs	√	√	√		√	Pollution prevention, Recreation	0
#178 Mount Clemens Ice Rink Stormwater Retrofit/CSO Control Sponsor: City of Mount Clemens Contact: Chuck Bellmore <i>cbellmore@cityofmountclemens.com</i>	Clinton River	Reduce the number of combined sewer overflows into the Clinton River to reduce the levels of E.coli		√	√			Pollution prevention	\$160,000
#91 North Branch Clinton River Wetland Restoration & Protection Sponsor: Macomb County Public Works Office Contact: Lynne Seymour <i>lynne.seymour@macombcountymi.gov</i>	North Branch Clinton River	This project will restore/enhance habitat in 40 acres of high priority wetlands along the NBCR. Restoring 40-acres represents 9% of the target wetland restoration in the watershed to achieve the delisting criteria.	√	√			√	Recreation, Public education/outreach	\$200,000
#219 North Branch Flood Plain Restoration Sponsor: Huron Clinton Metroparks Contact: Paul Muelle <i>paul.muelle@metroparks.com</i>	North Branch Clinton River	Habitat restoration along eight miles of floodplain.	√	√			√	Pollution prevention, recreation, public education/outreach	\$100,000
#120 Oakland University Stormwater Retrofit Project Sponsor: Oakland University Contact: Ryan Giorio <i>giorio@oakland.edu</i>	Clinton River Main	The project will daylight 1,040 ft of stream, remove a geothermal pond from the northeast basin area, establish a 0.35 acre northeast basin and a 4.5 acre Northwest pond 5 acres of invasive species	√						\$3,750,000

**Appendix C-2
Projects Consistent With Management Plan Priorities**

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		control, 1 acre of riparian native vegetation restored, 280 lb of phosphorus removal per year, channel protection (extended detention) will allow for over 1 mile of Galloway Creek to eventually be restored							
#229 Off-line Wetland Treatment System for Pelton Creek Drain Sponsor: St. Clair County Drain Office Contact: Bob Wiley <i>rwiley@stclaircounty.org</i>	Anchor Bay	Restoration and creation of 11 acres of riparian wetland habitat to reduce stormwater volumes and filter sediment and nutrients.	√	√			√	Pollution prevention, Recreation, Public education/outreach	\$700,000
#154 Otter Drain Sediment Removal, Bank Stabilization and Habitat Restoration Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	Reduced stream bank erosion Reduced sediment transport and deposition 2000 +/- lineal feet of restored streambank Minor wetland enhancement (5 acres +/-)	√	√					\$600,000
#186 Paint Creek Fish Passage Restoration Project Sponsor: City of Rochester Contact: Jaymes Vettrano <i>jvettrano@ci.rochester.mi.us</i>	Clinton River	15 miles of aquatic organism passage (AOP) restored 5,000 linear feet of stream channel restored/enhanced 300 feet of slope failure stabilized 2 fish passage barriers restored	√						\$1,895,000
#177 Partridge Creek Commons Habitat Restoration Sponsor: Macomb County Public Works Office Contact: Lynne Seymour <i>lynne.seymour@macombcountymi.gov</i>	Clinton River	52 acres of habitat restored invasive species removal/native plantings 5,500 lineal feet of multi-staged open channel restoration 5 acres of wetland restored Interpretive signage and trail system for mall visitors and local residents	√	√			√	Recreation, Public education/outreach	\$4,975,000
#234 Phase I -- Upper St. Clair River Habitat Restoration Sponsor: St. Clair County Community Foundation Contact: Randy Maier <i>randy@stclairfoundation.org</i>	St. Clair River	Restoration of approximately five acres of land along the St. Clair River, comprising 0.8 of a mile of shoreline as well as shallow and deep water	√	√			√	Pollution prevention, Recreation, Public education/outreach	\$1,720,000

**Appendix C-2
Projects Consistent With Management Plan Priorities**

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		fish habitat.							
#192 Phragmites control through biofuel production Sponsor: Oakland University Contact: David Newlin <i>newlin@oakland.edu</i>	Lake St. Clair, Clinton River	Phragmites removal in select wetland areas of the Clinton River watershed. Feasibility study for scaling-up biofuel production. Peer-review publications. Alternative to Phragmites control via glyphosate or other toxic chemical use.	√			√		Pollution prevention, Toxics	\$50,000
#235 Professional Training in Aquatic Habitat Restoration Techniques Sponsor: Michigan Sea Grant Contact: Jennifer Read <i>jenread@umich.edu</i>	Lake St. Clair, St. Clair River Watersheds	Develop three training modules, including written and web materials, illustrations and slides about: constructed fish spawning reefs, nearshore and wetland habitat enhancements, and soft shoreline engineering. A new course would train at least 20 professionals, providing 30 hours of direct instruction and continuing education credits.	√			√		Planning/assessment	\$150,000
#159 Red Run Drain Sediment Removal Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	5,000 cubic yards of sediment will be removed from the drain, eliminating its eventual transport and deposition in the Clinton River and Lake St. Clair.	√					Pollution prevention	\$350,000
#161 Red Run Drain Stream Bank Stabilization Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	3,000 lineal feet of streambank will be restored and prevented from further erosion. This will eliminate significant sediment deposition in the Clinton River and Lake St. Clair	√					Stormwater management, Pollution prevention	\$500,000
#141 Restoration & Improvements to Harsen's Island Conservation Area Sponsor: Harsens Island Conservation Association Incorporated Contact: Bernard Licata <i>licata@comcast.net</i>	St. Clair River/Anchor Bay	Restoration of 440 acres possessing rare native communities hiking trails and waterways, for use by over four million people in Southeast Michigan.	√				√		\$1,000,000

**Appendix C-2
Projects Consistent With Management Plan Priorities**

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
#236 Restoration of Chesterfield Island Park Sponsor: Macomb County Planning and Economic Development Contact: Gerry Santoro <i>gerard.santoro@macombcountymi.gov</i>	Lake St. Clair Direct Drainage	Restoration of 2.18 acres of urban habitat for aquatic and terrestrial wildlife	√				√	Public education/outreach	\$150,000
#96 Restoration of Fish Spawning Habitat in the St. Clair River Sponsor: Michigan Sea Grant Contact: Jennifer Read <i>jenread@umich.edu</i>	St. Clair River	This project will restore 1.5 acres of fish spawning habitat and remediate the loss of this habitat due to shipping channel construction. The constructed habitat will improve the reproductive success of sturgeon, walleye and lake whitefish	√						1,400,000
#232 Restoration of the Marine City Drain Sponsor: St. Clair County Drain Office Contact: Bob Wiley <i>rwiley@stclaircounty.org</i>	St. Clair River	Address habitat fragmentation, Remove six miles of barriers to fish passage such as sediment blockages and debris dams, Control invasive species on three miles of stream corridor, Restore six miles fo riparian and in-stream habitat through plantings.	√	√			√	Pollution prevention, Recreation, Public education/outrech	1,500,000
#79 Restoring Fish Passage in the Red Run Headwaters Sponsor: City of Troy Contact: Steve Vandette <i>vandettesj@troymi.gov</i>	Clinton River	Over 1,400 feet of stream channel will be restored. The Project will reconnect 1.7 miles of headwater tributaries in low density residential areas to 1.5 miles of the lower Lane Drain. Approximately 0.75 acres of riparian wet meadow will be created. Over 3 acres of riparian native buffer re-vegetation/no mow areas will be established.	√	√				Public education/outreach	2,112,000
#107 Road Salt Impact on Clinton River AOC Sponsor: Oakland University Contact: David Newlin <i>newlin@oakland.edu</i>	Clinton River	Physical, mineralogical and biogeochemical characterization of a salt-laden watershed. Quantification of inorganic element and PCB fluxes in the system. Assessment of the toxicity due to salt input. Determination of the				√		Pollution prevention, Toxics	\$55,000

**Appendix C-2
Projects Consistent With Management Plan Priorities**

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		mechanisms occurring in a salt-laden environment.							
#157 Roseville Clinton Harrison Relief Drain Water Quality and Habitat Improvement Project Sponsor: Macomb County Public Works Office Contact: Lynne Seymour <i>lynne.seymour@macombcountymi.gov</i>	Clinton River	500 tons/yr sediment reduction 2 tons phosphorus reduction 50 acres of invasive species management/native plant re-vegetation 2 miles of channel restored.	√		√			Pollution prevention, Public education/outreach	\$1,680,000
#65 Safeguarding Our Drinking Water Real Time Monitoring Sponsor: Macomb County Health Department Contact: Steve Lichota <i>steve.lichota@macombcountymi.gov</i>	St. Clair River/Lake St. Clair	Ongoing Sentinel Program For Safeguarding Region's Drinking Water Supply				√		Pollution prevention, Planning/assessment	\$2,500,000
#163 Sinking Bridge Drain Wetland Enhancement Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	170 +/- acres of new or restored wetland habitat Reduction in nutrient inputs (source reduction and/or loadings) Reduction in sediment inputs (source reduction and/or loadings). Reduction in concentrations of soluble reactive phosphorus Potential reduction in the number of incidences of harmful algal blooms	√	√				Recreation	\$2,000,000
#55 St. Clair River Shoreline Restoration Phase 2 Sponsor: City of Marysville Contact: G. Jason Hami <i>jhami@cityofmarysvillemi.org</i>	St. Clair River	Reconnect 1500 ft of Cuttle Creek to St. Clair River, add woody habitat, create 2 fishing areas with educational signs, raise Cuttle Creek water quality ranking to good	√		√		√	Recreation, Public education/outreach	\$2,500,000
#207 St. Clair Shores Floating Vegetation Remedial Implementation Sponsor: City of St. Clair Shores Contact: Bryan Babcock, PE <i>babcockb@scsmi.net</i>	Lake St. Clair Direct Drainage	Removal/reduction of bacteria harboring material from shoreline Improved shoreline aesthetics Reduced beach closings Improved Lake St. Clair access for residents			√		√	Pollution prevention	\$2,000,000
#206 St. Clair Shores Floating Vegetation Study/Design Sponsor: City of St. Clair Shores Contact: Bryan Babcock, PE <i>babcockb@scsmi.net</i>	Lake St. Clair Direct Drainage	Removal/reduction of bacteria harboring material from shoreline Reduce number of beach closings Improved shoreline aesthetics Improved Lake	Identify and reduce sources of bacteria, Enhance public use of Lake St. Clair Watershed		√		√	Pollution prevention, Planning/assessment	\$200,000

**Appendix C-2
Projects Consistent With Management Plan Priorities**

Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		St. Clair access for residents							
#94 Sterling Relief Drain Habitat Restoration Sponsor: Macomb County Public Works Office Contact: Lynne Seymour <i>lynne.seymour@macombcountymi.gov</i>	Clinton River	Daylight 2,000 feet of enclosed storm drain, remove a perched outfall directly connected to the Red Run Drain, restore approximately 5 miles of drain connectivity, create 2.5 acres of riparian floodplain habitat, create over 10,000 square feet of spawning habitat. Develop a long-term native vegetation management plan to control invasives and establish native plant buffers, and enhance recreation through pedestrian trailways and river accessibility.	√	√			√	Public education/outreach	\$1,500,000
#217 Stony Creek Floodplain Habitat Restoration/ Invasive Species Removal Sponsor: Huron Clinton Metroparks Contact: Paul Muelle <i>paul.muelle@metroparks.com</i>	Clinton River	Conserve, restore and protect wildlife habitat within the Stoney Creek Floodplain forest by removal of invasive species	√					Recreation	\$25,000
#164 Update of Oakland County Design Standards for Stormwater Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	Reduction in nutrient inputs (source reduction and/or loadings) Reduction in sediment inputs (source reduction and/or loadings). Reduction in concentrations of soluble reactive phosphorus Potential reduction in the number of incidences of harmful algal blooms		√				Public education/outreach, Planning/assessment	\$200,000
#233 Updating Lake Huron Direct and St. Clair River Direct Watersheds Management Plans Sponsor: St. Clair County Health Department Contact: Kristen O'Reilly <i>koreilly@stclaircounty.org</i>	St. Clair River	Two watershed management plans for improved funding opportunities that meet 319 requirements, and provide descriptions of projects that will reduce E-coli sources at impaired	√	√	√		√	Planning/assessment	\$300,000

Appendix C-2 Projects Consistent With Management Plan Priorities									
Projects	Watershed	Quantitative Outcomes	Plan Priorities Addressed by Project					Other aspects of Management Plan Addressed by Project	Estimated Cost
			Conserve and restore habitat	Stormwater management/ Retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhancing public use of Lake St. Clair		
		beaches, restore fish spawning habitat and identify stormwater retrofit opportunities							
#145 Village of Leonard Sewage Disposal Alternative Evaluation Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	Reduced bacterial contamination to the Clinton River and Lake St. Clair	Identify and reduce sources of bacteria		√			Pollution prevention, Planning/assessment	\$100,000
#220 Water Quality Assessment of the North Branch of the Clinton River, Wolcott Mill Metropark Sponsor: Huron Clinton Metroparks Contact: Paul Muelle <i>paul.muelle@metroparks.com</i>	Clinton River	To assess the impacts of land uses within Wolcott Mill Metropark on water quality of the North Branch of the Clinton River and make land management recommendations for improvements	Identify and reduce sources of bacteria		√			Pollution prevention, Public education/outreach, Planning/assessment	\$40,000
#218 Wolcott Mill dam removal and shoreline stabilization Sponsor: Huron Clinton Metroparks Contact: Paul Muelle <i>paul.muelle@metroparks.com</i>	Clinton River	Dam removal, reduced erosion and sedimentation, habitat improvement, recreation improvement	√	√			√		\$125,000
#199 Yates Roadside Park fish habitat restoration and angler access Sponsor: City of Rochester Hills Contact: Roger Moore <i>moorer@rochesterhills.org</i>	Clinton River	Restoration of river channel through addition of riffles, scour pools, glides, woody material, undercut banks will benefit trout, including steelhead and non game fish, Re-vegetate banks with erosion control blankets and riparian plantings/seed to reduce sediment loadings by 25 tons/yr to improve habitat for fish and macroinvertebrates.	√				√	Public education/outreach	\$250,000

Appendix C-3 Candidate Projects that are Eligible for Army Corps Assistance Through Ecosystem Restoration Authorities										
Ranking	Projects	Watershed	Quantitative Outcomes	Management Plan Priorities Addressed					Other Aspects of Management Plan Addressed by Project	Estimated Cost
				Conserve and restore habitat	Stormwater management/ retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhance public use of Lake St. Clair		

Appendix C-3

Candidate Projects that are Eligible for Army Corps Assistance Through Ecosystem Restoration Authorities

Ranking	Projects	Watershed	Quantitative Outcomes	Management Plan Priorities Addressed					Other Aspects of Management Plan Addressed by Project	Estimated Cost
				Conserve and restore habitat	Stormwater management/ retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhance public use of Lake St. Clair		
1	#234 Phase I -- Upper St. Clair River Habitat Restoration Sponsor: St. Clair County Community Foundation Contact: Randy Maier randy@stclairfoundation.org	St. Clair River	Restoration of approximately five acres of land along the St. Clair River, comprising 0.8 of a mile of shoreline as well as shallow and deep water fish habitat.	√	√			√	Stormwater management, Pollution prevention, Recreation, Public education/outreach	\$1,720,000
2	#55 St. Clair River Shoreline Restoration Phase 2 Sponsor: City of Marysville Contact: G. Jason Hami jhami@cityofmarysvillemi.org	St. Clair River	Reconnect 1500 ft of Cuttle Creek to St. Clair River, add woody habitat, create 2 fishing areas with educational signs, raise Cuttle Creek water quality ranking to good	√		√		√	Bacteria reduction Recreation, Public education/outreach	\$2,500,000
3	#157 Roseville Clinton Harrison Relief Drain Water Quality and Habitat Improvement Project Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Clinton River	500 tons/yr sediment reduction 2 tons phosphorus reduction 50 acres of invasive species management/native plant re-vegetation 2 miles of channel restored.	√		√			Stormwater management, Pollution prevention, Public education/outreach	\$1,680,000
4	#232 Restoration of the Marine City Drain Sponsor: St. Clair County Drain Office Contact: Bob Wiley rwiley@stclaircounty.org	St. Clair River	Address habitat fragmentation, remove six miles of barriers to fish passage such as sediment blockages and debris dams, Control invasive species on three miles of stream corridor, Restore six miles fo riparian and in-stream habitat through plantings.	√	√			√	Stormwater management, Pollution prevention, Recreation, Public education/outrech	1,500,000
5	#229 Off-line Wetland Treatment System for Pelton Creek Drain Sponsor: St. Clair County Drain Office Contact: Bob Wiley rwiley@stclaircounty.org	Anchor Bay	Restoration and creation of 11 acres of riparian wetland habitat to reduce stormwater volumes and filter sediment and nutrients.	√	√			√	Bacteria reduction, Pollution prevention, Recreation, Public education/outreach	\$700,000
6	#177 Partridge Creek Commons Habitat Restoration Sponsor: Macomb County Public Works Office Contact: Lynne Seymour lynne.seymour@macombcountymi.gov	Clinton River	52 acres of habitat restored invasive species removal/native plantings 5,500 lineal feet of multi-staged open channel	√	√			√	Stormwater management, Recreation, Public	\$4,975,000

Appendix C-3

Candidate Projects that are Eligible for Army Corps Assistance Through Ecosystem Restoration Authorities

Ranking	Projects	Watershed	Quantitative Outcomes	Management Plan Priorities Addressed					Other Aspects of Management Plan Addressed by Project	Estimated Cost
				Conserve and restore habitat	Stormwater management/ retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhance public use of Lake St. Clair		
			restoration 5 acres of wetland restored Interpretive signage and trail system for mall visitors and local residents						education/outreach	
7	#231 Cottrellville Township St. Clair River Shoreline Restoration Sponsor: Cottrellville Township Contact: Tom Raymand <i>griz54@att.net</i>	St. Clair River	Restoration of 200 feet of St. Clair River shoreline with soft engineering and natural shallow-water habitat; management of approximately 1 acre of invasive Phragmites; New public access to the St. Clair River for fishing, boating, birdwatching and other recreation.	√				√		\$975,000
8	#148 Mainland Drain Project Wetland Creation and Stream Restoration Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	Reduce peak flow, Reduce stream bank erosion, Reduce sediment transport and deposition, 500 +/- lineal feet of restored streambank 13 +/- acres of new or restored wetland habitat	√	√				Stormwater management, Pollution prevention	\$3,000,000
9	#125 Meldrum Drain Fish and Wildlife Habitat Restoration Project Sponsor: Macomb County Public Works Office Contact: Lynne Seymour <i>lynne.seymour@macombcountymi.gov</i>	Lake St. Clair Direct Drainage	Develop fish and wildlife habitat restoration on 3,175 feet of the lower Meldrum Drain – a tributary to Anchor Bay in the northwest of Lake St. Clair. Natural stream meanders, pools, cover, and substrate enhancements will provide spawning habitat for fish and amphibians. Four acres of invasive species control/native re-vegetation and riparian floodplain restoration will be constructed.	√						\$500,000
10	#79 Restoring Fish Passage in the Red Run Headwaters Sponsor: City of Troy Contact: Steve Vandette <i>vandettesj@troymi.gov</i>	Clinton River	Over 1,400 feet of stream channel will be restored. The Project will reconnect 1.7 miles of headwater tributaries in low density residential areas to 1.5	√	√				Stormwater management, Public education/outreach	\$2,112,000

Appendix C-3

Candidate Projects that are Eligible for Army Corps Assistance Through Ecosystem Restoration Authorities

Ranking	Projects	Watershed	Quantitative Outcomes	Management Plan Priorities Addressed					Other Aspects of Management Plan Addressed by Project	Estimated Cost
				Conserve and restore habitat	Stormwater management/ retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhance public use of Lake St. Clair		
			miles of the lower Lane Drain. Approximately 0.75 acres of riparian wet meadow will be created. Over 3 acres of riparian native buffer re-vegetation/no mow areas will be established.							
11	#94 Sterling Relief Drain Habitat Restoration Sponsor: Macomb County Public Works Office Contact: Lynne Seymour <i>lynne.seymour@macombcountymi.gov</i>	Clinton River	Daylight 2,000 feet of enclosed storm drain, remove a perched outfall directly connected to the Red Run Drain, restore approximately 5 miles of drain connectivity, create 2.5 acres of riparian floodplain habitat, create over 10,000 square feet of spawning habitat. Develop a long-term native vegetation management plan to control invasives and establish native plant buffers, and enhance recreation through pedestrian trailways and river accessibility.	√	√			√	Stormwater management, Recreation, Public education/outreach	\$1,500,000
12	#187 Clinton River Fish Habitat Restoration Project Sponsor: City of Rochester Hills Contact: Roger Moore <i>moorer@rochesterhills.org</i>	Clinton River	Restoration of 3,500 feet of Clinton River channel including addition of spawning gravel/cobble riffles, deep scour pools, mainstem holding water, off-channel overwintering pond, cover, vegetated riparian zones, restoration of fish passage to 1,350 feet of a headwater stream, reduction in sediment by 300 tons/year	√					Recreation, Public education/outreach	\$1,600,000
13	#169 Harrington Drain Habitat Restoration Sponsor: Macomb County Public Works Office Contact: Lynne Seymour <i>lynne.seymour@macombcountymi.gov</i>	Clinton River	Improved water quality (reduced turbidity, nutrients), Public education, riparian residents 750 tons/yr sediment reduction, 2.25 tons phosphorus reduction,	√	√				Stormwater management, Public education/outreach	\$2,850,000

Appendix C-3

Candidate Projects that are Eligible for Army Corps Assistance Through Ecosystem Restoration Authorities

Ranking	Projects	Watershed	Quantitative Outcomes	Management Plan Priorities Addressed					Other Aspects of Management Plan Addressed by Project	Estimated Cost
				Conserve and restore habitat	Stormwater management/ retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhance public use of Lake St. Clair		
			50 acres of invasive species management/native plant re-vegetation 6 miles of channel restored							
14	#96 Restoration of Fish Spawning Habitat in the St. Clair River Sponsor: Michigan Sea Grant Contact: Jennifer Read <i>jenread@umich.edu</i>	St. Clair River	This project will restore 1.5 acres of fish spawning habitat and remediate the loss of this habitat due to shipping channel construction. The constructed habitat will improve the reproductive success of sturgeon, walleye and lake whitefish	√						\$1,400,000
15	#163 Sinking Bridge Drain Wetland Enhancement Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	170 +/- acres of new or restored wetland habitat Reduction in nutrient inputs (source reduction and/or loadings) Reduction in sediment inputs (source reduction and/or loadings). Reduction in concentrations of soluble reactive phosphorus Potential reduction in the number of incidences of harmful algal blooms	√	√				Stormwater management, Recreation	\$2,000,000
16	#186 Paint Creek Fish Passage Restoration Project Sponsor: City of Rochester Contact: Jaymes Vettraino <i>jvettraino@ci.rochester.mi.us</i>	Clinton River	15 miles of aquatic organism passage (AOP) restored 5,000 linear feet of stream channel restored/enhanced 300 feet of slope failure stabilized 2 fish passage barriers restored	√						\$1,895,000
17	#120 Oakland University Stormwater Retrofit Project Sponsor: Oakland University Contact: Ryan Giorio <i>giorio@oakland.edu</i>	Clinton River Main	The project will daylight 1,040 ft of stream, remove a geothermal pond from the northeast basin area, establish a 0.35 acre northeast basin and a 4.5 acre Northwest pond 5 acres of invasive species control, 1 acre of riparian native vegetation restored, 280 lb of phosphorus removal per year, channel	√						\$3,750,000

Appendix C-3

Candidate Projects that are Eligible for Army Corps Assistance Through Ecosystem Restoration Authorities

Ranking	Projects	Watershed	Quantitative Outcomes	Management Plan Priorities Addressed					Other Aspects of Management Plan Addressed by Project	Estimated Cost
				Conserve and restore habitat	Stormwater management/ retrofits	Reduce sources of bacteria	Use of technology in protecting Lake St. Clair	Enhance public use of Lake St. Clair		
			protection (extended detention) will allow for over 1 mile of Galloway Creek to eventually be restored							
18	#126 Galloway Creek Fish Passage Restoration Project Sponsor: Oakland University Contact: Ryan Giorio <i>giorio@oakland.edu</i>	Clinton River	1,000 ft of stream restoration 65 tons/yr of sediment reduction Restore floodplain along 300 ft of tributary	√	√					\$850,000

**Appendix C-4
Other St. Clair River and Lake St. Clair Projects**

Projects	Watershed	Quantitative Outcomes	Estimated Cost
#60 Sterling Heights Household Hazardous Waste Outreach Sponsor: Macomb County Health Department Contact: Steve Lichota <i>steve.lichota@macombcountymi.gov</i>	Clinton River	10.5 tons of household hazardous waste removed from the solid waste stream per year	\$ 625,000
#162 Red Run Drain Contaminated Sediment Removal Sponsor: Oakland County Water Resources Office Contact: Jim Wineka <i>jwineka@oakgov.com</i>	Clinton River	Approximately 16,700 cubic yards of contaminated sediment will be removed from the drain. This will eliminate its deposition in the Clinton River and Lake St. Clair.	\$2,000,000