

Local Surface Water Management Plan
City of Lake St. Croix Beach, Minnesota

DRAFT
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Local Surface Water Management Plan

Purpose

The City of Lake St. Croix Beach has prepared this Surface Water Management Plan to consolidate information on the City's overall surface water management objectives, implementation and funding. The City has adopted the Middle St. Croix Watershed Management Organization Water Management Plan by reference along with elements of the Metropolitan Council Water Resources Management Plan. It is the City's goal to protect valuable natural resources and to have no adverse impact on the water quality of the St. Croix River as it passes through our city.

The City of Lake St. Croix Beach's Plan is intended to support the goals and policies of the Middle St. Croix Watershed Management Organization (MSCWMO). The MSCWMO is a Joint Powers Watershed Management Organization composed of ten St. Croix Valley communities that was established under State Statute 103B to cooperatively manage water resources within the watershed. The ten member communities of the MSCWMO are Afton, Bayport, Baytown Township, Lakeland, Lakeland Shores, Lake St. Croix Beach, Oak Park Heights, St. Mary's Point, Stillwater, and West Lakeland Township. Lake St. Croix Beach appoints one manager and one alternate to serve on the ten member WMO Board. Lake St. Croix Beach represents about 3 percent of the 19.8 square mile MSCWMO Watershed area.

The purpose of the WMO and of this Plan, is to conserve natural resources through land use planning, flood control, and other conservation projects in order to ensure continued public health and welfare. The specific purposes for the Plan and the WMO Plan are:

- 1) Cooperatively manage water resources in the watershed.
- 2) Inventory and assess the resources of the watershed.
- 3) Monitor the water quality of lakes and streams in the watershed.
- 4) Provide education on water related issues in the watershed.
- 5) Review development plans for stormwater management, erosion and sediment control, and provide wetland and shoreland protection.
- 6) Plan and implement capital improvement projects that enhance the water resources of the watershed.

Land and Surface Water Features

The Middle St. Croix Watershed is unique when compared to other watersheds in Washington County in that it has many small, parallel sub watersheds that all flow into the St. Croix River, whereas the other watersheds generally have one major drainage with a headwaters and outlet.

Generally speaking the drainage pattern in Lake St. Croix Beach is from west to east; however there are a number of isolated low areas within the City which prevent discharge directly into the St. Croix River. Most of the City drains internally, with very little area draining directly into the River. There are two concentrated discharge sites which flow into the River.

The MSCWMO Plan includes a detailed assessment of the land and water resources found within the MSCWMO and reference is made to the WMO Plan for this information. The MPCA’s online mapping tool identifies the special and impaired waters information for the waters listed in Table C -1.

Table C -1. Special and Impaired Waters in Lake St. Croix Beach

Water Body	Designation	Requirements
St. Croix River	Outstanding Resources Value Water (ORVW) Restricted Discharge	NPDES Construction Permit requires additional measures for construction activities; water quality volume and buffer zones
St. Croix River	Impaired for Mercury (Hg)	Approved TMDL. Statewide implementation. No direct local requirements.
	Impaired for PCB	TMDL not yet completed. No current local requirements.
		Fish consumption advisories apply to both impairments
	Phosphorus	20% phosphorus load reduction goal set

Protected waters are shown in Figure 2.11 of the MSCWMO Plan and the wetlands within the City are illustrated in Figure 2.7 of the MSCWMO Plan. The St. Croix River is the only Protected Water that is within or that borders Lake St. Croix Beach. Four wetlands are identified in the City. Three of these wetlands are located along the St. Croix River and the fourth is located near the intersection of Ramada Ave. and 20th St.

Stormwater Management System

The City has no formal storm sewer or ditch system. The City has installed drainage structures at strategic locations along roadways to address periodic street flooding. There are two concentrated discharge points from the City to the St. Croix River located at Upper 17th St. and Riviera Ave and on Riviera Ave near 16th St. Several Planned Unit Developments located in the City have stormwater facilities which include ponds. The City has a policy for inspection and maintenance on these facilities. The City also inspects mandated stormwater facilities at private residences and businesses each year as part of the CUP renewal process.

Surface Water Management Requirements and Standards

The City will carry out sound stormwater management practices which are consistent with the City's ordinances and the policies of the MSCWMO Plan. The City will update their current ordinances listed in Table C-2 to match the standards identified in the MSCWMO Watershed Management Plan for stormwater treatment and volume control, erosion and sediment control and groundwater management.

The City will follow a process to review proposed development for potential wetland impacts. The City will support the administration of the Minnesota Wetland Conservation Act by the MSCWMO. The City will require treatment of stormwater runoff for new projects and encourage treatment of existing discharges prior to discharge to wetlands and the maintenance of a natural buffer around wetlands. The City shall support the restoration of disturbed wetlands within the city.

Table C-2. Ordinances Relating to Surface Water Management

Ordinance Chapter	Description
301.10	Adoption of Model Zoning Code. Land coverage and Drainage Component.
302.	Adoption of Lower St. Croix Bluffland and Shoreland Management Ordinance
402.	Adoption of Model Floodplain Regulation
403.	Soil Erosion
404.	Restrictive Soils
506.	Individual Sewage Treatment System Code
507.	Water Drainage Code
509.	Water Supply System Code

The City has adopted the State Wild and Scenic Rivers Management Program (SWSRMP) which includes special shoreland and bluffland management provisions for the St. Croix River Corridor. The City also participates in the National Flood Insurance

Program and has adopted the Washington County Model Floodplain Regulation which regulates any development or redevelopment in the floodplain. The Minnesota DNR reviews and approves all development requiring variances or special uses in the St. Croix Riverway District and floodplain.

The City will incorporate the MSCWMO performance standards into its existing practices, and will refer projects to the MSCWMO for full review when deemed necessary based on the activities listed below. Projects that require full review by MSCWMO will be subject to a \$250.00 fee, which shall be paid to the City of Lake St. Croix Beach. The MSCWMO will then invoice the City in the amount of \$250.00 for full review. Lake St. Croix Beach will adopt the MSCWMO review comments into its commentary for each project.

- 1) Any project undertaking grading, filling, or other land alteration activities which involve movement of earth or removal of vegetation on greater than 10,000 square feet of land.
- 2) All major subdivisions. Major Subdivisions are defined as subdivisions with 4 or more lots.
- 3) Any project with wetland impacts.
- 4) Any project with grading within the public waters.
- 5) Any project with grading within the wetland buffer as identified in the MSCWMO Plan.
- 6) Any project with grading within 40 feet of the bluff line.
- 7) Redevelopment on a site of 5 acres or more, where pervious surface is disturbed and final impervious surface, in aggregate, exceeds 1 acre or 5% of a site, which causes a change in runoff characteristics of removal of vegetation.
- 8) Development projects that impact 2 or more of the member communities.

Projects that do not trigger full review may still require staff level review by the MSCWMO as follows:

Performance Standards in Section 5 of the WMP will apply to development within the Middle St. Croix watershed and focus on stormwater management, erosion and sediment control, and wetland protection. The Performance Standards will apply to all projects that trigger the MSCWMO review process. In addition, whenever a project requires a building permit that adds five hundred square feet of additional impervious surface, or a project requires a variance from the current local impervious surface zoning requirements for the property, the Performance

Standards will apply. Building permits for new construction in an approved major subdivision that meets the requirements of the Performance Standards are exempt from the water quantity and quality standards as long as the individual property does not exceed the impervious surface percentage approved for the given parcel in that subdivision. All projects regardless of whether public or private can be reviewed.

The erosion and sediment goal of the MSCWMO and the City is to prevent erosion and subsequent sedimentation from surface runoff within the watershed on construction sites, agricultural lands, and along stream banks, lakeshores and roadsides. To achieve this, the City supports the MSCWMO goals and policies to:

- 1) Promote methods that prevent erosion;
- 2) Intercept eroded material before it leaves the site; and
- 3) Require sedimentation basins or other areas for sediment to be safely controlled.

Groundwater Management

Groundwater provides all of the drinking water and the majority of water for commercial, industrial, and irrigation needs in Washington County. The protection and conservation of groundwater is critical to safe drinking water, a healthy ecosystem and economic vigor. The City supports the goals and policies within the Washington County Groundwater Plan 2003-2013 which covers the protection and conservation of groundwater resources by coordinating with other governmental bodies, writing policies, regulation and education. Groundwater quality and quantity are the two main focuses of the plan.

Groundwater recharge in Lake St. Croix Beach occurs both vertically and horizontally. Most of the City is an important groundwater recharge area given the granular soils. With coarse soils over shallow bedrock, septic tank affluent passing through existing drywells could have a high probability to contaminate groundwater. The existence of many shallow private wells located in the City may also be a potential risk to groundwater. The entire City is served by a water system operated by the City of Lakeland. The Lakeland Water Utility has a Wellhead Protection Plan and only a small portion of Lake St. Croix Beach is located within the wellhead protection area.

In 1987 the Minnesota Department of Health issued a Well Advisory for Lakeland, Lakeland Shores, Afton and West Lakeland Township located adjacent to and north of Lake St. Croix Beach. Wells were identified with higher than average volatile organic compounds (VOCs). At least two sources of plumes were identified in the area, one with fluorocarbons and petroleum products (Ray's Truck Stop Plume) and the other with solvents. As a result of VOCs detected in nearly 200 wells, the communities of Lakeland and Lakeland Shores were connected to a municipal water system installed in 1991. Lake

St. Croix Beach connected to the system in 1991-1994 due to concerns over nitrates found in private wells. Well sampling continues to be conducted by the Minnesota Pollution Control Agency (MPCA) and well monitoring collected by the MPCA to date indicates that the plumes are fully contained.

Water Based Recreation

The beautiful St. Croix River is one of Lake St. Croix Beach's key assets. Water based recreation is plentiful on the St. Croix River. Residents and visitors enjoy the 0.7 miles of beach which makes up the City's Riverfront parks. Activities include but are not limited to swimming, fishing, sailing, and pleasure boating.

Fish and Wildlife Habitat

The St. Croix River contains many species of fish and attracts many types of waterfowl. Upland game animals such as deer are not uncommon along the River and in the wooded areas of the City. The City has wetland areas including a wooded wetland and seasonally flooded shoreland areas which attract birds and other wetland wildlife.

Assessment of Problems Goals and Corrective Actions

Water Quantity

St. Croix River Flooding. Property owners in the flood plain experience property damage, expenses and inconvenience associated with periodic flooding of the St. Croix River. Major flood events have occurred in 1965, 1969, 1993, 1997 and 2001. 8.55% of the land located in the City is within the 1% annual chance flood boundary (100 year floodplain.)

Goal: To minimize property damage and threats to public health and safety associated with flooding of the St. Croix River.

Action:

- The City maintains a levee system and participates in the Non-Federal Flood Control Works (NFFCW) inspection and rehabilitation program through the U.S Army Corps of Engineers. The levees are inspected annually by the City and biannually by the Army Corps of Engineers.
- The City has prepared a Flood Management Manual and during a flood event property owners in the flood plain, with the assistance of City Officials and other residents sandbag and pump to protect public and private properties within the floodplain.
- The City encourages property owners in the floodplain to consider elevating existing structures above the 100 year flood level, to flood proof

to an elevation above the 100 year floodplain, or to participate in federal buyouts. A number of homes have been elevated or removed since the 2001 flood.

- The City will enforce existing codes related to development and redevelopment in the floodplain. The lowest level of any new structures shall be built 2 feet above the 100 year flood elevation.

Stormwater Runoff. The volume, rate and quality of stormwater runoff is directly related to surface coverage. Increased stormwater runoff is a result of increased impervious surfaces. Impervious surfaces have a larger impact on water quality as they provide less detention storage and deliver water faster downstream. Periodic flooding is caused by large stormwater events and snowmelt. With no formal storm sewer or ditch system to drain streets periodic ponding occurs in areas along roadways and in low areas of the City.

Goal: To reduce stormwater runoff volume to prevent flooding and infiltrate stormwater to promote groundwater recharge and to protect the water quality of receiving bodies.

Action:

- The City will require that development and redevelopment include facilities to provide water quality treatment and control runoff at or below existing rates and as required by the MSCWMO. Examples include swales, detention areas, raingardens, etc.
- Sump drainage structures and raingardens will be installed to alleviate local flooding problems when identified.
- The City will explore expanding limitation of impervious surfaces to areas outside of the Riverway District.

Water Quality

Stormwater runoff is considered the leading source of water pollution in the United States. Water runoff from impervious surfaces and lawns introduces pollutants that can be transported by the runoff into receiving water bodies. Nonpoint source pollution from animal wastes, construction sites, leaves, grass clippings, failing septic systems, automobile wear, emissions, waste oils, pesticides, fertilizers and road salting cause pollution loading of local waters.

Goal: To minimize impact of current and future development on water quality of wetlands and the St. Croix River.

Action:

- Reduce nonpoint sources of pollution through the support and use of low impact development practices and Best Management Practices aimed at protecting water quality and maintaining stormwater runoff rates and volumes at or below predevelopment conditions.
- Runoff will be prevented through reduction in impervious surfaces.
- Efforts will be made to infiltrate stormwater to promote groundwater recharge and to protect the water quality of receiving bodies.

Areas of implementation will include the following:

Construction Project Management

- The City will control erosion from construction sites through enforcement of existing codes and referral of qualifying projects to MSCWMO for review.

Street Repair and Maintenance

- The City will establish a program for Best Practices for use of sand and de-icing products to balance groundwater, surface water, budget, and transportation safety and educate contractors involved in these activities. The Minnesota Snow and Ice Control Field Handbook for Snowplow Operators will be made a term of contracts and provided to contractors.
- The City will sweep the streets during the spring of each year to remove sand and salt deposited by winter street sanding. The City will also sweep the streets in late fall to remove leaves and sediment.
- New road and road improvement projects shall be completed in a manner that incorporates performance standards as set forth by the MSCWMO.

Park and Landscape Maintenance

- The city will investigate and assess existing park and landscape maintenance activities and implement pollution prevention practices. The City will educate contractors involved in these activities.

Residential Stewardship

- The City will educate and encourage residents to minimize fertilizer and pesticide use, and to implement modified lawn care practices.

- Installation of raingardens to infiltrate stormwater runoff and use of rain barrels to capture and reuse runoff will be encouraged.

Best Management Practices

- When considering applications for new construction and reconstruction the City will require onsite treatment devices such as swales, raingardens and drainage structures be used whenever possible or as required by the MSCWMO.
- The City will lead by example and manage its properties in accordance with the appropriate Best Management Practices.

Erosion

Contaminants and nutrients are generally associated with sediment runoff. High phosphorus concentrations contribute to algae growth and poor water quality. Phosphorus in stormwater runoff bonds with soil particles and limiting the movement of soil particles will benefit downstream water bodies. Soil erosion can also cause problems for drainage conveyance systems and deposition of eroded material can reduce the effectiveness of these systems. Soil erosion can create pond and detention basin performance and maintenance issues. The shoreline bluffs and levees located in the City have experienced serious sloughing and erosion caused by high water and stormwater runoff.

Goal: To prevent erosion and the movement of sediment.

Action:

- The City will prevent soil erosion through public education and enforcement of existing City and MSCWMO policies and performance standards.
- The City will continue to partner with agencies including but not limited to the MSCWMO, Washington Conservation District (WCD), the MN Board of Water and Soil Resources (BWSR) and organizations such as Great River Greening to repair and protect publicly owned shoreline and bluff land along the St. Croix River from erosion.
- The City will control erosion from construction sites through enforcement of existing codes and referral of qualifying projects to MSCWMO for review.
- Construction will be prohibited on slopes greater than 12%.

Groundwater

There is a need to prevent contamination of aquifers and to promote groundwater recharge. The City is an important groundwater recharge area given the granular soils. Private wells and individual sewage treatment systems (ISTS) within the City may be a potential risk to groundwater.

Goal: To prevent contamination of aquifers and promote groundwater recharge.

Action:

- Groundwater protection will be a goal when making land use decisions in the City.
- The City will encourage homeowners with private wells to hook up to city water system and require proper well abandonment when wells are taken out of service.
- The City will encourage the use of water conservation techniques and landscape alternatives such as the use of low maintenance native plants to reduce dependency on groundwater supplies.
- The City has adopted and will enforce the ISTS regulations of Washington County which regulates design, use and maintenance of ISTS.
- The City will continue its Memorandum of Agreement with Washington County to enforce the maintenance and inspection portion of the ISTS ordinance.
- The City will be proactive in the elimination of drywells in the community.
- The City will provide education to residents and public officials on the inter-relation of surface and groundwater quality and quantity, the value and need to protect recharge areas and wetlands and implementation of BMPs to protect groundwater resources.
- The City will require a groundwater monitoring or protection plan as part of the CUP application for businesses that store, use or transplant hazardous materials.

Public Participation/Education

There is a need to increase public participation and knowledge of water resources to gain public support for implementation of this Plan.

Goal: Increase public knowledge of the cumulative effects of individual actions and increase participation in stormwater management and protection of water resources.

Action:

- The City will increase public participation and knowledge in management of water resources of the community by providing information in City newsletters, and by offering classes, hands on training and technical assistance to residents regarding BMPs.
- The City will educate public officials about managing community water resources.
- When practical the City will use our public spaces to display BMPs.
- The City will support the efforts of the MSCWMO, the WCD and other water resource management organizations in their public information efforts.

Wetlands

There is a need to protect wetlands within the City for their valuable functions of stormwater quality treatment, groundwater recharge, open space and wildlife habitat.

Goal: To maintain and protect the quality and quantity of wetlands within the City

Action:

- The City will support the policies and performance standards of the MSCWMO regarding wetlands.
- The City will require treatment of stormwater runoff for new projects and encourage treatment of existing discharges prior to discharge to wetlands and the maintenance of a natural buffer around wetlands.
- The City will maintain buffer zones of un-mowed natural vegetation on public properties along the St. Croix River.

- The City shall support the restoration of disturbed wetlands within the city.

Recreation, Fish and Wildlife

Water based recreation is plentiful on the St. Croix River and these activities may be threatened by reduced water quality. Despite federal protection as a wild and scenic river Lake St. Croix was listed as impaired by the MPCA in 2008 because of high levels of phosphorus. Flooding and stormwater runoff has caused erosion on the bluffs and shore land of the St. Croix River located in the City. Non-native invasive plants such as buckthorn are found throughout the City and can reduce native plant diversity, can reduce tree seedling regeneration, degrade habitat for wildlife, and increase erosion.

Goal: To protect the natural and scenic qualities of the St. Croix River, manage water recreation activities, and improve fish and wildlife habitat.

Action:

- The City will maintain the scenic beauty of the St. Croix River by enforcing the adopted SWSRMP shoreland and bluffland management provisions.
- The parks and open spaces located on public property will be managed in a way that sets the best example for stewardship of natural resources in the community.
- The City will control sediment and nutrient loading of the St. Croix River by reducing stormwater runoff.
- The City will control erosion by stabilizing slopes and make efforts to maintain the ecological health of the bluffland ecosystems.
- The City will remove invasive plants from public property and replace them with native plants and encourage residents to remove buckthorn and other invasive species from private property.

Maintenance/Inspection

The function of water resource facilities can deteriorate without regular maintenance.

Goal: Preserve the function of surface water management facilities.

Action:

- Routine inspection and maintenance of drainage systems will be completed to assure that the facilities are functioning adequately and to maximize system performance.
- The City will develop standards to insure consistency and documentation of maintenance and inspections.
- Public drainage structures will be cleaned on an annual basis by the City. Surface water management structures on private property will be inspected regularly and the maintenance will be the responsibility of the property owner.
- The City will sweep streets in the early spring and fall to remove sediment and organic materials.

Implementation Plan

This City intends to cooperate with the MSCWMO in implementing their 2006 Watershed Management Plan. The City recognizes that the MSCWMO Plan is intended to be in effect until 2014 and this Plan will be updated within 2 years of the WMO Plan update. This implementation plan is intended to provide guidance in carrying out the Plan goals and objectives. Capital improvement projects, studies and ongoing maintenance, inspection, monitoring and other management activities are summarized. These items were developed by assessing and prioritizing the current problem areas and issues of concern in the city. The key implementation activities and projects are summarized and prioritized in Table C-3 along with planning level cost estimates.

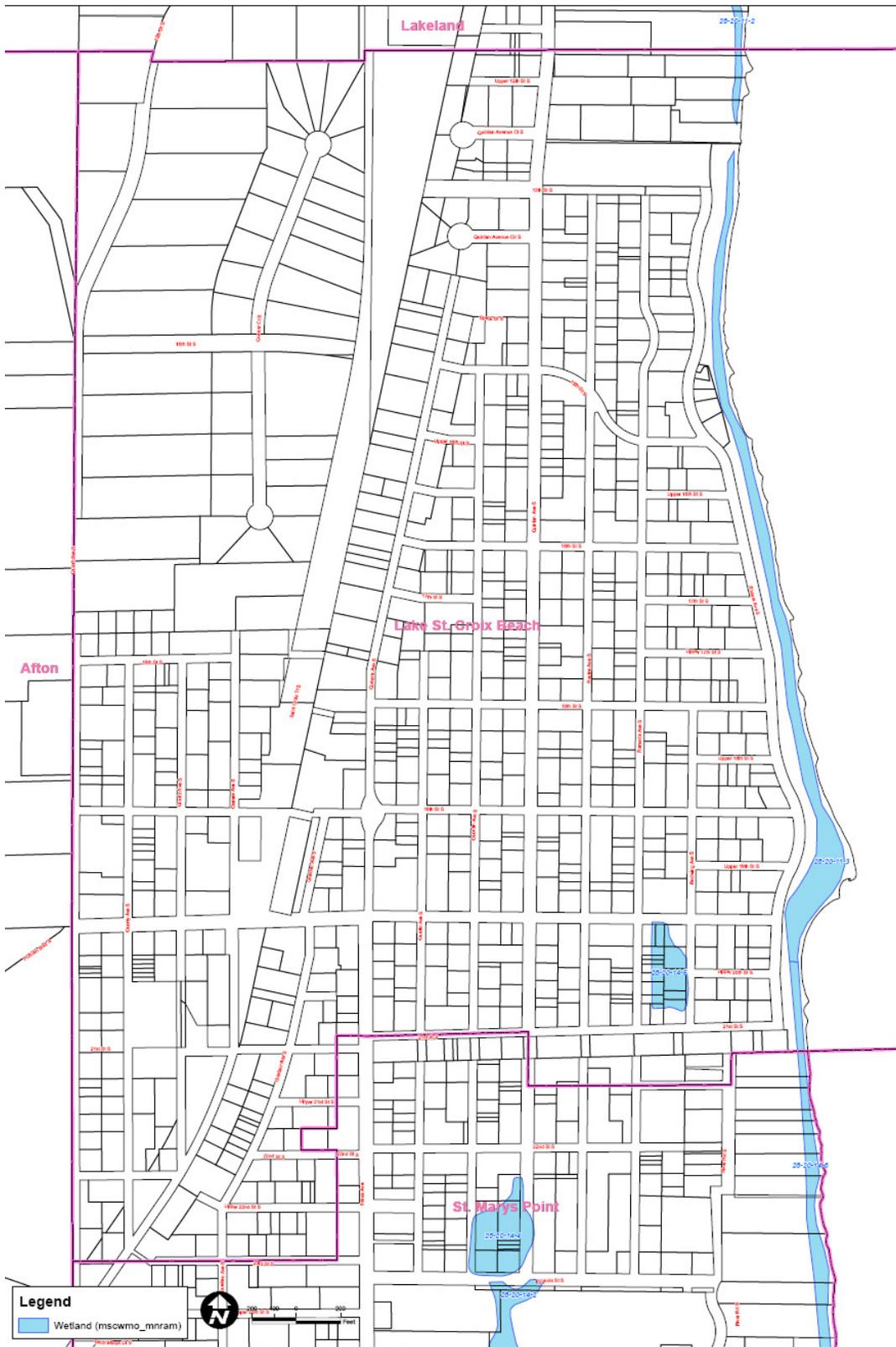
Table C-3. Implementation Program Priority Projects and Activities

ID	Project Name	Description	Year	Cost/Funding Source
1	Update City Codes and Ordinances related to water management	Incorporate MSCWMO Standards, Washington County Groundwater Plan, NPDES Standards, and Wetland Conservation Act.	2009-2010	\$500
2	City Hall Raingardens and Native Plant Display	Installation of raingarden adjacent to City Hall including a native plant display garden and a second raingarden N of 20 th St to address street ponding.	2009	\$3000 50% MSCWMO Cost-share grant
3	Shoreline Buffer and Erosion Control Between 20 th St. and 21 st St.	Remove invasive species, stabilize area of active erosion and create native buffer to protect St. Croix River	2009-2010	\$25,000. BWSR Native Buffer Cost Share Grant: \$18,750. City share: \$6250.

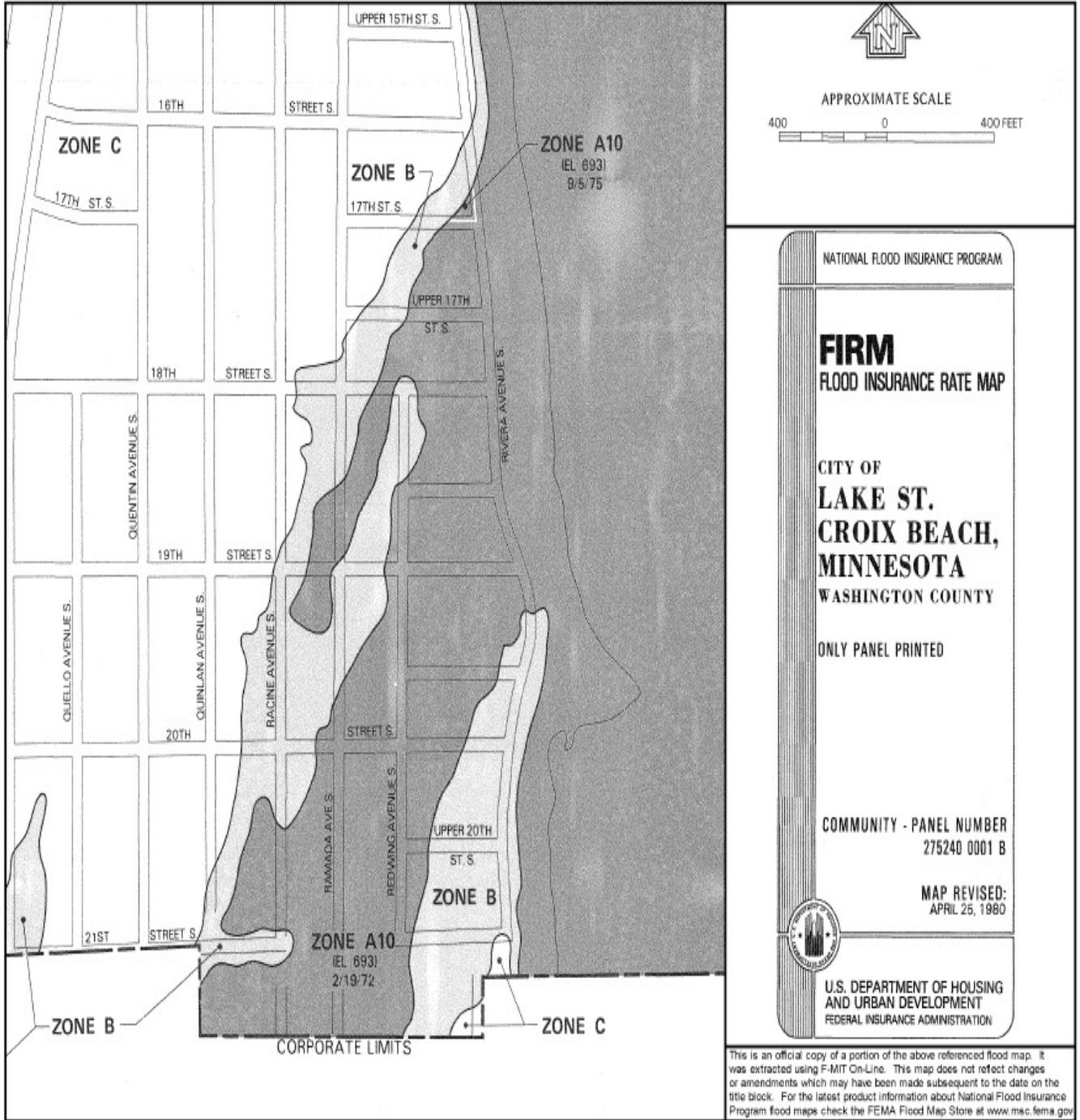
4	Inspection and maintenance of stormwater facilities	Regular inspection and maintenance of stormwater facilities on public and private property.	2009-2016	Undetermined maintenance cost. Inspection by trained volunteers.
5	Street Sweeping	Sweep streets in spring and early fall.	2009-2016	\$6700 per year
6	Surface Water Management	Installation of Drainage Structures, BMPs and flood protection.	2009-2016	\$5000 annually. Pursue grants to increase installation of BMPs and reduce costs to residents
7	Levee inspection, maintenance and repair	Annual inspection of levee, removal of woody vegetation and erosion control. Repair as needed.	2009-2016	2009: \$1500 Future needs undetermined. Flood damage repair costs covered by NFFCW
8	Water Samples and Testing	Collect grab samples at 2 existing stormwater discharge sites and test for pollutants and set standards to improve quality of water discharging to River.	2009-2010	\$700
8	Public Education and Participation	Provide information in monthly City newsletters, offer classes training and technical assistance to residents regarding BMPs.	2009-2016	\$200 per year
9	Stormwater Facilities Inspection and Maintenance Policy	Review current policies and update. Create chart for use in inspections and for documentation. Train volunteers to complete inspections.	2009-2010	\$500
9	Parks/Public Space Management	Review existing practices and implement standards and policies incorporating best practices.	2009	\$100
10	Snowplowing Policy	Review and update existing policy to incorporate best practices for use of sand and salt on roadways.	2009	\$100
11	Invasive Species Removal	Remove invasive species from public properties.	2009-2016	\$500 per year
12	Bluff Erosion Control Plan	Evaluate condition and prioritize sections for erosion repair and protection.	2009	\$400
13	Bluff Erosion Protection and Repair	Repair and protect City owned bluffs from erosion.	2009-2016 as needed	Undetermined. Pursue grants to reduce residents cost burden.

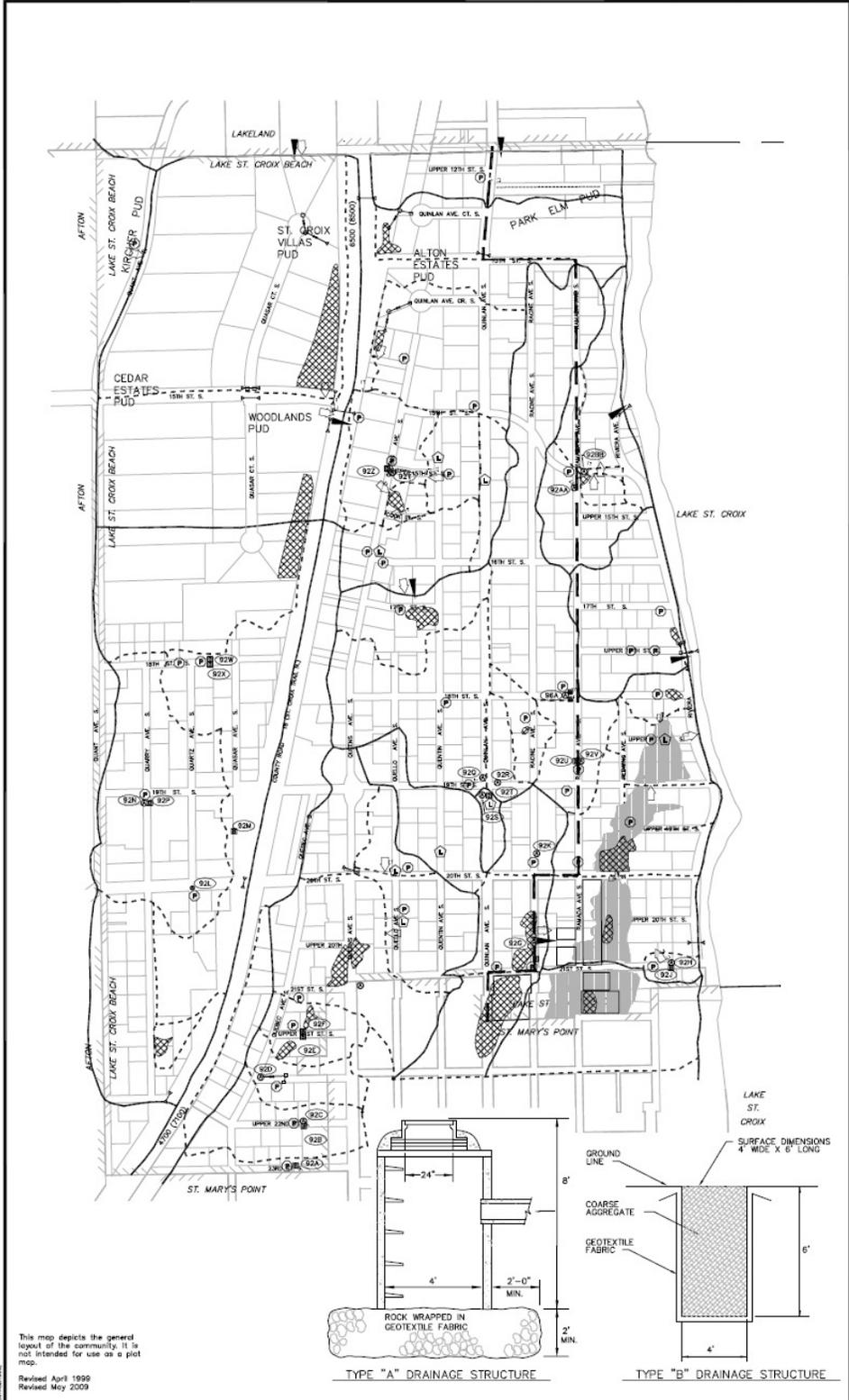
Plan Amendments

The Community is dynamic as people move in and out, businesses come and go, and neighborhoods are developed and redeveloped. This plan will be evaluated, maintained, updated and enhanced over time. Amendment proposals can be requested by persons either residing in or having business with the City. Proposed amendments are reviewed by staff and if determined to be reasonable and necessary, the need for a public hearing shall be measured, and the amendment shall be considered at a regular or special City Council meeting. The City Council and the MSCWMO will determine whether or not to approve proposed amendments.



	3535 VADNAIS CENTER DR. ST. PAUL, MN 55110 PHONE: (651) 490-2000 FAX: (651) 490-2150 WWW: 800-328-0266 www.sehinc.com	Project: XXXXX 000000 Print Date: 05/05/2009 Map by: Projection: Source:	Wetlands Map Lake St. Croix Beach, MN	Figure X
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**lake
st. croix
beach**

drainage map

- lake st. croix beach city limits
- major drainage boundary
- minor drainage boundary
- low area not identified on contour map
- low area identified on contour map
- 1997 flood area
- culvert

- major drainage flow path
- minor drainage flow path
- overflow drainage path
- areas with storm water problems
- existing storm sewer
- existing "type B" inlet
- existing "type A" inlet
- storm structure identification

500 0

250

SCALE IN FEET